National Aeronautics and Space Administration (NASA)

Small Business Innovation Research (SBIR)

SBIR Ignite Solicitation

Fiscal Year 2024

Complete Phase I Proposal Package Due Date and Time:
July 30, 2024 by 5:00 p.m. ET

Complete Phase II Proposal Package Due Date and Time:
120th day of Phase I Period of Performance by 5:00 p.m. ET

Amended April 14, 2025

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Executive Summary

The NASA Small Business Innovation Research (SBIR) program focuses on transforming scientific discovery into products and services through innovations that have potential for infusion into NASA programs and missions, potential for commercialization into commercial markets, and societal benefit. Unlike fundamental research, the NASA SBIR program supports small businesses in the creation of innovative, disruptive technologies and enables the application of research advancements from concept to market. Unlike most investors, the NASA SBIR program provides non-dilutive funding at the earliest stages of company and technology development.

The SBIR Ignite Solicitation is a limited pilot initiative focused on technologies with a strong commercial pull. The topic areas of interest for this solicitation have been specifically selected for their commercial relevance. Offerors must demonstrate how their technology meets a need within the commercial market and provide a strong plan for commercialization of the technology to be competitive for award.

If you are familiar with the traditional NASA annual SBIR and STTR solicitations, you will notice significant differences in section 3: Proposal Preparation Instructions and Requirements; section 4: Method of Selection and Evaluation Criteria; section 6: Submission of Proposals; and section 8: Submission Forms. Be sure to read each of these sections carefully to ensure your proposal makes it through administrative screening to be considered.

For Phase I, the technical proposal will be separated into 2 distinct parts:

- A White Paper
- A Slide Deck

Firms may be invited to present to a panel made up of NASA subject matter experts and/or 3rd party reviewers.

Like the 2024 NASA SBIR Phase I solicitation, proposal submission will occur through ProSAMS rather than the standard Electronic Handbook (EHB) platform.

Phase II proposals will be due 120 days from the start of the Phase I period of performance. Firms will be notified of the exact date when they receive their Phase I award. The goal is to reduce the time between the end of the Phase I and the beginning of the Phase II periods of performance.

The SBIR Ignite program aims to accelerate the advancement of technology to market. Firms are encouraged to propose the shortest Phase II period of performance that is required to reach their proposed milestones and not to default to the maximum 24-month period of performance. *Note: The Phase I period of performance is expected to be the standard 6 months.*

NASA requests Small Business Concerns (SBCs) to submit proposals for the SBIR Ignite solicitation during fiscal year (FY) 2024.This solicitation includes instructions for you to submit complete proposal packages as well as background information, eligibility and certification requirements, evaluation criteria, and contracting considerations. Details on the research topic areas appear in section 9. Communication between NASA and firms is through email during the solicitation period. The SBIR Ignite proposal submission period begins Monday, June 10, 2024 and ends at 5 p.m. Eastern Time on Tuesday, July 30, 2024.

1. Program Description

1.1 Legislative Authority and Background

Congress created the Small Business Innovation Research (SBIR) program to support scientific excellence and technological innovation through the investment of federal research funds. The purpose of this investment is to build a strong national economy, strengthen the role of small business in meeting federal research and development needs, increase the commercial application of research results, and foster and encourage participation by socially and economically disadvantaged and women-owned small businesses.

The Small Business Administration (SBA) provides policy through the combined Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs. The SBIR and STTR Extension Act of 2022 amended the Small Business Act *(15 U.S.C. 638*) to extend the SBIR and STTR programs until September 30, 2025.

1.1.1 Due Diligence Program to Assess Security Risks

The SBIR and STTR Extension Act of 2022 requires NASA, in coordination with the SBA, to establish and implement a due diligence program to assess security risks presented by offerors seeking a federally funded award. As noted above, the NASA SBIR/STTR Programs follow the policies and practices of the SBA SBIR/STTR Policy Directive. Revisions to the Policy Directive are in effect as of May 3, 2023, and can be viewed through the Federal Register Notice. This revision is incorporated into this solicitation, including Appendix III, "Disclosures of Foreign Affiliations or Relationships to Foreign Countries" as reflected in the Disclosures of Foreign Affiliations or Relationships to Foreign Countries form (see section 2.3.1).

In accordance with section 4 of the SBIR and STTR Extension Act of 2022, NASA will review all proposals submitted in response to this solicitation to assess security risks presented by offerors seeking an SBIR or STTR award. NASA will use information provided by the offeror in response to the Disclosures of Foreign Affiliations or Relationships to Foreign Countries form and the proposal to conduct a risk-based due diligence review on the cybersecurity practices, patent analysis, employee analysis, and foreign ownership of a small business concern, including the financial ties and obligations (which shall include surety, equity, and debt obligations) of the offeror and its employees to a foreign country, foreign person, or foreign entity.

1.2 Purpose and Priorities

This solicitation sets the requirements for you, the offeror, to submit a proposal to NASA for Small Business Innovation Research (SBIR) Program Ignite Phase I projects in fiscal year (FY) 2024. NASA will release its FY 2024 Phase I SBIR Ignite solicitation on Monday, June 10, 2024. You must submit completed proposal packages by Tuesday, July 30, 2024, 5:00 p.m. Eastern.

The Space Technology Mission Directorate (STMD) directs implementation of the NASA SBIR and STTR programs. The NASA SBIR/STTR Program Management Office (PMO), hosted at the NASA Ames Research Center, operates the programs together with NASA mission directorates and centers. The NASA Shared Services Center (NSSC) manages SBIR and STTR procurements.

Each year NASA mission directorates, programs, and projects identify the research problems and technology needs that the SBIR program will solicit. The range of problems and technologies is broad, and the list of research subtopics varies from year to year to maintain alignment with current interests.

1.3 Three-Phase Program

NASA SBIR projects advance through three phases and are described in detail on the NASA SBIR/STTR website: https://sbir.nasa.gov/.

Phase I

Phase I projects should demonstrate technical feasibility of the proposed innovation and the potential for use in a NASA program or mission and/or the commercial market. The NASA SBIR Program does not make awards solely directed toward system studies, market research, routine engineering, development of existing product(s), proven concepts, or modifications of existing products without substantive innovation.

Maximum value and period of performance (POP) for Phase I:

Phase I Contracts	SBIR
Maximum Contract Value	$150,000
Period of Performance	6 months

Phase II

Phase II proposals continue the research and development started in Phase I to bring the innovation closer to use in a NASA program or mission and/or the commercial market. Phase II requires a more detailed proposal of the technical effort and commercialization strategy. Only Phase I awardees are eligible to submit a Phase II proposal within 120 days from the start of the Phase I period of performance. Firms will be notified of the exact date when they receive their Phase I award. The goal is to reduce the time between the end of the Phase I and the beginning of the Phase II periods of performance. Firms are encouraged to propose the shortest Phase II period of performance that is required to reach their proposed milestones and not to default to the maximum 24-month period of performance.

Phase II Contracts	SBIR
Maximum Contract Value	$850,000
Maximum Period of Performance	24 months

Post-Phase II Opportunities for Continued Technology Development

Phase I and II awards may not be sufficient in either dollars or time to prepare the project for government or commercial use. Therefore, NASA supports small businesses beyond Phase I and II awards with several Post Phase II initiatives. Please refer to the NASA SBIR/STTR website for eligibility, application deadlines, matching requirements and further information.

Phase III

Phase III is the commercialization of innovative technologies, products, and services resulting from either a Phase I or Phase II contract. This includes further development of technologies for transition into NASA programs, other Government agencies, or the private sector. Phase III contracts are funded from sources other

than the SBIR and STTR programs and may be awarded without further competition. SBIR awardees are eligible to receive sole-source Phase III contracts any time after award of their Phase I contracts. Please refer to https://sbir.nasa.gov/content/post-phase-ii-initiatives#Phase-III for Phase III information.

1.4 Availability of Funds

NASA does not commit to fund any proposal or to make a specific number of awards. NASA may elect to make several or no awards in any specific research subtopic. NASA will determine the number of awards based on the level of appropriated funding provided to the program in FY 2024.

NASA will not accept more than 1 proposal packages from any one offeror. NASA does not plan to award more than one (1) SBIR contracts to any offeror. See sections 3.1 and chapter 4.

1.5 Eligibility Requirements

1.5.1 Small Business Concern (SBC) Certification

You must submit a certification stating that the SBC meet the size, ownership, and other requirements of the SBIR program at the time of proposal package submission, award, and at any other time set forth in SBA's regulations at 13 CFR §§ 121.701-121.705. NASA encourages socially and economically disadvantaged and women-owned SBCs to propose.

1.5.2 SBC Size

You, combined with affiliates, must not have more than 500 employees.

1.5.3 SBIR Restrictions on Level of Small Business Participation

You must be the primary performer of the proposed research effort. To be awarded an SBIR Phase I contract, you must perform at least two-thirds or 67% of the effort, and subcontractors or consultants may perform up to one-third or 33% of the effort.

1.5.4 Place of Performance and American-made Products and Equipment

Congress intends that the Awardee of a Funding Agreement under the SBIR/STTR program should, when purchasing any equipment or a product with funds provided through the Funding Agreement, purchase only American-made equipment and products, to the extent possible, in keeping with the overall purposes of this program.

If a rare and unique circumstance exists (for example, if a supply, material, equipment, product, subcontractor/ consultant, or project requirement is not available in the United States), NASA requires you to provide justification by completing the Foreign Vendor Form. This form must be submitted within the Proposal Budget Form, see section 3.2.3.5 NASA will consider a deviation request during contract negotiation and either approve or decline before award.

If a foreign vendor is proposed, the Phase I contract may be delayed or not awarded.

NASA will not approve purchases from or work with countries that appear on the Designated Country list. For reference, please see https://www.nasa.gov/oiir/export-control.

1.5.5 Principal Investigator (PI) Employment Requirement

Requirements	SBIR
Primary Employment	Principal investigator must be primarily employed with the SBC
Employment Certification	For Phase I, the principal investigator must be primarily employed with the SBC at the time of award and during the conduct of the proposed project. Primary employment means that more than one-half of the PI employment time is spent in the employ of the SBC, based on a 40-hour workweek. NASA considers a 19.9-hour or more workweek elsewhere to conflict with this rule.
Co-PIs	Not allowed
Deviation Request	NASA will review any deviation requests during negotiation and either approve or decline before award.
Misrepresentation of Qualifications	If you mispresent qualifications, NASA will decline the proposal package or terminate the contract.
Substitution of PIs	To substitute PIs, you must request approval from NASA after award

1.5.6 Novated/Successor in Interested/Revised Funding Agreements

An SBIR awardee may include, and SBIR work may be performed by, those identified via a "novated" or "successor in interest" or similarly revised funding agreement. In addition, an SBIR awardee may include those that have merely reorganized with the same key staff, regardless of whether they have been assigned a different tax identification number. In cases where there is a novation or similarly revised funding agreement, agencies may require the original awardee to relinquish its rights and interests in an SBIR project in favor of another applicant as a condition for that applicant's eligibility to participate in the programs for that project.

1.5.7 Restrictions on Venture-Capital-Owned Businesses

Small businesses owned in majority part by multiple venture capital operating companies, hedge funds, or private equity firms are not eligible to submit a proposal to this solicitation.

1.5.8 Joint Ventures or Limited Partnerships

Both joint ventures and limited partnerships are permitted, provided the entity created qualifies as an SBC defined in 1.5.1. Include in the proposal package a copy or summary of the joint venture or partnership agreement that includes, at a minimum, a statement of how the workload will be distributed, managed, and charged. See definitions for Joint Ventures along with examples at 13 CFR 121.103(h).

1.5.9 Required Benchmark Transition Rate

More experienced firms (SBCs with 21 or more Phase I awards) must meet performance benchmark requirements to continue participating in SBIR and STTR programs. The purpose of these benchmarks is to ensure that Phase I offerors that have won multiple prior SBIR and STTR awards are progressing towards commercialization. SBA will notify companies failing the benchmarks as well as the relevant officials at participating agencies like NASA.

Please refer to https://www.sbir.gov/performance-benchmarks for more information.

1.6 NASA Technology Available (TAV) for SBIR Use

You may use technology developed by NASA, or Technology Available (TAV), on SBIR projects. NASA has over 1,400 patents available for licensing, including many patents related to sensors and materials, and over 1,000 available software applications/tools in the Portfolio and Software Catalog via the NASA Technology Transfer Portal, http://technology.nasa.gov.

NASA provides these technologies "as is" and makes no representation or guarantee that additional effort will result in infusion or commercial viability. Whether or not an offeror proposes the use of a NASA patent or computer software within its proposed effort will not in any way be a factor in the selection for award.

1.6.1 Use of NASA Software

If you intend to use NASA software, a Software Usage Agreement (SUA), on a nonexclusive, royalty-free basis, is necessary, and the clause at 48 C.F.R. 1852.227-88, Government-Furnished Computer Software and Related Technical Data, will apply to the contract. Awardees will request the SUA from the appropriate NASA Center Software Release Authority (SRA) after contract award.

1.6.2 Use of NASA Patent

If you intend to use a NASA patent, you must apply for a nonexclusive, royalty-free evaluation license prior to submitting a proposal. After you have identified a patent to license in the NASA patent portfolio (http://technology.nasa.gov), click the link on the patent webpage ("Apply Now to License this Technology") to NASA's Automated Licensing System (ATLAS) to finalize your license with the appropriate field center technology transfer office. You must provide the completed evaluation license application with the proposal following the directions in section 3.3.3.7.

The evaluation license will automatically terminate at the end of the SBIR contract. License applications are treated in accordance with federal patent licensing regulations in 37 CFR Part 404. In addition to an evaluation license, if the proposed work includes the making, using, or selling of products or services incorporating a NASA patent, successful awardees will be given the opportunity to negotiate a nonexclusive commercialization license or, if available, an exclusive commercialization license to the NASA patent. Commercialization licenses are also provided in accordance with 37 CFR Part 404.

An SBIR awardee that has been granted a nonexclusive, royalty-free evaluation license to use a NASA patent under the SBIR award may, if available and on a noninterference basis, also have access to NASA personnel knowledgeable about the NASA patent. Licensing executives located at the appropriate NASA field center will be available to assist awardees requesting information about a patent that was identified in the SBIR contract and, if available and on a noninterference basis, provide access to the inventor or surrogate for the purpose of knowledge transfer.

Access to the inventor for the purpose of knowledge transfer will require the requestor to enter into a non-disclosure agreement (NDA) or other agreement, such as a Space Act Agreement. The awardee may be required to reimburse NASA for knowledge transfer activities. This is a time-consuming process and therefore, NASA does not recommend it for Phase I projects.

1.7 I-Corps™

NASA partners with the National Science Foundation (NSF) to give Phase I awardees the opportunity to participate in the NSF Innovation Corps (I-Corps™) program. I-Corps enables you to conduct customer discovery to learn your

customers' needs, to obtain a better understanding of your company's value proposition, and to develop an outline of a business plan for moving forward. This training is designed to lower the market risk inherent in bringing a product or innovation to market, thereby improving the chances for a viable business. For more information on the NASA I-Corps program, visit the NASA SBIR/STTR website.

If you are selected for Phase I contract negotiations, you will be provided the opportunity to opt into and participate in the NASA SBIR/STTR I-Corps program as indicated in section 4.1.9

The amount of funding is up to $10,000 to support participation in the shortened I-Corps version for SBIR awardees. I-Corps awards will be made separately with a modification with the Phase I contract.

1.8 Technical and Business Assistance (TABA)

Under the Small Business Act, you may request a Technical and Business Assistance (TABA) supplement up to $6,500 above the award amount of the Phase I contract. At Phase II, you may request a TABA supplement up to $50,000. If your project is selected for award and the TABA supplement is authorized by NASA, you must use the TABA supplement to contract with one or more vendors to receive services to assist in:

- Making better technical decisions concerning this SBIR project
- Solving technical problems that arise during the conduct of this SBIR project
- Minimizing technical risks associated with this SBIR project
- Commercializing new products and processes resulting from this SBIR project

TABA may include, for example:

- Access to a network of non-NASA scientists and engineers
- Assistance with product sales
- Intellectual property (IP) protections
- Market research
- Market validation
- Development of regulatory and manufacturing plans
- Access to technical and business literature available through online databases

TABA vendors may include private commercialization assistance or business development service providers, public-private partnerships, other entrepreneurial support organizations (ESOs), and attorneys or other IP or licensing professionals. TABA funds may not be used to fund activities conducted internally by the small business awardee.

For information on how to request a TABA supplement at Phase I, please see section 3.2.3.9, Request for Use of Technical and Business Assistance Funds. NASA does not guarantee approval of requests for a TABA supplement. Awardees who receive a TABA supplement must deliver a description of services obtained, and results at completion of their Phase I contract. For reference, see https://www.sbir.gov/.

1.9 Small Business Administration (SBA) Applicant Resources

The SBA works with several local partners of various organizational types to train and support potential SBIR/STTR applicants around the country from proposal assistance to SAM registration, and commercialization support to industry connections. To find local assistance visit: https://www.sbir.gov/local-assistance.

To find out more information on the specific types of SBA federal resources available, visit: https://www.sbir.gov/resources.

1.10 NASA Mentor-Protégé Program (MPP)

The purpose of the NASA Mentor-Protégé Program (MPP) is to provide incentives to NASA contractors, performing under at least one active approved subcontracting plan negotiated with NASA, to assist protégés in enhancing their capabilities to satisfy NASA and other contract and subcontract requirements. The NASA MPP established under the authority of Title 42, United States Code (U.S.C.) 2473(c)(1) and managed by the Office of Small Business Programs (OSBP), includes an Award Fee Pilot Program. Under the Award Fee Pilot Program, a mentor is eligible to receive an award fee at the end of the agreement period based upon the mentor's performance of providing developmental assistance to an active SBIR/STTR Phase II contractor in a NASA Mentor-Protégé agreement (MPA). For more information on the Mentor-Protégé Program, please visit https://www.nasa.gov/osbp/mentor-protege-program/.

1.11 Fraud, Waste and Abuse and False Statements

Fraud is "any false representation about a material fact or any intentional deception designed to deprive the United States unlawfully of something of value or to secure from the United States a benefit, privilege, allowance, or consideration to which an individual or business is not entitled."

NASA reserves the right to decline any proposal packages that include plagiarism and false claims. Further, knowingly and willfully making any false, fictitious, or fraudulent statements or representations may be a felony under the Federal Criminal False Statement Act (18 U.S.C., section 1001), punishable by a fine and imprisonment of up to 5 years in prison. The Office of the Inspector General (OIG) has full access to all proposal packages submitted to NASA.

Pursuant to NASA policy, any company representative who observes crime, fraud, waste, abuse, or mismanagement or receives an allegation of crime, fraud, waste, abuse, or mismanagement from a federal employee, contractor, grantee, contractor, grantee employee, or any other source will report such observation or allegation to the OIG. NASA contractor employees and other individuals are also encouraged to report crime, fraud, waste, and mismanagement in NASA's programs to the OIG. The OIG offers several ways to report a complaint:

NASA OIG Hotline: 1-800-424-9183 (TDD: 1-800-535-8134)

NASA OIG Cyber Hotline: https://oigforms.nasa.gov/wp_cyberhotline.html

Or by mail:
NASA Office of Inspector General
P.O. Box 23089
L'Enfant Plaza Station
Washington, DC 20026

1.12 NASA Procurement Ombudsman Program

The NASA Procurement Ombudsman Program is available under this solicitation as a procedure for addressing concerns and disagreements concerning the terms of the solicitation, the processes used for evaluation of proposal packages, or any other aspect of the SBIR procurement. The clause at NASA Federal Acquisition Regulation (FAR) Supplement (NFS) 1852.215-84 ("Ombudsman") is incorporated into this solicitation.

The cognizant ombudsman is:

Marvin Horne, Procurement Ombudsman
Office of Procurement
NASA Headquarters
Washington, DC 20546-0001
Telephone: 202-358-4483
Email: nhq-dl-op-comp-advocate-vendor-engagement@mail.nasa.gov

In accordance with NFS 1852.215-84, the ombudsman does not participate in any way with the evaluation of proposal packages, the source selection process, or the adjudication of formal contract disputes. Therefore, before consulting with the ombudsman, you must first address your concerns, issues, disagreements, and/or recommendations to the Contracting Officer for resolution. The process set forth in this solicitation provision (and described at NFS 1852.215-84) does not change your right to file a bid protest or the period in which to timely file a protest.

1.13 Questions About This Solicitation and Means of Contacting NASA SBIR Program

To ensure fairness, NASA will not answer questions about the intent and/or content of research subtopics in this solicitation during the open solicitation period.

If you have questions requesting clarification of proposal package instructions and administrative matters, refer to the NASA SBIR/STTR website or contact the NASA SBIR/STTR Helpdesk. **The Helpdesk will not guarantee a timely answer to questions received after July 23, 2024, at 5:00 p.m. ET.**

1. NASA SBIR/STTR Website: http://sbir.nasa.gov
2. Helpdesk:
    a. Email: agency-sbir@mail.nasa.gov
    b. You must provide the name and telephone number of the person to contact, the organization name and address, and the specific questions or requests.

1.14 Definitions

NASA strongly encourages you to review the list of definitions available at https://www.nasa.gov/sbir_sttr/program-definitions/. These definitions include those from the combined SBIR/STTR Policy Directives as well as terms specific to NASA.

2. Certifications and Other Proposal Requirements

2.1 Small Business Administration (SBA) Company Registry

You must register with SBA's Company Registry and update your commercialization status. See https://www.sbir.gov/. You must provide your unique SBC Control ID (assigned by SBA upon completion of the Company Registry registration) and upload a PDF copy of the SBA Company Registry registration with the Firm Certification From.

2.2 System for Award Management (SAM) Registration

SAM, maintained by the GSA's Federal Acquisition Service, is the primary repository for contractor information required to conduct business with NASA. To be registered in SAM, all mandatory information, including the Unique Entity Identifier (UEI) and a Commercial and Government Entity (CAGE) code, must be validated in SAM. You may obtain information on SAM registration and annual confirmation requirements at https://www.sam.gov/SAM/pages/public/index.jsf or by calling 866-606-8220.

Per FAR 4.1102(a) "Offerors and quoters are required to be registered in SAM at the time an offer or quotation is submitted in order to comply with the annual representations and certifications..." To be eligible for SBIR awards, you must have an active SAM registration under North American Industry Classification System (NAICS) code 541713 or 541715 as a small business at the time of proposal submission. Note that your SAM registration must remain active through entire process from proposal submission to contract performance. If you are not registered, apply for registration immediately upon receipt of this solicitation. Typically, SAM registration and updates to SAM registration take several weeks. In order to receive an SBIR/STTR award from NASA, purpose of registration must be listed as "All Awards" on your SAM Registration. Note that your SAM registration Doing Business As (DBA) name will appear on all contract documents.

2.3 Certifications

You must complete the Firm and Proposal Certifications by answering "Yes" or "No" to certifications as applicable in the Proposal Submissions and Award Management System (ProSAMS). Carefully read each of the certification statements. The Federal Government relies on the information to determine whether you are eligible for a SBIR program award. ProSAMS requires firm registration and login. To access ProSAMS, go to https://prosams.nasa.gov. Additional guidance is available in the ProSAMS SBC Registration and Login Digital Guide: https://prosams.nasa.gov/training/ProSAMS_SBIR_STTR_Digital_Guide_Registration_and_Login_R4_02162024.pdf

NASA uses a similar certification to ensure continued compliance with specific program requirements at time of award and at the time of final payment. The definitions for the terms used in this certification are set forth in the Small Business Act, SBA regulations (13 CFR Part 121), the SBIR/STTR Policy Directives, and any statutory and regulatory provisions referenced in those authorities.

> For Phase I awards, in addition to invoice certifications and as a condition for payment, a life cycle certification shall be completed in ProSAMS. The life cycle certification shall be completed along with the final invoice certification before uploading the final invoice in the Department of Treasury's Invoice Processing Platform (IPP).

If the Contracting Officer believes that you may not meet certain eligibility requirements for award, they may request you provide clarification or supporting documentation. If the Contracting Officer still believes you are not eligible, you must file a size protest with the SBA, who will determine eligibility.

For Phase II awards, two life cycle certifications shall be completed in ProSAMS. A life cycle certification shall be completed along with the second invoice certification as a condition of payment of the second invoice. Another life cycle certification shall be completed along with the final invoice certification as a condition of payment of the final invoice. The life cycle certifications are preset in theProSAMS.

2.3.1 Disclosures of Foreign Affiliation or Relationships to Foreign Countries

You must complete the "Disclosures of Foreign Affiliations or Relationships to Foreign Countries" form as part of your proposal submission. Even if you do not have any foreign relationships, you must complete this form to represent that such relationships do not exist. If you do not submit this form, NASA will decline your proposal during the administrative screening process, and it will not be evaluated. Foreign involvement or investment does not independently disqualify you but failing to disclose such affiliations or relationships may result in denial of an award.

The disclosures require the following information:

- the identity of all owners and covered individuals of the small business concern who are a party to any foreign talent recruitment program of any foreign country of concern, including the People's Republic of China;
- the existence of any joint venture or subsidiary of the small business concern that is based in, funded by, or has a foreign affiliation with any foreign country of concern, including the People's Republic of China;
- any current or pending contractual or financial obligation or other agreement specific to a business arrangement, or joint venture-like arrangement with an enterprise owned by a foreign state or any foreign entity;
- whether the small business concern is wholly owned in the People's Republic of China or another foreign country of concern;
- the percentage, if any, of venture capital or institutional investment by an entity that has a general partner or individual holding a leadership role in such entity who has a foreign affiliation with any foreign country of concern, including the People's Republic of China;
- any technology licensing or intellectual property sales to a foreign country of concern, including the People's Republic of China, during the five-year period preceding submission of the proposal; and
- any foreign entity, offshore entity, or entity outside the United States related to the small business concern.

After reviewing the above listed disclosures, and if determined appropriate by NASA, the program may ask you to provide true copies of any contractual or financial obligation or other agreement specific to a business arrangement or joint venture-like arrangement with an enterprise owned by a foreign state or any foreign entity in effect during the five-year period before proposal submission.

During award, you must regularly report to NASA any changes to a required disclosure.

2.4 Federal Acquisition Regulation (FAR) and NASA Certifications and Clauses

SAM contains required certifications that you may access at https://www.acquisition.gov/browsefar as part of the required registration (see FAR 4.1102). You must complete these certifications to be eligible for award. You must provide representations and certifications electronically via the website and update the representations and certifications as necessary, and at least annually, to keep them current, accurate, and complete. NASA will not enter any contract if you do not comply with these requirements.

In addition, you will need to be aware of the clauses that will be included in the contract if selected for a contract. For a complete list of FAR and NASA clauses see Appendix C.

2.5 Software Development Standards

If you are proposing projects involving the development of software, you may be required to comply with NASA Procedural Requirements (NPR) 7150.2D, NASA Software Engineering Requirements, available online at https://nodis3.gsfc.nasa.gov/npg_img/N_PR_7150_002D_/N_PR_7150_002D__Preface.pdf.

2.6 Human and/or Animal Subject

NASA requires a protocol approved by a NASA review board if proposed work includes human or animal subjects. **Due to the complexity of the approval process, NASA does not allow use of human and/or animal subjects for Phase I projects.** For additional information, contact the NASA SBIR/STTR Program Office at agency-sbir@mail.nasa.gov. Reference 14 CFR 1230 and 1232.

2.7 Flight Safety Standards

If you are proposing projects involving the delivery of a spacecraft, you must comply with NASA Procedural Requirements (NPR) 8079.1, NASA Spacecraft Conjunction Analysis and Collision Avoidance for Space Environment Protection, available online at https://nodis3.gsfc.nasa.gov/displayDir.cfm?t=NPR&c=8079&s=1

2.8 HSPD-12

If your project is selected for award and requires access to federally controlled facilities or access to a federal information system (a*s defined in FAR 2.101(b)(2)*) for 6 consecutive months or more, you must apply for and receive appropriate Personal Identify Verification (PIV) credentials.

FAR clause 52.204-9, Personal Identity Verification of Contractor Personnel, states in part that the contractor must ensure that individuals needing such access provide the personal background and biographical information requested by NASA. See https://nvlpubs.nist.gov/nistpubs/FIPS/NIST.FIPS.201-3.pdf.

3. Proposal Preparation Instructions and Requirements

3.1 Multiple Proposal Submissions

NASA will not accept more than one (1) proposal package from any one firm.

3.2 Requirements to Submit a Complete Phase I Proposal Package

3.2.1 General Requirements

NASA will be using ProSAMS for the submission of these proposal packages. This solicitation guides firms through the steps for submitting a complete proposal package. All submissions will be completed through the secure ProSAMS URL and most communication between NASA and the firm is through email. To access ProSAMS, go to https://prosams.nasa.gov. Additional details are available in section 6.

The complete Phase I proposal package must contain a slide deck, white paper, and all required forms as described in section 3.2.3 below.

Be thoughtful in selecting a subtopic to ensure the proposal is responsive to the subtopic. NASA will not move a proposal between subtopics or programs.

3.2.2 Format Requirements

NASA administratively screens all elements of a completed proposal package and will reject any proposal that does not conform to the following formatting requirements:

Page Limitations and Margins
A Phase I technical proposal shall contain 2 elements:

- The Slide Deck:
  - Must not exceed 15 slides.
- The White Paper:
  - Must not exceed 7 standard 8.5- by 11-inch (21.6- by 27.9-cm) pages.
  - Margins must be 1.0 inch (2.5 cm). Offerors must ensure that the margins comply before uploading.

NASA will not accept technical proposal uploads with any page(s) over the required page limits. The additional forms required for proposal package submission do not count against the page limits.

Type Size
Use type size 10 point or larger for text or tables, except as legends on reduced drawings.

Header/Footer Requirements
Include the SBC name, proposal number, and project title in the slide deck title bars and the header on each page of the proposal. Include the page number and proprietary legend (see section 3.5), if applicable, in the footer on each page of the proposal. You may use margins for header/footer information.

Classified Information
NASA will reject any proposal package that contains classified information.

Project Title
The proposal project title must be concise and descriptive of the proposed effort. Do not use the NASA research subtopic title, acronyms, or words like "development of" or "study of."

Templates
Templates for the slide deck and white paper are available on the NASA SBIR/STTR Ignite website (https://www.nasa.gov/sbir_sttr/sbir-ignite/). Use of the templates is not required but is highly recommended to ensure compliance with formatting requirements.

3.2.3 Complete Phase I Proposal Package

To be considered complete, each Phase I proposal package submitted shall contain the following items:

1. Proposal Information
2. Contacts
3. Proposal Certifications
4. Proposal Summary (must not contain proprietary data)
5. Budget (including letters of commitment for government resources and subcontractors/consultants, other direct costs, and the foreign vendor form, if applicable)
6. Slide Deck
7. White Paper
8. NASA Evaluation License Application (only if TAV is being proposed)
9. Technical and Business Assistance (TABA) request (optional)
10. Letters indicating financial support/funding commitments
11. I-Corps Interest Form
12. Firm-Level Forms (completed once for all proposals submitted by a firm to a single solicitation)
    a. Firm Information
    b. Firm Certifications
    c. Disclosures of Foreign Affiliations or Relationships to Foreign Countries
    d. Audit Information
    e. Prior Awards Addendum (for firms with more than 15 Phase II awards in the past 5 years)
    f. Commercialization Metrics Survey (CMS)

Note: The program will not consider additional items such as relevant technical papers, product samples, videotapes, slides, or other ancillary item during the review process.

3.2.3.1 Proposal Information

You must provide the selected topic for your proposal, the proposal title, and certify you have read and understand the requirements for proposal submission.

3.2.3.2 Proposal Contacts

You must provide complete information for each contact person and submit the form as required. *Contact Information is public information and may be disclosed.*

3.2.3.3 Proposal Certifications

You must provide complete information for each question in the form and certify its accuracy as required.

3.2.3.4 Proposal Summary

You must provide complete information for each section of the form as required. **The Proposal Summary, including the technical abstract, is public information and may be disclosed.**

3.2.3.5 Proposal Budget Form

You must complete the Proposal Budget form following the instructions provided. See 5.5 Profit for Fee and 5.6 Cost Sharing. The total requested funding for the Phase I effort must not exceed $150,000 or $156,500 (if requesting $6,500 for Technical and Business Assistance (TABA), see section 1.9 and 3.2.3.8 for more information on the TABA opportunity). more information on the TABA opportunity).

All proposed cost is supported with documentation, such as a quote, previous purchase order, published price lists, etc. **NASA is not responsible for any monies you expend for proposal preparation and submission.**

In addition, you must submit the following information in the Proposal Budget form, as applicable:

- **Use of a Foreign Vendor**. If you are requesting to purchase products and equipment from a foreign vendor, you must complete the Foreign Vendor Form (see section 1.5.4 for more information).
- **Use of Government Resources**. If you plan to use government resources (such as, services, equipment, facilities, laboratories, etc.), as described in Part 8 of the technical proposal instructions, you must provide the following:
    1. Statement, signed by the appropriate Federal department or agency official, verifying that the resources are available during the proposed period of performance, authorizing their use, and if applicable, including the associated cost.
    2. Signed letter on your company letterhead explaining why your SBIR research project requires the use of government resources. Include data that verifies the absence of non-federal facilities or personnel capable of supporting the research effort, and, if applicable, the associated cost estimate.

  Due to the complexity and length of time for the approval process, NASA strongly discourages you from requesting the use of government resources during the performance of a Phase I. Approval for the use of government resources for a Phase I technical proposal requires a strong justification at the time of submission and will require approval by the Contracting Officer during negotiations if selected for award.
- **Use of Subcontractors and Consultants.** You may establish business arrangements with other entities or individuals to perform some of the proposed research/research and development (R/R&D) effort, within the limits in section 1.5 and below. Subcontractors' and consultants' work must also be performed in the United States (see section 1.5.4 for more information).

  If you propose using subcontractors or consultants, you must submit the following:
    1. List of consultants by name with the number of hours and hourly costs identified for each consultant.
    2. Subcontractor budget that aligns with your Proposal Budget form and includes direct labor, other direct costs, and profit, as well as indirect rate agreements.
    3. A letter of commitment for each subcontractor and/or consultant, dated and signed by the appropriate person with contact information.
        a. If a university is proposed as a subcontractor, the signed letter must be on the university letterhead from the Office of Sponsored Programs.
        b. If an independent consultant is proposed, the signed letter must not be on university letterhead.

  The proposed subcontracted business arrangements for Phase I contracts, including consultants, must not exceed 33 percent of the research and/or analytical work. To calculate this percentage, divide the total cost of the proposed subcontracting effort including applicable indirect rates such as overhead and G&A by the total price proposed less profit.

Percentage of subcontracting effort = (Subcontractor cost + G&A) / (Total price – Profit)

Example:	Total price including profit	$150,000
	Profit	$15,000
	Total price less profit	$150,000 - $15,000 = $135,000
	Subcontractor cost	$40,000
	G&A	7%
	G&A on subcontractor cost	$40,000 x 7% = $2,800
	Subcontractor cost plus G&A	$40,000+ $2,800 = $42,800
	Percentage of subcontracting effort	**$42,800/$135,000 = 31.7%**

For an SBIR Phase I, this is acceptable because it is below the limitation of 33 percent.

Occasionally, deviations from this requirement may occur, and must be approved in writing by the Contracting Officer after consultation with the NASA SBIR PMO.

See Part 6 of the Technical Proposal for additional information on the use of subcontractors and consultants.

Travel in Phase I

Due to the intent and short period of performance of the Phase I contracts, along with a limited budget, NASA strongly discourages travel during the Phase I contract. If the purpose of the meeting cannot be accomplished via videoconference or teleconference, you must justify the trip in the proposal budget form. The Contracting Officer and Technical Monitor will review travel requests to determine if they are necessary to complete the proposed effort.

3.2.3.6 Slide Deck

The slide deck must address the three parts below:

Part 1: The Market Opportunity:

Description of the market opportunity should address the following key elements:

Commercial Potential—Quantitative Market Analysis

1. Describe the market segment and potential service addressable market (SAM) that is appropriate to the proposed innovation.
2. Describe the proposed innovation in terms of target customers (e.g., NASA, other Federal agency, or commercial enterprise).
3. Describe the competitive landscape by identifying potential competitors.

Commercial Intent—Value Proposition

1. Describe the commercial development.
2. Describe the risks to the commercial development plan and what mitigations, if any, can be taken over a reasonable period to lessen the risks.

Commercial Capability—How Will the Innovation Enter into a Market?

1. Describe the current and future company capitalization efforts.

2. As applicable, describe the approach, path to market, and revenues. (Companies with no SBIR/STTR awards or only fairly recent SBIR/STTR awards will not be penalized under past performance for the lack of past SBIR/STTR commercialization.)

Intellectual Property (IP)

1. Describe how you will protect the IP that results from your innovation.

Assistance and Mentoring

1. Describe the existing and future business relationships in terms of any formal partnerships, joint ventures, or licensing agreements with other companies/organizations.
2. Describe the plans for securing needed technical or business assistance through mentoring, partnering, or through arrangements with state assistance programs, Small Business Development Centers (SBDCs), Federally funded research laboratories, Manufacturing Extension Partnership centers, Federal programs, or other assistance providers.

Evidence of follow-on funding commitments:

1. A letter of commitment for follow-on funding and/or product sales.
2. A letter of commitment for matching funding to be provided for a future Phase II-E application.
3. A letter of capital commitment, signed by the proper authority (CEO, CFO, etc.), that indicates a commitment to provide funding and/or product sales, should the Phase II project be successful, and the market need still exists.
4. Letter of intent to provide funding should the Phase II project be successful, and the market need still exists.
5. A specific plan to secure Phase III funding.

Note: The slide deck should only include a list of these letters/commitments. The actual letters should be emailed to the SBIR Held Desk via agency-sbir@mail.nasa.gov.

Part 2: Key Personnel/Team

Identify all personnel involved in Phase I activities whose expertise and functions are essential to the success of the project and future commercialization efforts. Provide biographical information, including directly related education and experience. Where the resume/vitae are extensive, you may summarize the most relevant experience or publications.

The PI is key to the success of the effort. The following applies:

- **Functions:** The PI plans and directs the project, leading it technically and making substantial personal contributions during its implementation. The PI also serves as the primary contact with NASA on the project and ensures that work proceeds according to contract agreements. Competent management of PI functions is essential to project success. You must describe the nature of the PI's activities and the amount of time that the PI will personally apply to the project. The amount of time the PI proposes to spend on the project must be acceptable to the Contracting Officer.
- **Qualifications:** You must clearly present the qualifications and capabilities of the proposed PI and the basis for PI selection. NASA has the sole right to accept or decline a PI based on factors such as education, experience, demonstrated ability and competence, and any other evidence related to the specific assignment.

- **Eligibility:** You must establish and confirm the eligibility of the PI and indicate if existing projects and other proposals recently submitted or planned commit the time of the PI concurrently with this proposed project. NASA will decline your proposal if you try to circumvent the restriction on PIs working more than half time for an academic or a nonprofit organization by substituting an ineligible PI.

Part 3: Facilities and Equipment

Describe the types, location, and availability of equipment necessary to carry out the work proposed. You must justify any proposed equipment purchase. **When purchasing equipment or a product under the SBIR contract, you should purchase only American-made products or equipment.**

Although use of government-furnished laboratory equipment, facilities, or services (collectively, "government resources") is strongly discouraged in Phase I proposals, describe in this part why the use of such government resources is necessary and not reasonably available from the private sector if government resources are required. See sections 3.2.3.7 and 5.14 for additional requirements when proposing use of such government resources. The narrative description of resources should support the proposed approach and documentation in the Proposal Budget form.

If you plan to use a federal laboratory/facility during a follow-on Phase II contract, please state this intent in your Phase I proposal.

3.2.3.7 White Paper

The white paper should not contain any budget data and must consist of all 7 parts listed below in order, number, and title. NASA will decline any proposal package that does not have all 7 parts, and it will not be evaluated. Parts that are not applicable must be included and marked "Not applicable."

The white paper shall provide all information described in the seven parts below. Evaluators will not seek additional information. Any pertinent references or publications should be noted in part 5 or 6 of the white paper.

Part 1: Table of Contents

The white paper must begin with a brief table of contents indicating the page numbers of each of the parts.

Part Title	Page #
Part 1: Table of Contents	
Part 2: Identification and Significance of the Innovation	
Part 3: Technical Objectives	
Part 4: Work Plan	
Part 5: Related R/R&D	
Part 6: Subcontractors/Consultants	
Part 7: Related, Essentially Equivalent, and Duplicate Proposals and Awards	

Part 2: Identification and Significance of the Innovation

Succinctly describe:

- The proposed innovation.
- The relevance and significance of the proposed innovation to an interest, need, or needs, within a topic described in section 9.
- The proposed innovation relative to the current state of the art.

Part 3: Technical Objectives
State the specific objectives of the Phase I R/R&D effort as it relates to the problem statement(s) posed in the subtopic description and the types of innovations being requested. Indicate the proposed deliverables at the end of the Phase I effort and how these align with the proposed subtopic deliverables described within a subtopic found in chapter 9.

If you plan to use NASA TAV including Intellectual Property (IP), you must describe planned developments with the IP. Add the NASA Evaluation License Application as an attachment in the Proposal Certifications form (see section 1.6).

Part 4: Work Plan
Include a detailed plan to meet the Phase I technical objectives. The plan must include:

- Detailed task descriptions, that is, what will be done, where it will be done, and the methods you will use to do it
- Schedules
- Resource allocations
- Estimated task hours for each key personnel that match hours reported in the Proposal Budget Form
- Planned accomplishments (including project milestones)
- If the offeror is a joint venture or limited partnership, a statement of how the workload will be distributed, managed, and charged

Part 5: Related R/R&D
Describe significant existing R/R&D that is directly related to the technical proposal including any conducted by the PI or by the company. Describe how it relates to the proposed effort and any planned coordination with outside sources. You must demonstrate awareness of key recent R/R&D conducted by others in the specific subject area. Include any pertinent references or publications.

Part 6: Subcontractors/Consultants
Describe all subcontracting or other business arrangements, including who they are with and for what expertise, functions, services, and number of hours. You must ensure that all organizations and individuals are available for the time periods proposed. The narrative description of subcontractors and consultants in the technical proposal should support the proposed approach and documentation in the Proposal Budget form, section 3.2.3.4.

Part 7: Related, Essentially Equivalent, and Duplicate Proposals and Awards
WARNING: It is illegal to enter into multiple funding agreements for essentially equivalent work. While you may submit similar or identical proposals to multiple solicitations, it is risky. You must notify the agencies in advance and resolve the matter prior to award.

If you choose to submit identical proposals or proposals containing a significant amount of essentially equivalent work under other federal program solicitations, you must include a statement in each proposal containing:

1. The name and address of the agencies to which proposals were submitted or from which awards were received.
2. Date of proposal submission or date of award.
3. Title, number, and date of solicitations under which proposals were submitted or awards received.
4. The specific applicable research subtopics for each proposal submitted or award received.
5. Titles of research projects.
6. Name and title of principal investigator or project manager for each proposal submitted or award received.

A summary of essentially equivalent work information, as well as related research and development on proposals and awards, is also required on the Proposal Certifications form (if applicable).

3.2.3.8 NASA Evaluation License Application, only if TAV is being proposed

If you applied for TAV by following the instructions found at http://technology.nasa.gov, upload the application with your proposal package.

3.2.3.9 Request for Use of Technical and Business Assistance (TABA) Funds at Phase I

NASA encourages you to request the TABA supplement of up to $6,500 at Phase I. You will choose your own TABA vendor. NASA cannot direct you to any specific TABA vendor or website. See section 1.9.

NASA encourages you to use the limited amount of $6,500 Phase I TABA funds for:

1. Development of a Phase II TABA Needs Assessment – If you plan to request a TABA supplement at Phase II, you should secure a TABA vendor at Phase I to support the development of a Phase II TABA needs assessment. The goal of the TABA Needs Assessment is to determine and define the types of TABA services and costs you would need if the project was selected for a future Phase II award. Phase II TABA supplements may be up to $50,000.
2. Development of a Phase II Commercialization and Business Plan – If you are planning to submit a future proposal for Phase II funding, you will be required to submit a commercialization and business plan that meets the requirements of that future Phase II solicitation. NASA encourages you to use a Phase I TABA supplement to secure a TABA vendor to help develop the commercialization and business plan. The goal of the commercialization and business plan is to allow NASA to evaluate your ability to commercialize the innovation and provide a level of confidence regarding your future and financial viability.

If you request the Phase I TABA supplement, you must do so in the proposal package submission. You are not required to request TABA at Phase I. TABA at Phase II eligibility is not dependent on Phase I TABA participation.

TABA Vendor Information - The TABA request must provide the following information for each vendor according to the directions found in the Budget forms in ProSAMS:

- Contact information of the vendor (name, address, phone number, website)
- Description of vendor(s) expertise and knowledge of providing the desired technical and business assistance services
- Itemized list of services and costs the TABA vendor will provide (vendor quote)
- Description of the deliverables the TABA vendor will provide and a plan to submit a deliverable summarizing the outcome of the TABA services with expected supporting information.
- TABA costs reflected in the budget forms.

All TABA vendors must be legal businesses in the United States and NASA will review the U.S. Government-wide System for Award Management (SAM) excluded parties list to ensure the proposed TABA vendor can receive federal funds. NASA will consider TABA requests that are missing any requested TABA information as incomplete and will not review the TABA request or provide TABA approval under the award.

The TABA supplement is in addition to the Phase I contract award value, is not subject to any profit or fee by the requesting offeror and cannot be used in the calculation of indirect cost rates or general and administrative expenses (G&A). The TABA cost(s) and service(s) to be provided by each vendor will be based on the original Phase I period of performance. NASA will not consider requests for TABA funding outside of the Phase I period of performance or after a proposal package submission.

3.2.3.10 Firm Level Forms

You must complete all SBC level forms electronically within ProSAMS. The SBC level forms do not count toward the page limits for the proposal. To access ProSAMS, go to https://prosams.nasa.gov.

A. Firm Information

You must complete the SBC identifying information once to be applicable across all proposals submitted to this solicitation.

B. Firm Certifications

You must complete the Firm Certifications section of by answering "Yes" or "No" as applicable. Additional guidance is available in the ProSAMS SBC Firm Form Digital Guide: https://prosams.nasa.gov/training/ProSAMS_SBIR_STTR_Digital_Guide_Firm_Forms_R4_02162024.pdf

C. Disclosures of Foreign Affiliations or Relationships to Foreign Countries

Each offeror is required to complete the Disclosures of Foreign Affiliations or Relationships to Foreign Countries form as required in ProSAMS. See section 2.5 for additional information on these disclosures. The offeror shall answer "Yes" or "No" as applicable and provide the requested information related to each "yes" response.

Please note that even if you do not have any foreign relationships, you must complete the "Disclosures of Foreign Affiliations or Relationships to Foreign Countries form." to represent that such relationships do not exist. Failure to complete and include this form will result in the declination of your application during the administrative screening.

D. Audit Information

Although you are not required to have an approved accounting system, it is easier for NASA to determine that your rates are fair and reasonable if you have an approved accounting system. To assist NASA, you must complete the questions in the Audit Information form regarding your rates and upload the Federal agency audit report or related information that is available from the last audit. If you have never been audited by a federal agency, then answer "No" to the first question, and you do not need to complete the remainder of the form. The Contracting Officer uses this Audit Information to assist with negotiations if the proposal package is selected for award. The Contracting Officer will advise you what is required to determine reasonable cost and/or rates in the event the Audit Information is not adequate.

E. Prior Awards Addendum (for firms with more than 15 Phase II awards in the past 5 years)

If you have received more than 15 Phase II awards in the prior 5 fiscal years, submit the name of the awarding agency, solicitation year, phase, date of award, funding agreement/contract number, and subtopic title for each Phase II. If you have received any SBIR or STTR Phase II awards, even if fewer than 15 in the last 5 years, NASA still recommends that you complete this form as the information will be useful to you when completing the Commercialization Metrics Survey (CMS).

F. **Commercialization Metrics Survey (CMS)**

NASA uses a commercialization report/data-gathering process to track the overall commercialization success of its SBIR and STTR programs. You must complete the Commercialization Metrics Report or update an existing report if applicable, via https://www.sbir.gov/ (the report is available in the "My Dashboard" section of your company's sbir.gov profile) as part of the proposal package submissions process. Companies with no SBIR/STTR awards or awards within the last 3 to 5 years will not be penalized under past performance for the lack of past SBIR/STTR commercialization.

3.2.3.11 I-Corps Interest Form

You will complete a short I-Corps interest form as part of your proposal package submission. NASA uses this form to determine the level of interest from Phase I offerors to participate in the NASA I-Corps program. See section 1.7.

Based on the initial level of interest in the I-Corps program, NASA plans to open the opportunity to all Phase I awardees to ensure a successful cohort of teams participate in the program. Phase I awardees will receive information from the SBIR PMO during contract negotiations describing the process to provide a 5-page proposal to participate in the I-Corps program. NASA will provide directions for completing the proposal including due dates, training dates, and available funding by email. NASA reserves the right to limit the number of offerors to participate in the I-Corps program based on the assessment of the I-Corps proposals and funding availability.

3.3 Requirements to Submit a Complete Phase II Proposal Package

3.3.1 General Requirements

NASA will be using ProSAMS for the submission of these proposal packages. This solicitation guides firms through the steps for submitting a complete proposal package. All submissions will be completed through the secure ProSAMS URL and most communication between NASA and the firm is through email. To access ProSAMS, go to https://prosams.nasa.gov. Additional details are available in section 6.

Complete Phase II proposal packages must contain all documents as described in sections 3.3.3 below.

3.3.2 Format Requirements

Note: The Government administratively screens all elements of a proposal package and will reject any proposal package that does not conform to the following formatting requirements.

Page Limitations and Margins

Technical Proposal:

- May not exceed a total of 40 standard 8.5- by 11-inch (21.6- by 27.9-cm) pages.
- Margins must be 1.0 inch (2.5 cm). Offerors must ensure that the margins comply before uploading.

NASA will not accept technical proposal uploads with any page(s) over the required page limits. The additional forms required for proposal package submission do not count against the page limits.

Type Size

Use type size 10 point or larger for text or tables, except as legends on reduced drawings.

Header/Footer Requirements

You may include the SBC name, proposal number, and project title in the header on each page of the proposal. Include the page number and proprietary legend (see section 3.5), if applicable in the footer on each page of the proposal. You may use margins for header/footer information.

Classified Information

NASA will reject any Phase II proposal package that contains classified information.

Project Title

The proposal project title must be concise and descriptive of the proposed effort. Do not use the NASA research subtopic title, acronyms, or words like "development of" or "study of."

3.3.3 Complete Phase II Proposal Package

Each Phase II proposal package must contain the following items:

1. Proposal Information
2. Contacts
3. Proposal Certifications
4. Proposal Summary (must not contain proprietary data)
5. Budget (including letters of commitment for government resources and subcontractors/consultants, other direct costs, and the foreign vendor form, if applicable)
6. Phase II Technical Proposal
7. NASA Evaluation License Application, only if TAV is being proposed
8. Technical and Business Assistance (TABA) request (optional)
9. Letters indicating financial support/funding commitments
10. Firm-Level Forms (completed once for all proposals submitted by a firm to a single solicitation)
    a. Firm Information
    b. Firm Certifications
    c. Disclosures of Foreign Affiliations or Relationships to Foreign Countries
    d. Audit Information
    e. Prior Awards Addendum (for firms with more than 15 Phase II awards in the past 5 years)
    f. Commercialization Metrics Survey (CMS)

Note: The program will not consider additional items such as relevant technical papers, product samples, videotapes, slides, or other ancillary item during the review process.

3.3.3.1 Proposal Information

You must provide the selected topic for your proposal, the proposal title, and certify you have read and understand the requirements for proposal submission.

3.3.3.2 Proposal Contacts

You must provide complete information for each contact person and submit the form as required. *Contact Information is public information and may be disclosed.*

3.3.3.3 Proposal Certifications

You must provide complete information for each question in the form and certify its accuracy as required.

3.3.3.4 Proposal Summary

You must provide complete information for each section of the form as required. The Proposal Summary, including the technical abstract, is public information and may be disclosed.

3.3.3.5 Proposal Budget Form

You must complete the Proposal Budget form following the instructions provided. See 5.5 Profit for Fee and 5.6 Cost Sharing. The total requested funding for the Phase I effort must not exceed $850,000 or $900,000 (if requesting $50,000 for Technical and Business Assistance (TABA), see section 1.8 and 3.3.3.8 for more information on the TABA opportunity). more information on the TABA opportunity).

All proposed cost is supported with documentation, such as a quote, previous purchase order, published price lists, etc. **NASA is not responsible for any monies you expend for proposal preparation and submission.**

- **Proposal Budget Requirements for Use of Government Resources**
  If you plan to use government resources (such as, services, equipment, facilities, laboratories, etc.), as described in Part 8 of the technical proposal instructions, you must provide the following:
  1. Statement, signed by the appropriate Government official at the affected Federal department or agency, verifying that the resources should be available during proposed period of performance.
  2. Signed letter on company letterhead from the SBC's designated small business representative explaining why the SBIR research project requires the use of Government resources (such as, but not limited to, Federal services, equipment, or facilities, etc.) including data that verifies the absence of non-Federal facilities or personnel capable of supporting the research effort, a statement confirming that the facility proposed is not a Federal laboratory, if applicable, and the associated cost estimate.

- **Use of Subcontractors and Consultants**
  You may establish business arrangements with other entities or individuals to perform some of the proposed R/R&D effort, within the limits in section 1.5 and below. Subcontractors' and consultants' work must also be performed in the United States (see section 1.5.4 for more information).

  If you propose using subcontractors or consultants, you must submit the following:
  1. List of consultants by name with the number of hours and hourly costs identified for each consultant.
  2. Subcontractor budget that aligns with your Proposal Budget form and includes direct labor, other direct costs, and profit, as well as indirect rate agreements.
  3. A letter of commitment for each subcontractor and/or consultant, dated and signed by the appropriate person with contact information.
     a. If a university is proposed as a subcontractor, the signed letter must be on the university letterhead from the Office of Sponsored Programs.
     b. If an independent consultant is proposed, the signed letter must not be on university letterhead.

  In Phase II, the proposed subcontracted business arrangements, including consultants, must not exceed 50 percent of the research and/or analytical work [as determined by the total cost of the proposed subcontracting effort (to include the appropriate overhead (OH) and general and administrative expenses (G&A) in comparison to the total effort funded by the government (total contract price including cost sharing or less profit, if any)]. Occasionally, deviations from this SBIR requirement may occur, and must be approved in writing by the Contracting Officer after consultation with the NASA SBIR PMO.

3.3.3.6 Phase II Technical Proposal

The phase II technical proposal must contain all 10 parts in order, number, and title as listed below. NASA will decline any proposal package that does not have all 10 parts and it will not be evaluated. If a part is not applicable to your proposed effort, you must include the part and mark it "Not applicable." Do not include any budget data in the technical proposal.

Part 1: Table of Contents
Begin the technical proposal with a brief table of contents indicating the page numbers of each of the parts of the technical proposal).

Part Title	Page #
Part 1: Table of Contents	
Part 2: Identification and Significance of the Innovation	
Part 3: Technical Objectives	
Part 4: Work Plan	
Part 5: Related R/R&D	
Part 6: Key Personnel	
Part 7: Commercialization and Business Plan	
Part 8: Facilities and Equipment	
Part 9: Subcontractors/Consultants	
Part 10: Related, Essentially Equivalent, and Duplicate Proposals and Awards	

Any pertinent references or publications should be noted in part 5 or 6 of the proposal.

Part 2: Identification and Significance of the Innovation
Succinctly describe:

- The proposed innovation.
- The relevance and significance of the proposed innovation to an interest, need, or needs, within a topic described in section 9.
- The proposed innovation relative to the current state of the art.

Part 3: Technical Objectives
State the specific objectives of the Phase II R/R&D effort as it relates to the problem statement(s) posed in the topic description and the types of innovations being requested. Indicate the proposed deliverables at the end of the Phase II effort and how these align with the proposed topic deliverables described within a topic found in section 9.

If you plan to use NASA TAV including Intellectual Property (IP), you must describe planned developments with the IP. Add the NASA Evaluation License Application as an attachment in the Proposal Certifications form (see section 1.6).

Part 4: Work Plan
Include a detailed plan to meet the Phase II technical objectives. The plan must include:

- Detailed task descriptions, that is, what will be done, where it will be done, and the methods you will use to do it
- Schedules
- Resource allocations
- Estimated task hours for each key personnel that match hours reported in the Proposal Budget Form
- Planned accomplishments (including project milestones)
- If the offeror is a joint venture or limited partnership, a statement of how the workload will be distributed, managed, and charged

Note: The SBIR Ignite program aims to accelerate the advancement of technology to market. Because of this, the program encourages Phase II proposals with periods of performance less than the standard 24 months in a regular Phase II award.

Part 5: Related R/R&D

Describe significant current and/or previous R/R&D that is directly related to the technical proposal including any conducted by the PI or by the offeror. Describe how it relates to the proposed effort and any planned coordination with outside sources. The offeror must persuade reviewers of his or her awareness of key recent R/R&D conducted by others in the specific subject area.

Part 6: Key Personnel and Biographical Information of Directly Related Work

Identify all key personnel involved in Phase II activities whose expertise and functions are essential to the success of the project and commercialization efforts. Provide biographical information, including directly related education and experience. Where resume/vitae are extensive, you may summarize the most relevant experience or publications.

Note: If the Phase II key personnel are different than the key personnel under Phase I, please provide rationale for the change.

Part 7: Commercialization and Business Plan

This part should provide the following information to communicate and validate that the firm has the knowledge and ability to commercialize the innovation being proposed and to validate the company's future viability and financial viability.

<u>Commercial Potential—Quantitative Market Analysis</u>

1. Describe the market segment and potential service addressable market (SAM) that is appropriate to the proposed innovation.
    a. Indicate how the market was validated and what assumptions were used in the analysis.
    b. Indicate the market size by providing the scope in dollars if possible.
    c. Indicate market segmentation and/or TAM in dollars if possible.
    d. Indicate the projected percentage of the offeror's market share in 2 to 3 years after entry into the identified market.
2. Describe the proposed innovation in terms of target customers (e.g., NASA, other Federal agency, or commercial enterprise).
3. Describe the competitive landscape by identifying potential competitors.
    a. Indicate potential competitors by company name within the identified market.
    b. Discuss the barriers to entry and how many years it would take a competitor to enter this segment in terms of capitalization, technology, and people.
    c. Describe how the proposed innovation is different from current and future competitors.

<u>Commercial Intent—Value Proposition</u>

1. Describe the commercial development.
    a. Include the development timeline to bring the innovation to market.
    b. Describe the applicable business model (spin-out, license, original equipment manufacturer (OEM), etc.) the offeror would use to bring the innovation to market.
    c. Indicate the channels of distribution (direct sales, distributors, etc.) that would be used in bringing the innovation into the identified market.
    d. Indicate the pro forma 2- to 3-year revenue dollar projections based on the proposed innovation's penetration of the identified market.
    e. Describe any follow-on development (long term > 5 years) plans to expand your proposed innovation's market presence.

2. Describe the risks to the commercial development plan and what mitigations, if any, can be taken over a reasonable period to lessen the risks.

Commercial Capability—How Will the Innovation Enter into a Market?

1. Describe the current and future company capitalization efforts.
    a. Provide a pro forma forecast based on income statements, balance sheet(s), and statement of cash flows. These forecasts should indicate current and projected revenues, expenses, and other items that are calculated as a percentage of future sales.
    b. Discuss the operations/manufacturing and business staff conducting the project and how they will be utilized to achieve commercialization.
    c. Describe the physical plant, including facilities and the capital equipment, tooling, and test equipment used to conduct the investigation and how they will be utilized to achieve commercialization.
    d. Discuss consultants, incubators, and research institutions that will be utilized to achieve commercialization.
    e. Indicate how the innovation will enter production (i.e., in house or through a licensee or other means) and what changes (if any) will be made to company capitalization for commercialization.
2. As applicable, describe the approach, path to market, and revenues from past commercialization(s) resulting from SBIR/STTR awards disclosed in the Commercial Metrics Survey (CMS). (Companies with no SBIR/STTR awards or only recent SBIR/STTR awards will not be penalized under past performance for the lack of past SBIR/STTR commercialization.)

Intellectual Property (IP)

1. Describe how you will protect the IP that results from your innovation.
    a. Note any actions you may consider for at least a temporary competitive advantage.
    b. Describe your company's prior IP record.
    c. Comment on the company's strategy to build a sustainable business through protection of IP.

Assistance and Mentoring

1. Describe the existing and future business relationships in terms of any formal partnerships, joint ventures, or licensing agreements with other companies/organizations.
2. Describe the plans for securing needed technical or business assistance through mentoring, partnering, or through arrangements with state assistance programs, Small Business Development Centers (SBDCs), Federally funded research laboratories, Manufacturing Extension Partnership centers, Federal programs, or other assistance providers.
    a. Identify if any assistance and mentoring is being requested under your TABA needs assessment and provide details in this section. The TABA needs assessment is reviewed separately from the proposal.

Evidence of follow-on funding commitments:

1. A letter of commitment for follow-on funding and/or product sales.
2. A letter of commitment for matching funding to be provided for a future Phase II-E application.
3. A letter of capital commitment, signed by the proper authority (CEO, CFO, etc.), that indicates a commitment to provide funding and/or product sales, should the Phase II project be successful, and the market need still exists.
4. A specific plan to secure Phase III funding.

Note: The proposal should only include a list of these letters/commitments. The actual letters should be uploaded separately.

Part 8: Facilities and Equipment
Describe the types, location, and availability of equipment necessary to carry out the work proposed. You must justify any proposed equipment purchase. **When purchasing equipment or a product under the SBIR contract, you should purchase only American-made products or equipment.**

If an offeror requests to use Government-furnished laboratory equipment, facilities, or services (collectively, "Government resources"), describe in this part why the use of such Government resources is necessary and not reasonably available from the private sector. See sections 3.3.3.4 and 5.14 for additional requirements when proposing use of such Government resources. The narrative description of resources should support the proposed approach and documentation in the Budget form.

Part 9: Subcontractors/Consultants
Describe all subcontracting or other business arrangements, including who they are with and for what expertise, functions, services, and number of hours. You must ensure that all organizations and individuals are available for the time periods proposed. The narrative description of subcontractors and consultants in the technical proposal should support the proposed approach and documentation in the Budget form, section 3.3.5.

Part 10: Related, Essentially Equivalent, and Duplicate Proposals and Awards

WARNING: It is illegal to enter into multiple funding agreements for essentially equivalent work. While you may submit similar or identical proposals to multiple solicitations, it is risky. You must notify the agencies in advance and resolve the matter prior to award.

If you choose to submit identical proposals or proposals containing a significant amount of essentially equivalent work under other federal program solicitations, you must include a statement in each proposal containing:

1. The name and address of the agencies to which proposals were submitted or from which awards were received.
2. Date of proposal submission or date of award.
3. Title, number, and date of solicitations under which proposals were submitted or awards received.
4. The specific applicable research subtopics for each proposal submitted or award received.
5. Titles of research projects.
6. Name and title of principal investigator or project manager for each proposal submitted or award received.

A summary of essentially equivalent work information, as well as related research and development on proposals and awards, is also required on the Proposal Certifications form (if applicable).

3.3.3.7 NASA Evaluation License Application, only if TAV is being proposed

If you have applied for TAV by following the instructions found at https://technology.nasa.gov/, upload the application of the TAV request with your complete proposal package. See section 1.6 for additional details.

3.3.3.8 Request for Use of Technical and Business Assistance (TABA) Funds at Phase II

NASA encourages you to request the TABA supplement of up to $50,000 at Phase II. You will choose your own TABA vendor. NASA cannot direct you to any specific TABA vendor or website. See section 1.9.

Requests for TABA funding are not reviewed during the evaluation of the proposal, and the request for TABA funds will not be part of the decision to make an award. All TABA requests will be reviewed after a proposal is selected for award and during the contract negotiation process.

If requesting Phase II TABA funding, the request must provide the following information for each vendor according to the directions found in the Budget forms in ProSAMS:

- Contact information of the vendor (name, address, phone number, website)
- Description of vendor(s) expertise and knowledge of providing the desired technical and business assistance services
- Itemized list of services and costs the TABA vendor will provide (vendor quote)
- Description of the deliverables the TABA vendor will provide and a plan to submit a deliverable summarizing the outcome of the TABA services with expected supporting information.
- TABA costs reflected in the budget forms.

All TABA vendors must be legal businesses in the United States and NASA will review the U.S. Government-wide System for Award Management (SAM) excluded parties list to ensure the proposed TABA vendor can receive federal funds. NASA will consider TABA requests that are missing any requested TABA information as incomplete and will not review the TABA request or provide TABA approval under the award.

Any TABA funding **is in addition to the Phase II contract award value, is not subject to any profit or fee by the requesting firm and cannot be used in the calculation of indirect cost rates or general and administrative expenses (G&A).** The TABA cost(s) and service(s) to be provided by each vendor will be based on the original Phase I period of performance. Requests for TABA funding outside of the Phase II period of performance or after a complete proposal package has been submitted will not be considered.

Schedule of Deliverables and Payments for TABA—if you are approved to receive TABA under a Phase II award will be reimbursed for TABA expenses. Reimbursement for TABA will be based on the awardee providing a TABA end-of-contract report at the end of the contract period of performance. Reimbursement will not be provided for any amounts incurred over the TABA funding amount approved by the Government prior to award.

3.3.3.9 Firm Level Forms

You must complete all SBC level forms electronically within ProSAMS. The SBC level forms do not count toward the page limit for the technical proposal. To access ProSAMS, go to https://prosams.nasa.gov.

A. Firm Certifications

You must complete the Firm Certifications section of by answering “Yes” or “No” as applicable. Additional guidance is available in the ProSAMS SBC Firm Forms Digital Guide: https://prosams.nasa.gov/training/ProSAMS_SBIR_STTR_Digital_Guide_Firm_Forms_R4_02162024.pdf

B. Audit Information

Although you are not required to have an approved accounting system, it is easier for NASA to determine that your rates are fair and reasonable if you have an approved accounting system. To assist NASA, you must complete the questions in the Audit Information form regarding your rates and upload the Federal agency audit report or related information that is available from the last audit. There is a separate Audit Information section in the Proposal Budget form that you must also complete. If you have never been audited by a federal agency, then answer "No" to the first question, and you do not need to complete the remainder of the form.

An electronic form will be provided during the submissions process. The Contracting Officer uses this Audit Information to assist with negotiations if the proposal package is selected for award. The Contracting Officer will advise you what is required to determine reasonable cost and/or rates in the event the Audit Information is not adequate.

C. Disclosures of Foreign Affiliations or Relationships to Foreign Countries

Each offeror is required to complete the Disclosures of Foreign Affiliations or Relationships to Foreign Countries form as required in ProSAMS. See section 2.3.1 for additional information on these disclosures. You must answer "Yes" or "No" as applicable and provide the requested information related to each "yes" response.

Please note that even if you do not have any foreign relationships, you must complete the "Disclosures of Foreign Affiliations or Relationships to Foreign Countries form" to represent that such relationships do not exist. Failure to complete and include this form will result in the declination of your application during the administrative screening.

D. Prior Awards Addendum (for firms with more than 15 Phase II awards in the past 5 years)

If you have received more than 15 Phase II awards in the prior 5 fiscal years, submit the name of the awarding agency, solicitation year, phase, date of award, funding agreement/contract number, and subtopic title for each Phase II. If you have received any SBIR or STTR Phase II awards, even if fewer than 15 in the last 5 years, NASA still recommends that you complete this form as the information will be useful to you when completing the Commercialization Metrics Survey (CMS).

E. Commercialization Metrics Survey (CMS)

NASA uses a commercialization report/data-gathering process to track the overall commercialization success of its SBIR and STTR programs. You must complete the Commercialization Metrics Report or update an existing report if applicable, via https://www.sbir.gov/ (the report is available in the "My Dashboard" section of your company's sbir.gov profile) as part of the proposal package submissions process. Companies with no SBIR/STTR awards or awards within the last 3 to 5 years will not be penalized under past performance for the lack of past SBIR/STTR commercialization.

3.4 Understanding the Patent Landscape

You should indicate in the proposal that a comprehensive patent review has been completed to ensure that there is no existing patent or perceived patent infringement based on the innovation proposed. The U.S. Patent and Trade Office (USPTO) has an online patent search tool that can found at https://www.uspto.gov/patents-application-process/search-patents.

3.5 Proprietary Information in the Proposal Submission

Limit proprietary information to only that information that is essential to your proposal.

Information contained in unsuccessful proposals remains your property. The Federal Government may, however, retain copies of all proposals. Public release of information in any proposal submitted will be subject to existing statutory and regulatory requirements. If proprietary information is provided in a proposal, which constitutes a trade secret, commercial or financial information, it will be treated in confidence, to the extent permitted by law, provided that the proposal is clearly marked as follows:

(A) The following "italicized" legend must appear on the title page of the proposal:

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

(B) The following legend must appear on each page of the proposal that contains information you wish to protect:

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

3.6 Release of Certain Proposal Information

In submitting a proposal, you agree to permit the government to disclose publicly the information contained in the Contact Information form and Proposal Summary form, which includes the Technical Abstract and Briefing Chart. Other proposal data is your property, and NASA will protect it from public disclosure to the extent permitted by law, including requests submitted under the Freedom of Information Act (FOIA).

4. Method of Selection and Evaluation Criteria

The NASA SBIR Program does not make awards solely directed toward system studies, market research, routine engineering, development of existing product(s), proven concepts, or modifications of existing products without substantive innovation.

4.1 Phase I Evaluation Process and Evaluation Criteria

NASA conducts a multi-stage review process of all proposal packages:

1. Administrative review for compliance with chapters 3 and 6 of the solicitation
2. Initial screening for responsiveness to the subtopic
3. Commercial and technical evaluation on a competitive basis (as an "other competitive procedure" in accordance with FAR 6.102(d)(2) and FAR 35.016), using the criteria and procedures set forth within this solicitation
4. Scoring and weighting to determine rating
5. Price evaluation
6. Panel Review
7. Selection
8. Determination of cost/price reasonableness and responsibility

Do not assume that evaluators are acquainted with your company, key individuals, or with any experiments or other information. NASA will judge each proposal on its own merit and will not conduct any tradeoff analyses between or among competed proposals.

4.1.1 Administrative Review

NASA will review all proposal packages received by the published deadline to determine if the proposal package meets the requirements found in chapters 3 and 6. NASA may decline and not evaluate a proposal package that is not compliant with the requirements in chapters 3 and 6. NASA will notify you of its decision to eliminate the proposal package from consideration and the reason(s) for the decision.

4.1.2 Proposal Responsiveness

NASA will screen proposal packages that pass the administrative review to determine technical responsiveness to the topic of the solicitation. Proposal packages that are not responsive to the topic will be declined and not evaluated. NASA will notify you of its decision to eliminate the proposal package from consideration and the reason(s) for the decision. Ensure your technical proposal is responsive to the topic. NASA will NOT evaluate a technical proposal under a topic other than the one you select. ***Failure to adequately communicate how the proposal relates to the technical need posed in the topic will result in the proposal being rejected and no further evaluations will occur.***

4.1.3 Evaluation Criteria

NASA will evaluate proposal packages that comply with administrative requirements and are technically responsive to the subtopic of this solicitation. Subject matter experts will determine the most promising technical and scientific approaches, based on the following criteria:

Factor 1: Commercial Potential
NASA will evaluate whether your proposal has demonstrated a knowledge of the potential economic benefits of the innovation, potential customers and strategies to reach them, as well as risks associated with this approach. If known, you may indicate if there are any existing and projected commitments for funding of the innovation beyond Phase I and II (this can include investment, sales, licensing, and other indicators of commercial potential).

NASA will assess the commercial potential of the Phase I proposal by evaluating the following:

- Commercial potential through a quantitative cited market analysis to include the market segmentation and the commercial Service Addressable Market (SAM) the proposed innovation in terms of beachhead market, target customers, and the competitive landscape by identifying potential competitors.
- Commercial intent to include the development timeline required to bring the innovation to market, the applicable business model (spin-out, license, OEM, etc.) you would use, and the risks to the commercial development plan and what mitigations, if any, can be taken over a reasonable period of time to lessen the risks.
- Commercial capability to include the current and future company capitalization efforts
- Your approach to protecting any Intellectual Property that results from the innovation.
- Any assistance or mentoring the company intends to pursue.
- Evidence of follow-on funding support.

Factor 2: Scientific/Technical Merit and Feasibility
NASA will evaluate the proposed Phase I effort on:

- The technical approach and the anticipated agency and commercial benefits that may be derived from the research.
- The adequacy of the proposed effort and its relationship to the fulfillment of requirements of the research subtopic.
- The soundness and technical merit of the proposed approach and its incremental progress toward topic solution.
- Specific objectives, approaches, and plans for developing and verifying the innovation must demonstrate a clear understanding of the problem and the current state of the art.
- The degree of understanding and significance of the risks involved in the proposed innovation as well as any mitigations.

Factor 3: Experience, Qualifications, and Facilities
The qualifications of the team (including: proposed principal investigator/project manager, persons charged with leading commercialization efforts, supporting staff and consultants and subcontractors) will be evaluated for consistency with the research and commercialization effort and their degree of commitment and availability.

The proposed necessary equipment or facilities required to accomplish the proposed technical approach will be evaluated to determine if they are adequate. In addition, any proposed reliance on external sources, such as government-furnished equipment or facilities (section3.2.3.8 and part 8 of the technical proposal), will be evaluated for reasonableness. and part 8 of the technical proposal), will be evaluated for reasonableness.

Factor 4: Effectiveness of the Proposed Work Plan
The work plan will be evaluated for comprehensiveness, its proposed effective use of available resources, and approach to labor distribution. In addition, the work plan's proposed schedule for meeting the Phase I objectives will be evaluated to make sure they are reasonable and consistent with the proposed technical approach.

4.1.4 Scoring of Factors and Weighting to Determine the Most Highly Rated Proposals

- Factor 1: Commercialization Potential is worth a maximum of 30 points.
- Factor 2: Scientific/Technical Merit and Feasibility is worth a maximum of 30 points.
- Factor 3: Experience, Qualifications, and Facilities is worth a maximum 20 points.
- Factor 4: Effectiveness of the Proposed Work Plan is worth a maximum of 20 points.

The sum of the scores for Factors 1, 2, 3, and 4 will constitute the proposal's total score. The most highly rated proposals will be presented to the Panel (4.1.6) for additional review and consideration.

4.1.5 Price Evaluation

Utilizing the procedures set forth in FAR 15.404-1, NASA will evaluate the budget proposal form to determine whether the proposed pricing is fair and reasonable. NASA will only make an award when the price is fair and reasonable and approved by the NASA Contracting Officer.

If a proposal is selected for award, the Contracting Officer will review all the evaluations for the proposal and will address any pricing issues identified during negotiation of the final award.

4.1.6 Panel Review

A panel made up of NASA subject matter experts and/or 3rd party reviewers will review the most highly rated proposals. The panel will assign adjectival ratings and rank the proposals considering the results of 4.1.4 and programmatic investment considerations (e.g., first-time awardee, portfolio balance across technologies, other strategic considerations, etc.). The most highly ranked proposals will be invited to present a slide deck and participate in a Question & Answer session. Specific details regarding the Question & Answer session will be provided with the invitation. The questions will be tailored to the specifics of each Offeror's proposal. Following the completion of the Question & Answer sessions, the panel will assign a final adjectival rating considering the proposal, the Offeror's slide deck presentation, and responses during the Question & Answer session and establish final rankings of the proposals in each topic area.

The possible adjectival ratings for the Panel Review are:

- Excellent: A thorough and compelling proposal of exceptional merit, with one or more significant strengths and no significant weaknesses, that fully responds to the objectives of the solicitation.

- Very Good: A competent proposal of high merit, with one or more significant strengths and where strengths outbalance any weaknesses that may exist, that fully responds to the objectives of the solicitation.

- Good: A proposal that represents a credible and reasonably sound response to the solicitation. Any weaknesses not offset by strengths do not significantly detract from the response.

- Fair: A proposal with weaknesses that are not offset by strengths.

- Poor: A proposal of low merit, with one or more major weaknesses that are expected to be difficult to correct or are not correctable, or that does not represent a credible response to the solicitation.

The panel's final rankings and rationale for the rankings will be presented to the Source Selection Official (SSO).

4.1.7 Selection

The SSO has the final authority for choosing the specific proposals for contract negotiation. In making such a determination, the SSO, in their discretion, may consider additional programmatic balance factors such as portfolio balance across NASA programs, centers and mission directorates, available funding, first-time awardees/participants, historically underrepresented communities, and geographic distribution. Under this solicitation, NASA will not accept more than one proposal package from any one firm to ensure the broadest participation of the small business community. The list of proposals selected for negotiation will be posted on the NASA SBIR/STTR website (https://sbir.nasa.gov/). All selected firms will receive a formal notification letter.

4.1.8 Determination of cost/price reasonableness and responsibility

Each proposal package selected for negotiation by the SSO will be evaluated by the Contracting Officer to determine eligibility for an award. The terms and conditions of the contract will be negotiated based on the SBIR Small Business Act (15 U.S.C. 638), FAR and NASA FAR requirements, and a responsibility determination will be made. The Contracting Officer will advise the SSO on matters pertaining to price analysis and responsibility determinations. A Contracting Officer will negotiate an appropriate contract to be signed by both parties before work begins.

4.1.9 I-Corps Evaluation Process

For awardees that submit an I-Corps proposal pursuant to sections 1.7 and 3.2.3.10, NASA will provide a programmatic assessment based on the following criteria: NASA will provide a programmatic assessment based on the following criteria:

- Proposed team members demonstrate a commitment to the requirements of the I-Corps program.
- The proposed team includes the proper composition and roles as described in the I-Corps proposal requirements.
- The I-Corps proposal demonstrates that there is potential for commercialization in both NASA and commercial markets.

Based on the assessment of the above criteria the NASA SBIR/STTR PMO will provide a recommendation to the SSO of I-Corps proposals to receive funding. The SSO will make the final selections.

4.2 Phase II Evaluation Process and Evaluation Criteria

Only Offerors selected for Phase I awards will be eligible to submit Phase II proposals. Phase II proposals will be evaluated and selected in accordance with the evaluation and selection criteria identified in section 4.2.

NASA conducts a multi-stage review process of all proposal packages:

1. Administrative review for compliance with Chapters 3 and 6 of the solicitation
2. Initial screening for responsiveness to the subtopic
3. Commercial and technical evaluation on a competitive basis (as an “other competitive procedure” in accordance with FAR 6.102(d)(2) and FAR 35.016), using the criteria and procedures set forth within this solicitation
4. Scoring and weighting to determine rating
5. Price evaluation
6. Panel Review
7. Selection
8. Determination of cost/price reasonableness and responsibility

Do not assume that evaluators are acquainted with your company, key individuals, or with any experiments or other information. NASA will judge each proposal on its own merit and will not conduct any tradeoff analyses between or among competed proposals.

4.2.1 Administrative Review

All proposal packages received by the published deadline will undergo an administrative review to determine if the proposal package meets the requirements found in chapter 3 (Proposal Preparation Instructions and Requirements), and chapter 6 (Submission of Proposals). ***A proposal package that is found to be noncompliant with any requirements in chapters 3 and 6 may be rejected and no further evaluations will occur.*** The offeror will be notified of NASA's decision to eliminate the proposal package from consideration and the reason(s) for the decision. ***Incomplete proposal packages will be automatically rejected, and no further evaluations will occur.***

4.2.2 Evaluation Criteria

The following four evaluation factors will be used in the review of the proposals that have met the administrative and responsiveness requirements of this solicitation.

Factor 1: Commercial Potential

NASA will evaluate whether your Phase II proposal has demonstrated a knowledge of the potential economic benefits of the innovation, potential customers and strategies to reach them, as well as risks associated with this approach. If known, you may indicate if there are any existing and projected commitments for funding of the innovation beyond Phase I and II (this can include investment, sales, licensing, and other indicators of commercial potential). NASA will assess the commercial potential of the Phase I proposal (that you provided in the slide deck and white paper) by evaluating the following:

- Commercial potential through a quantitative cited market analysis to include the market segmentation and the commercial Service Addressable Market (SAM) the proposed innovation in terms of beachhead market, target customers, and the competitive landscape by identifying potential competitors.
- Commercial intent to include the development timeline required to bring the innovation to market, the applicable business model (spin-out, license, OEM, etc.) you would use, and the risks to the commercial development plan and what mitigations, if any, can be taken over a reasonable period of time to lessen the risks.
- Commercial capability to include the current and future company capitalization efforts
- Your approach to protecting any Intellectual Property that results from the innovation.
- Any assistance or mentoring the company intends to pursue.
- Evidence of follow-on funding support.

Factor 2: Scientific/Technical Merit and Feasibility

NASA will evaluate the proposed Phase II effort on:

- The technical approach and the anticipated agency and commercial benefits that may be derived from the research.
- The adequacy of the proposed effort and its relationship to the fulfillment of requirements of the research subtopic.
- The soundness and technical merit of the proposed approach and its incremental progress toward topic solution.
- Specific objectives, approaches, and plans for developing and verifying the innovation must demonstrate a clear understanding of the problem and the current state of the art.
- The degree of understanding and significance of the risks involved in the proposed innovation as well as any mitigations.

Factor 3: Experience, Qualifications, and Facilities
The qualifications of the team (including: proposed principal investigator/project manager, persons charged with leading commercialization efforts, supporting staff and consultants and subcontractors) will be evaluated for consistency with the research and commercialization effort and their degree of commitment and availability.

The proposed necessary equipment or facilities required to accomplish the proposed technical approach will be evaluated to determine if they are adequate. In addition, any proposed reliance on external sources, such as government-furnished equipment or facilities (section 3.3.3.5 and part 8 of the technical proposal), will be evaluated for reasonableness.

Factor 4: Effectiveness of the Proposed Work Plan
The work plan will be evaluated for comprehensiveness, its proposed effective use of available resources, and approach to labor distribution. In addition, the work plan's proposed schedule for meeting the Phase II objectives will be evaluated to make sure they are reasonable and consistent with the proposed technical approach.

4.2.3 Scoring of Factors and Weighting to Determine the Most Highly Rated Proposals

- Factor 1: Commercialization Potential is worth a maximum of 30 points.
- Factor 2: Scientific/Technical Merit and Feasibility is worth a maximum of 30 points.
- Factor 3: Experience, Qualifications, and Facilities is worth a maximum of 20 points.
- Factor 4: Effectiveness of the Proposed Work Plan is worth a maximum of 20 points.

The sum of the scores for Factors 1, 2, 3, and 4 will constitute the proposal's total score.

4.2.4 Price Evaluation

Utilizing the procedures set forth in FAR 15.404-1, NASA will evaluate the budget proposal form to determine whether the proposed pricing is fair and reasonable. NASA will only make an award when the price is fair and reasonable and approved by the NASA Contracting Officer.

If a proposal is selected for award, the Contracting Officer will review all the evaluations for the proposal and will address any pricing issues identified during negotiation of the final award

4.2.5 Panel Review

A panel made up of NASA subject matter experts and 3rd party reviewers will review the proposals in each topic area and assign adjectival ratings using the evaluation criteria outlined in 4.2.2 and programmatic investment considerations (e.g., first-time awardee, portfolio balance across technologies, other strategic considerations, etc.).

The possible adjectival ratings for the Panel Review are:

- Excellent: A thorough and compelling proposal of exceptional merit, with one or more significant strengths and no significant weaknesses, that fully responds to the objectives of the solicitation.

- Very Good: A competent proposal of high merit, with one or more significant strengths and where strengths outbalance any weaknesses that may exist, that fully responds to the objectives of the solicitation.

- Good: A proposal that represents a credible and reasonably sound response to the solicitation. Any weaknesses not offset by strengths do not significantly detract from the response.

- Fair: A proposal with weaknesses that are not offset by strengths.

- Poor: A proposal of low merit, with one or more major weaknesses that are expected to be difficult to correct or are not correctable, or that does not represent a credible response to the solicitation.

The panel's final rankings and rationale for the rankings will be presented to the SSO.

4.2.6 Selection

The SSO has the final authority for choosing the specific proposals for contract negotiation. In making such a determination, the SSO, in their discretion, may consider additional programmatic balance factors such as portfolio balance across NASA programs, centers and mission directorates, available funding, first-time awardees/participants, historically underrepresented communities, and geographic distribution. The list of proposals selected for negotiation will be posted on the NASA SBIR/STTR website (https://sbir.nasa.gov/). All firms will receive a formal notification letter.

4.2.7 Determination of cost/price reasonableness and responsibility

Each proposal package selected for negotiation by the SSO will be evaluated by the Contracting Officer to determine eligibility for an award. The terms and conditions of the contract will be negotiated based on the SBIR Small Business Act (15 U.S.C. 638), FAR and NASA FAR requirements, and a responsibility determination will be made. The Contracting Officer will advise the SSO on matters pertaining to price analysis and responsibility determinations. A Contracting Officer will negotiate an appropriate contract to be signed by both parties before work begins.

Note: Sections 4.3, 4.4 and 4.5 below apply to both the Phase I and Phase II evaluation process.

4.3 Technical and Business Assistance (TABA)

NASA conducts a separate review of all Phase I and II requests for TABA after the SSO makes the final selection of projects to enter negotiation for a Phase I contract. The SBIR/STTR PMO conducts the evaluation of the TABA request to determine if the request meets the requirements found in sections 1.8 and 3.3.3.8 and informs the Contracting Officer of the final determination to allow TABA funding under the contract. NASA will notify you of the approval or denial of TABA funding prior to TABA award.

During this review, NASA will consider:

- At Phase I, if the awardee proposes to use the funding to develop a Phase II TABA Needs Assessment and a Phase II Commercialization and Business Plan and/or if there are additional services being requested.
- Verification of TABA vendors by reviewing the vendor contact information.
- The vendor(s) expertise and knowledge in providing the desired technical and business assistance services
- Costs in the vendor quote(s) and whether they are reflected in the budget forms
- Proposed plans to submit a deliverable summarizing the outcome of the TABA services with expected supporting information.
- Any evidence of Fraud, Waste and Abuse.

NASA reserves the right to withhold funds requested for TABA until a formal review and approval of the requested vendor is completed. In addition, reviewing the TABA request in the proposal package, NASA may also consider additional information, such as a review of the vendor's website, Dun and Bradstreet reports, and SAM.gov, to verify the existence of the vendor(s) and to assess the capability of the vendor(s). NASA will only approve TABA funding if the proposal is selected for a Phase II award and the offeror adequately demonstrates the existence and capability of the selected vendor(s) as determined at the sole discretion of NASA. Notification of the approval or denial of TABA funding will be provided to the offeror prior to award.

4.4. Access to Proprietary Data by Non-NASA Personnel

4.4.1 Non-NASA Reviewers

In addition to utilizing government personnel in the review process, NASA, at its discretion and in accordance with 1815.207-71 of the NASA FAR Supplement, may utilize individuals from outside the government with highly specialized expertise not found in the government. Qualified experts outside of NASA (including industry, academia, and other government agencies) may assist in performing evaluations as required to determine or verify the merit of a proposal package. In deciding to obtain an outside evaluation, NASA will take into consideration requirements for the avoidance of organizational or personal conflicts of interest and any competitive relationship between the prospective contractor or subcontractor(s) and the prospective outside evaluator. Outside evaluators will certify that the information (data) contained in the proposal package is for evaluation purposes and will not be further disclosed.

4.4.2 Non-NASA Access to Confidential Business Information

In the conduct of proposal package processing and potential contract administration, NASA may need to provide access to the proposal package to other NASA contractor and subcontractor personnel. NASA will provide access to such data only under contracts that contain an appropriate NFS 1852.237-72 Access to Sensitive Information clause that requires the contractors to fully protect the information from unauthorized use or disclosure.

4.5 Notification and Feedback to Offerors

After selections for negotiation have been made, NASA will send a notification to the designated small business representative identified in the proposal package according to the processes described below.

Due to the competitive nature of the program and limited funding, recommendations to fund or not fund a proposal package are final. NASA will not reconsider selection decisions or provide additional information regarding the final decision. Offerors are encouraged to use the written feedback to understand the outcome and review of their proposal package and to develop plans to strengthen future proposals.

4.5.1 Providing Feedback

NASA uses a two-stage process to notify you of the outcome of your proposal package.

1. At the time of the public selection announcement, NASA will send an email to the designated small business representative indicating the outcome of the proposal package.

2. NASA will automatically email proposal feedback to the designated small business representative within 60 days of the announcement of selection for negotiation. If you have not received your feedback within 60 days after the announcement, contact the NASA SBIR/STTR Program Support Office at agency-sbir@mail.nasa.gov. **Due to the sensitivity of this feedback, NASA will only provide feedback to the designated small business representative and not to any other parties.**

5. Considerations

5.1 Requirements for Negotiations

To simplify making contract awards and to reduce processing time, all contractors selected for Phase I and Phase II contracts will ensure that:

1. All information in your proposal package is current (e.g., your address has not changed, the proposed PI is the same, etc.). If changes have occurred since submittal of your proposal package, notify the Contracting Officer immediately.
2. Your SBC is registered with System for Award Management (SAM) (section 2.2).
3. Your SBC complies with the FAR 52.222-37 Employment Reports on Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (VETS-4212) requirement (See Appendix C). Confirmation that a VETS-4212 report has been submitted to the Department of Labor, and is current, shall be provided to the Contracting Officer within 10 business days of the notification of selection for negotiation.
4. Your SBC HAS NOT proposed a co-principal investigator.
5. Your SBC will provide timely responses to all communications from the NSSC Contracting Officer. Failure to respond in a timely manner to the NSSC Contracting Officer may result in the award being cancelled.
6. All proposed cost is supported with documentation, such as a quote, previous purchase order, published price lists, etc.

Costs incurred prior to and in anticipation of award of a contract are entirely the risk of the contractor. A notification of selection for negotiation is not to be misconstrued as an award notification to commence work.

5.1.1 Requirements for Contracting

Awardees are required to make certain legal commitments through acceptance of numerous clauses in their Phase I contracts. This list is not a complete list of clauses to be included in Phase I contracts and is not the specific wording of such clauses. Copies of complete terms and conditions are available by following the links in Appendix C.

1. Standards of Work. Work performed under the contract must conform to high professional standards.
2. Inspection. Work performed under the contract is subject to government inspection and evaluation at all times.
3. Examination of Records. The Comptroller General (or a duly authorized representative) must have the right to examine any pertinent records of the Awardee involving transactions related to this contract.
4. Default. The Federal Government may terminate the contract if the contractor fails to perform the work contracted.
5. Termination for Convenience. The contract may be terminated at any time by the Federal Government if it deems termination to be in its best interest, in which case the Awardee will be compensated for work performed and for reasonable termination costs.
6. Disputes. Any dispute concerning the contract that cannot be resolved by agreement must be decided by the Contracting Officer with right of appeal.
7. Contract Work Hours. The Awardee may not require an employee to work more than 8 hours a day or 40 hours a week unless the employee is compensated accordingly (for example, overtime pay).
8. Equal Opportunity. The Awardee will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin.

9. Equal Opportunity for Veterans. The Awardee will not discriminate against any employee or application for employment because he or she is a disabled veteran or veteran of the Vietnam era.
10. Equal Opportunity for People with Disabilities. The Awardee will not discriminate against any employee or applicant for employment because he or she is physically or intellectually disabled.
11. Officials Not to Benefit. No Federal Government official may benefit personally from the SBIR/STTR contract.
12. Covenant Against Contingent Fees. No person or agency has been employed to solicit or secure the contract upon an understanding for compensation except bona fide employees or commercial agencies maintained by the Awardee for the purpose of securing business.
13. Gratuities. The contract may be terminated by the Federal Government if any gratuities have been offered to any representative of the government to secure the award.
14. Patent Infringement. The Awardee must report each notice or claim of patent infringement based on the performance of the contract.
15. American Made Equipment and Products. When purchasing equipment or a product under the SBIR/STTR contract, purchase only American-made items whenever possible.

5.2 Awards

5.2.1 Anticipated number of Awards

For this pilot effort, it is anticipated that a limited number of proposals will be selected for negotiation. The program is anticipating selecting 10 Phase I proposals for contract negotiation with successful Phase I awards being selected for Phase II contract negotiation.

5.2.2 Award Conditions

NASA awards are electronically signed by a NASA Contracting Officer and transmitted electronically to the organization via email. NSSC will distribute the NASA SBIR award with the following items.

- SF26—Contract Cover Sheet
- Contract Terms and Conditions—to include reference to the complete proposal package
- Attachment 1: Contract Distribution List
- Attachment 2: Template of the Final Summary Chart
- Attachment 3: IT Security Management Plan Template
- Attachment 4: Applicable Documents List
- Negotiation Confirmation
- Frequently Asked Questions (FAQs)

5.2.3 Type of Contract

NASA SBIR Phase I and II awards are firm fixed price contracts.

5.2.4 Model Contracts

Examples of the NASA SBIR contracts can be found in the NASA SBIR/STTR Resources website: https://www.nasa.gov/sbir_sttr/firms_library/ Model contracts are subject to change**.**

5.3 Reporting and Required Deliverables

An IT Security Management Plan is required at the beginning of the contract. Contractors interested in doing business with NASA and/or providing IT services or solutions to NASA should use the list found at the website of the Office of the Chief Information Officer (OCIO) as a reference for information security requirements: https://www.nasa.gov/content/security-requirements-policies. An example of an IT Security Management Plan can be found in the NASA SBIR/STTR Resources website: https://www.nasa.gov/sbir_sttr/firms_library/ For more information, see NASA FAR Supplement clause 1852.204-76.

All contracts require the delivery of technical reports that present (1) the work and results accomplished; (2) the scientific, technical, and commercial merit and feasibility of the proposed innovation and project results; (3) the proposed innovation's relevance and significance to one or more NASA interests (chapter 9); and (4) the strategy for development and transition of the proposed innovation and project results into products and services for NASA mission programs and other potential customers. Deliverables may also include the demonstration of the proposed innovation and/or the delivery of a prototype or test unit, product, or service for NASA testing and utilization if requested under Phase I.

You must provide to NASA all technical reports and other deliverables required by the contract. These reports must document progress made on the project and activities required for completion. Periodic certification for payment is required as stated in the contract. You must submit a final report to NASA upon completion of the Phase I or II R/R&D effort in accordance with applicable contract provisions.

A final New Technology Summary Report (NTSR) is due at the end of the contract, and New Technology Report(s) (NTR) are required if the technology(ies) is/are developed under the award prior to submission of the final invoice. For additional information on NTSR and NTR requirements and definitions, see section 5.9.

If you receive the TABA supplement, your Phase I contract requires TABA deliverables that summarize the outcome of the TABA services. NASA bases reimbursement for TABA on delivery of a TABA final report at the end of the contract period of performance.

5.4 Payment Schedule

The exact payment terms are included in the contract. Invoices are submitted electronically through the Department of Treasury's Invoice Processing Platform (IPP). If you are approved to receive the TABA supplement under a Phase I award, you will be reimbursed for TABA expenses. You must submit TABA vendor invoices for reimbursement per the payment schedule in section 3.2.3.8. NASA will not reimburse any amounts incurred over the TABA funding amount that NASA approved prior to award.

5.5 Profit or Fee

Contracts may include a reasonable profit. The reasonableness of proposed profit is determined by the Contracting Officer during contract negotiations. Reference FAR 15.404-4.

5.6 Cost Sharing

Cost sharing is permitted for proposal packages under this program solicitation; however, cost sharing is not required. Cost sharing will not be an evaluation factor in consideration of your proposal package nor will it be used in the determination of the percentage of Phase I work to be performed on the contract.

5.7 Rights in Data Developed Under SBIR Funding Agreements

The SBIR program provides specific rights for data developed under SBIR awards. Please review the full text at the following FAR 52.227-20 Rights in Data-SBIR Program and PCD 21-02 FEDERAL ACQUISITION REGULATION (FAR) CLASS DEVIATION – PROTECTION OF DATA UNDER THE SMALL BUSINESS INNOVATIVE RESEARCH/SMALL TECHNOLOGY TRANSFER RESEARCH (SBIR/STTR) PROGRAM.

5.8 Copyrights

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

5.9 Invention Reporting, Election of Title, Patent Application Filing, and Patents

Awardees must provide New Technology Reports (NTR) for any new subject inventions, and the New Technology Summary Reports (NTSR) for the interim and final contract periods. Please review SBA SBIR/STTR Policy Directive provided in section 1.1.1 to understand these requirements.

5.10 Export Control

The contractor shall comply with all U.S. export control laws including Export Administration Regulations (EAR) and International Traffic in Arms Regulations (ITAR). Offerors are responsible for ensuring that all employees who will work on this contract888 are eligible under export control laws, EAR, and ITAR. Any employee who is not a U.S. citizen or a permanent resident may be restricted from working on this contract if the technology is restricted under export control laws, ITAR, or EAR unless the prior approval of the Department of State or the Department of Commerce is obtained via a technical assistance agreement or an export license. Violations of these regulations can result in criminal or civil penalties. For additional information on ITAR, please visit the Code of Federal Regulations at https://www.ecfr.gov/cgibin/text-idx?tpl=/ecfrbrowse/Title22/22cfr120_main_02.tpl. For additional information on EAR, please

5.11 Government-Furnished and Contractor-Acquired Property

In accordance with the SBIR/STTR Policy Directive, the Federal Government may transfer title to property provided by the SBIR Participating Agency to the awardee or acquired by the awardee for the purpose of fulfilling the contract, where such transfer would be more cost effective than recovery of the property.

5.12 Essentially Equivalent Awards and Prior Work

Awardees must certify with every invoice that they have not previously been paid nor are currently being paid for essentially equivalent work by any agency of the Federal Government. **Failure to report essentially equivalent or duplicate efforts can lead to the termination of contracts and/or civil or criminal penalties.**

5.13 Additional Information

5.13.1 Precedence of Contract Over this Solicitation

This program solicitation reflects current planning. If there is any inconsistency between the information contained herein and the terms of any resulting SBIR contract, the terms of the contract take precedence over the solicitation.

5.13.2 Evidence of Contractor Responsibility

The Government may request the offeror to submit certain organizational, management, personnel, and financial information to establish responsibility of the offeror. Contractor responsibility includes all resources required for contractor performance (e.g., financial capability, workforce, and facilities).

5.14 Use of Government Resources

Federal Departments and Agencies

Use of SBIR funding for unique Federal/non-NASA resources from a Federal department or agency that does not meet the definition of a Federal laboratory as defined by U.S. law and in the SBA Policy Directive on the SBIR program requires a waiver from the SBA. Proposal packages requiring waivers must include an explanation of why the waiver is appropriate. NASA will provide your request, along with an explanation to SBA, during the negotiation process. NASA cannot guarantee that a waiver can be obtained from SBA. Specific instructions to request use of Government Resources are in sections 3.2 or 3.3 of the solicitation. *Note: NASA facilities qualify as Federal laboratories.*

Support Agreements for Use of Government Resources

All offerors selected for award who require and receive approval from the SBIR Program Executive for the use of any federal facility must, within 20 business days of notification of selection for negotiations, provide to the NSSC Contracting Officer an agreement by and between the contractor and the appropriate federal facility/laboratory, executed by the government official authorized to approve such use. The agreement must delineate the terms of use, associated costs, and facility responsibilities and liabilities. Having a signed agreement for use of government resources is a requirement for award.

For proposed use of NASA resources, a NASA SBIR/STTR Support Agreement template is available in the Resources section https://www.nasa.gov/sbir_sttr/firms_library/ and must be executed before a contractor can use NASA resources. Offerors shall only include a signed letter of commitment from an authorized NASA point of contact in the complete proposal packages. NASA expects selected offerors to finalize and execute their NASA SBIR Support Agreement during the negotiation period with the NSSC.

Contractor Responsibilities for Costs

In accordance with FAR Part 45, it is NASA's policy not to provide services, equipment, or facilities (resources) (capital equipment, tooling, test, and computer facilities, etc.) for the performance of work under SBIR contracts. Generally, any contractor will furnish its own resources to perform the proposed work on the contract.

In all cases, the contractor shall be responsible for any costs associated with services, equipment, or facilities provided by NASA or another Federal department or agency, and such costs shall result in no increase in the price of this contract.

5.15 Agency Recovery Authority and Ongoing Reporting

In accordance with section 5 of the SBIR and STTR Extension Act of 2022, the NASA will –

1) require a small business concern receiving an award under its SBIR program to repay all amounts received from the Federal agency under the award if—
   (A) the small business concern makes a material misstatement that the Federal agency determines poses a risk to national security; or

(B) there is a change in ownership, change to entity structure, or other substantial change in circumstances of the small business concern that the Federal agency determines poses a risk to national security; and

2) require a small business concern receiving an award under its SBIR program to regularly report to the Federal agency and the SBA throughout the duration of the award on—

(A) any change to a disclosure required under subparagraphs (A) through (G) of section 2.3.1 above.

(B) any material misstatement made under section 5.15 paragraph (A) above; and

(C) any change described in section 5.15 paragraph (B) above.

6. Submission of Proposals

6.1 How to Submit Your Proposal Package

NASA uses electronically supported business processes for the SBIR program. You must have internet access and an email address. NASA will not accept paper submissions.

To apply for a NASA SBIR Phase I contract, you must follow the steps found below.

6.1.1 Electronic Submission Requirements via ProSAMS

NASA uses ProSAMS for the submission of these proposal packages. ProSAMS requires firm registration and login. To access ProSAMS, go to https://prosams.nasa.gov. For additional instructions to start a new proposal, go to https://prosams.nasa.gov/training/ProSAMS_SBIR_STTR_Digital_Guide_Start_a_New_Proposal_R4_02162024.pdf

NASA recommends that an authorized small business representative be the person to register the firm and complete the required firm level forms. They will be the only person allowed to edit the firm level forms.

For successful submission of a complete proposal package, you must complete all required and applicable forms, and upload the required documents per the submission requirements indicated in ProSAMS. Letters of commitment must be emailed to agency-sbir@mail.nasa.gov.

6.1.2 Deadlines for Submitting a Complete Proposal Package

6.1.2.1 Phase I

NASA must receive your proposal package for Phase I no later than 5:00 p.m. ET on Tuesday, July 30, 2024, via the ProSAMS.

You are responsible for ensuring that all files constituting the proposal package are uploaded and endorsed prior to the deadline. **If a proposal package is not received by the 5:00 p.m. ET deadline, NASA will determine the proposal package to be incomplete and will not evaluate it.** Start the submission process early to allow sufficient time to upload the complete proposal package. If you wait to submit a proposal package near the deadline, you are at risk of not completing the required uploads and endorsements by the required deadline and NASA may decline the proposal package.

6.1.2.2 Phase II

NASA must receive your proposal package for Phase II no later than 5:00 p.m. ET on the 120th day after the start of the Phase I period of performance. See chapter 3. Proposal Preparation Instructions and Requirements for additional details on proposal package requirements.

You are responsible for ensuring that all files constituting the proposal package are uploaded and endorsed prior to the deadline**. If a proposal package is not received by the 5:00 p.m. ET deadline, NASA will determine the proposal package to be incomplete and will not evaluate it.** Start the submission process early to allow sufficient time to upload the complete proposal package. If you wait to submit a proposal package near the deadline, you are at risk of not completing the required uploads and endorsements by the required deadline and NASA may decline the proposal package.

6.1.3 Proposal Package Submission

Upload all components of a proposal package using the Proposal Submissions module in ProSAMS. The designated business representative and principal investigator must endorse the proposal package. All transactions via ProSAMS are encrypted for security purposes.

Do not submit security/password-protected PDF files, as reviewers may not be able to open and read these files. NASA will decline proposal packages containing security/password-protected PDF files and they will not be evaluated.

You are responsible for virus checking all files prior to submission. NASA may decline any proposal package that contains a file with a detected virus.

You may upload a proposal package multiple times, with each new upload replacing the previous version, but only the final uploaded and electronically endorsed version will be considered for review. Embedded animation or video, as well as reference technical papers for "further reading," will not be considered for evaluation. **NASA may decline a proposal package that is missing the final endorsements.**

Note: Embedded animation or video, as well as reference technical papers for "further reading," will not be considered for evaluation.

6.1.4 Acknowledgment of Receipt of a Complete Proposal Package

NASA will acknowledge receipt of an electronically submitted proposal package by sending an email to the designated Business Official's email address as provided on the proposal package cover sheet. **If you do not receive a proposal package acknowledgment after submission, immediately contact the NASA SBIR/STTR Program Support Office at agency-sbir@mail.nasa.gov.**

6.1.5 Withdrawal of Complete Proposal Packages

Prior to the close of submissions, you may withdraw proposal packages. To withdraw a proposal package after the deadline, the designated small business representative must send written notification via email to agency-sbir@mail.nasa.gov.

6.1.6 Service of Protests

Protests, as defined in section FAR 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the Government Accountability Office (GAO), must be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgment of receipt from:

Kenneth Albright
NASA Shared Services Center
Building 1111, Jerry Hlass Road
Stennis Space Center, MS 39529
Agency-SBIR-STTRSolicitation@mail.nasa.gov

The copy of any protest must be received in the office designated above within one day of filing a protest with the GAO.

7. Scientific and Technical Information Sources

7.1 NASA Organizational and Programmatic Information

General sources relating to organizational and programmatic information at NASA is available via the following websites:

NASA Budget Documents, Strategic Plans, and Performance Reports:
http://www.nasa.gov/about/budget/index.html
NASA Organizational Structure: https://www.nasa.gov/organization/
NASA SBIR/STTR Programs: http://sbir.nasa.gov

Information regarding NASA's technology needs can be obtained at the following websites:

Office of Technology, Policy, and Strategy	
NASA Technology Taxonomy	https://www.nasa.gov/offices/oct/taxonomy/index.html

NASA Mission Directorates	
Aeronautics Research Mission Directorate (ARMD)	http://www.aeronautics.nasa.gov/
Exploration Systems Development Mission Directorate (ESDMD)	https://www.nasa.gov/directorates/exploration-systems-development
Space Operations Mission Directorate (SOMD)	https://www.nasa.gov/directorates/space-operations-mission-directorate
Science Mission Directorate (SMD)	http://nasascience.nasa.gov
Space Technology Mission Directorate (STMD)	http://www.nasa.gov/directorates/spacetech/home/index.html

NASA Centers	
Ames Research Center (ARC)	http://www.nasa.gov/centers/ames/home/index.html
Armstrong Flight Research Center (AFRC)	http://www.nasa.gov/centers/armstrong/home/index.html
Glenn Research Center (GRC)	http://www.nasa.gov/centers/glenn/home/index.html
Goddard Space Flight Center (GSFC)	http://www.nasa.gov/centers/goddard/home/index.html
Jet Propulsion Laboratory (JPL)	https://www.nasa.gov/jpl/
Johnson Space Center (JSC)	http://www.nasa.gov/centers/johnson/home/index.html
Kennedy Space Center (KSC)	http://www.nasa.gov/centers/kennedy/home/index.html
Langley Research Center (LaRC)	http://www.nasa.gov/centers/langley/home/index.html

Marshall Space Flight Center (MSFC)	http://www.nasa.gov/centers/marshall/home/index.html
Stennis Space Center (SSC)	http://www.nasa.gov/centers/stennis/home/index.html
NASA Shared Services Center (NSSC)	https://www.nssc.nasa.gov/

7.2 United States Small Business Administration (SBA)

The SBA oversees the Federal SBIR and STTR programs. The SBA has resources that small businesses can use to learn about the program and to get help for developing a proposal package to a Federal SBIR/STTR program. Offerors are encouraged to review the information that is provided at the following links: www.sbir.gov, https://www.sba.gov/local-assistance, and at https://www.sbir.gov/resources.

The SBA issues a SBIR/STTR Policy Directive which provides guidance to all Federal Agencies that have a SBIR/STTR program. The Policy Directives for the SBIR/STTR programs may be obtained from the SBA at https://www.sbir.gov/about or at the following address:

U.S. Small Business Administration
Office of Technology – Mail Code 6470
409 Third Street, S.W.
Washington, DC 20416
Phone: 202-205-6450

7.3 National Technical Information Service

The National Technical Information Service (NTIS) is an agency of the Department of Commerce and is the Federal Government's largest central resource for government-funded scientific, technical, engineering, and business-related information. For information regarding various NTIS services and fees, email or write:

National Technical Information Service
5301 Shawnee Road
Alexandria, VA 22312
URL: http://www.ntis.gov
E-mail: NTRLHelpDesk@ntis.gov

8. Submission Forms

8.1 SBIR Phase I Checklist

For assistance in completing your Phase I proposal package, use the following checklist to ensure your submission is complete.

- ☐ The slide deck and white paper for any innovation are submitted for one topic only.
- ☐ The complete proposal package is submitted consistently with the requirements outlined in section 3.
  - ☐ Proposal Information
  - ☐ Contacts
  - ☐ Proposal Certifications
  - ☐ Proposal Summary
  - ☐ Budget
    - ☐ Subcontractors/Consultants form (if applicable)
    - ☐ Other Direct Costs form (if applicable)
    - ☐ Foreign Vendor form (if applicable)
  - ☐ Slide Deck (15 slide maximum)
  - ☐ White Paper (7 page maximum)
  - ☐ NASA Evaluation License Application (only if TAV is being proposed)
  - ☐ Technical and Business Assistance (TABA) Request, if applicable
  - ☐ I-Corps Interest Form
  - ☐ Firm-Level Forms (completed once for all complete proposal packages submitted by a firm to a single solicitation)
    - ☐ Firm Information
    - ☐ Firm Certifications
    - ☐ Disclosures of Foreign Affiliations or Relationships to Foreign Countries
    - ☐ Audit Information
    - ☐ Prior Awards Addendum (for firms with more than 15 Phase II awards in the past 5 years)
    - ☐ Commercialization Metrics Survey (CMS)
- ☐ The slide deck shall not exceed 15 slides and the white paper shall not exceed a total of 7 standard 8.5- by 11-inch pages with one-inch margins and shall follow the format requirements found in section 3.2.2.
- ☐ The slide deck and white paper contain all required parts in order (section 3.2.3).
- ☐ Any additional required letters/documentation.
  - ☐ A letter of commitment from the appropriate Government official if the research or R&D effort requires use of Government resources (sections 3.2 and 5.14).
  - ☐ Letters of commitment from subcontractors/consultants.
  - ☐ If the firm is an eligible joint venture or a limited partnership, a copy or comprehensive summary of the joint venture agreement or partnership agreement is included.
  - ☐ NASA Evaluation License Application if proposing the use of NASA technology (TAV).
  - ☐ Supporting documentation of budgeted costs.
- ☐ Proposed funding does not exceed $150,000 (section 1.3), and if requesting TABA, the cost for TABA does not exceed $6,500 (sections 1.8 and 3.2.3.8).
- ☐ Proposed project duration does not exceed six (6) months (section 1.3).
- ☐ Complete proposal packages shall be <u>received</u> no later than 5:00 p.m. ET on Tuesday, July 30, 2024 (section 6.1.2).

8.2 SBIR Phase II Checklist

For assistance in completing your Phase II proposal package, use the following checklist to ensure your submission is complete.

- ☐ The proposal and innovation are submitted for one topic only.
- ☐ The complete proposal package is submitted consistently with the requirements outlined in section 3.
  - ☐ Proposal Information
  - ☐ Contacts
  - ☐ Proposal Certifications
  - ☐ Proposal Summary
  - ☐ Budget
    - ☐ Subcontractors/Consultants form (if applicable)
    - ☐ Other Direct Costs form (if applicable)
    - ☐ Foreign Vendor form (if applicable)
  - ☐ Phase II Proposal
  - ☐ NASA Evaluation License Application (only if TAV is being proposed)
  - ☐ Technical and Business Assistance (TABA) Request, if applicable
  - ☐ Firm-Level Forms (if information has changed since the Phase I proposal submission)
    - ☐ Firm Certifications
    - ☐ Disclosures of Foreign Affiliations or Relationships to Foreign Countries
    - ☐ Audit Information
    - ☐ Prior Awards Addendum (for firms with more than 15 Phase II awards in the past 5 years)
    - ☐ Commercialization Metrics Survey (CMS)
- ☐ The proposal shall not exceed a total of 40 standard 8.5- by 11-inch pages with one-inch margins and shall follow the format requirements found in section 3.3.2).
- ☐ The proposal plan contains all required parts in order (section 3.3.3).
- ☐ Any additional required letters/documentation.
  - ☐ A letter of commitment from the appropriate Government official if the research or R&D effort requires use of Government resources (sections 3.3.3 and 5.13).
  - ☐ Letters of commitment from subcontractors/consultants.
  - ☐ If the firm is an eligible joint venture or a limited partnership, a copy or comprehensive summary of the joint venture agreement or partnership agreement is included.
  - ☐ NASA Evaluation License Application if proposing the use of NASA technology (TAV).
  - ☐ Supporting documentation of budgeted costs.
- ☐ Proposed funding does not exceed $850,000 (section 1.3), and if requesting TABA, the cost for TABA does not exceed $50,000 (sections 1.8 and 3.3.3.8).
- ☐ Proposed project duration does not exceed 24 months (section 1.3).
- ☐ Complete proposal packages shall be <u>received</u> no later than 5:00 p.m. ET on the 120th day after the start of the Phase I period of performance (section 6.1.2).

9. Research Topics for the SBIR Ignite Solicitation

Introduction

You should be thoughtful in selecting a topic to ensure the proposal is responsive to the NASA need as defined by the topic. The NASA SBIR program will NOT move a completed proposal package between SBIR topics.

As stated in section 3.1, NASA will not accept more than one (1) proposal package from any one firm.

Topic Ai02.24: Aviation-Ready Electrical Energy Storage for All-Electric or Hybrid Electric Aircraft

NASA's role is to stimulate US entrepreneurship and tip markets into being. It leads the US's transition to electric aviation. In order to advance electric aviation, aircraft require an integrated aviation electrical energy storage system (battery or other technology) with a path to FAA certification by 2030 or earlier. Components are sought for integration, ground, and potential flight testing for a 1500 lbs. class hybrid electric drone or a customer application defined by the proposer.

The energy storage system boundary should include all the elements needed to integrate the system into an aviation platform under full environmental conditions and with the use of an external charging system. For a battery example, it would include the cells, packaging, all required electronics, software, thermal management, monitoring and control for charging/discharging and operations, and all required protection for thermal runaway and failures.

Strong proposals will have several characteristics:

- Indication of partner(s) or launch customer(s) and alignment of the proposed system to the customer's needs
- Definition of market introduction to the existing large UAV or the emerging electric and hybrid electric aircraft markets.
- Targets unmanned aerial vehicle (UAV), aircraft, or electric vertical takeoff and landing (eVTOL) systems in the 1500 to 5000 lbs size class or larger hybrid electric aircraft
- Demonstrates an understanding of relevant standards and a plan for target FAA certification date by 2030 or earlier, including an understanding and path to compliance for DO-311A, DO-160 environmental testing, electrical compatibility with relevant FAA or military standards and other applicable standards for safety, quality, and performance.
- Describes an operational concept which describes the expected operation of the system on an aircraft over a typical flight mission. Examples: are the batteries swapped between flights or charged on aircraft; what are the expected conditions and modes of the battery during the flight segments; what are the expected modes/conditions during ground operations; what are the expected modes / conditions during storage and transport?
- Considerations for critical safety testing like thermal runaway testing and key environmental tests like structural and thermal exposure tests.

Topic Hi02.24: Leak-Free Cryogenic Valves and Quick Disconnects

NASA is seeking innovative solutions to enhance components and improve sealing performance for cryogenic fluid transfer systems with a focus on improving reliability, efficiency, and longevity while exhibiting tolerance to harsh environments.

NASA and commercial companies have a need to develop technologies for the delivery, storage, and transfer of cryogenic propellants. Some of the primary sources of leakage in cryogenic systems are valves and joint interfaces. Internal and external leakage are direct losses of cryogenic propellants/commodity that escape the system and are lost into the environment through leaks at the valve actuator stem, packing, seats, and connections. Additionally, leaks can introduce contamination, detrimental thermal gradients, and lead to hazardous accumulation of propellants into unwanted areas creating additional risks to the mission and personnel. Propulsion test cryogenic fluid systems are volume limited and leakage results in test delays, decreased test duration, reduced test time, longer test turnaround, and impact to personnel safety. In space, cryogenic fluid management systems are volume-limited and cannot tolerate any leakage without significant cost and risk to mission and personnel.

Preference will be given to proposals that offer one or more of the following solutions:

- Novel and innovative sealing methods and materials for cryogenic fluids
- Cryogenic couplers
- Quick disconnects
- Compatibility with surface transfer systems

The goal of this topic is to improve the quality and reliability of cryogenic fluid management systems for space systems, propulsion testing, launch pads, and surface systems architecture, as well as the commercial cryogenic industry. The benefits of these innovations will reduce failures, maintenance, and human intervention required for proper operations; in turn, reducing costs, compressing schedule, and improving safety and quality.

Topic Si02.24: Decision Support Tools Leveraging NASA Earth Science Data

NASA's Earth Science Division envisions a thriving world, driven by trusted, actionable science. The new Earth Science to Action strategy (https://science.nasa.gov/earth-science/earth-science-to-action/) includes building the tools that humankind can use to meet new and emerging challenges. With a plethora of data and information now available, NASA seeks to bridge the gap between what information is available and what can be done with it, such that benefits to society can be accelerated. Under this solicitation, proposers are encouraged to develop new, highly-capable data analysis and decision support tools that leverage NASA Earth Science data (https://www.earthdata.nasa.gov/) in order to address a variety of problems that now confront society, for example:

- Early detection of algal blooms
- Local air quality assessments and predictions
- Local water quality assessments
- Agricultural applications, including crop health determination
- Wildland fire management and wildfire effects on local environments
- Emissions of greenhouse gases

Proposals will be evaluated on the potential commercial value of the solution. At a minimum, a NASA data source must be used but may be combined with data from other governmental agencies, industry, and from foreign sources.

Appendices

Appendix A: Technology Readiness Level (TRL) Descriptions

The Technology Readiness Level (TRL) describes the stage of maturity in the development process from observation of basic principles through final product operation. The exit criteria for each level document that principles, concepts, applications, or performance have been satisfactorily demonstrated in the appropriate environment required for that level. A relevant environment is a subset of the operational environment that is expected to have a dominant impact on operational performance. Thus, reduced gravity may be only one of the operational environments in which the technology must be demonstrated or validated to advance to the next TRL.

TRL	Definition	Hardware Description	Software Description	Exit Criteria
1	Basic principles observed and reported.	Scientific knowledge generated underpinning hardware technology concepts/applications.	Scientific knowledge generated underpinning basic properties of software architecture and mathematical formulation.	Peer reviewed publication of research underlying the proposed concept/application.
2	Technology concept and/or application formulated.	Invention begins, practical application is identified but is speculative, no experimental proof or detailed analysis is available to support the conjecture.	Practical application is identified but is speculative, no experimental proof or detailed analysis is available to support the conjecture. Basic properties of algorithms, representations and concepts defined. Basic principles coded. Experiments performed with synthetic data.	Documented description of the application/concept that addresses feasibility and benefit.
3	Analytical and experimental critical function and/or characteristic proof of concept.	Analytical studies place the technology in an appropriate context and laboratory demonstrations, modeling and simulation validate analytical prediction.	Development of limited functionality to validate critical properties and predictions using non-integrated software components.	Documented analytical/experimental results validating predictions of key parameters.
4	Component and/or breadboard validation in laboratory environment.	A low fidelity system/component breadboard is built and operated to demonstrate basic functionality and critical test environments, and associated performance predictions are defined relative to the final operating environment.	Key, functionally critical, software components are integrated, and functionally validated, to establish interoperability and begin architecture development. Relevant Environments defined and performance in this environment predicted.	Documented test performance demonstrating agreement with analytical predictions. Documented definition of relevant environment.
5	Component and/or breadboard validation in	A medium fidelity system/component brassboard is built and operated to demonstrate overall performance in a simulated operational	End-to-end software elements implemented and interfaced with existing systems/simulations conforming to target environment. End-to-end software system, tested in	Documented test performance demonstrating agreement with analytical predictions. Documented

	relevant environment.	environment with realistic support elements that demonstrates overall performance in critical areas. Performance predictions are made for subsequent development phases.	relevant environment, meeting predicted performance. Operational environment performance predicted. Prototype implementations developed.	definition of scaling requirements.
6	System/sub-system model or prototype demonstration in a relevant environment.	A high-fidelity system/component prototype that adequately addresses all critical scaling issues is built and operated in a relevant environment to demonstrate operations under critical environmental conditions.	Prototype implementations of the software demonstrated on full-scale realistic problems. Partially integrate with existing hardware/software systems. Limited documentation available. Engineering feasibility fully demonstrated.	Documented test performance demonstrating agreement with analytical predictions.
7	System prototype demonstration in an operational environment.	A high-fidelity engineering unit that adequately addresses all critical scaling issues is built and operated in a relevant environment to demonstrate performance in the actual operational environment and platform (ground, airborne, or space).	Prototype software exists having all key functionality available for demonstration and test. Well integrated with operational hardware/software systems demonstrating operational feasibility. Most software bugs removed. Limited documentation available.	Documented test performance demonstrating agreement with analytical predictions.
8	Actual system completed and "flight qualified" through test and demonstration.	The final product in its final configuration is successfully demonstrated through test and analysis for its intended operational environment and platform (ground, airborne, or space).	All software has been thoroughly debugged and fully integrated with all operational hardware and software systems. All user documentation, training documentation, and maintenance documentation completed. All functionality successfully demonstrated in simulated operational scenarios. Verification and Validation (V&V) completed.	Documented test performance verifying analytical predictions.
9	Actual system flight proven through successful mission operations.	The final product is successfully operated in an actual mission.	All software has been thoroughly debugged and fully integrated with all operational hardware/software systems. All documentation has been completed. Sustaining software engineering support is in place. System has been successfully operated in the operational environment.	Documented mission operational results.

Definitions

Brassboard: A medium-fidelity functional unit that typically tries to make use of as much operational hardware/software as possible and begins to address scaling issues associated with the operational system. It does not have the engineering pedigree in all aspects but is structured to be able to operate in simulated operational environments in order to assess performance of critical functions.

Breadboard: A low-fidelity unit that demonstrates function only, without respect to form or fit in the case of hardware, or platform in the case of software. It often uses commercial and/or ad hoc components and is not intended to provide definitive information regarding operational performance.

Engineering Unit: A high-fidelity unit that demonstrates critical aspects of the engineering processes involved in the development of the operational unit. Engineering test units are intended to closely resemble the final product (hardware/software) to the maximum extent possible and are built and tested so as to establish confidence that the design will function in the expected environments. In some cases, the engineering unit will become the final product, assuming proper traceability has been exercised over the components and hardware handling.

Laboratory Environment: An environment that does not address in any manner the environment to be encountered by the system, subsystem, or component (hardware or software) during its intended operation. Tests in a laboratory environment are solely for the purpose of demonstrating the underlying principles of technical performance (functions), without respect to the impact of environment.

Mission Configuration: The final architecture/system design of the product that will be used in the operational environment. If the product is a subsystem/component, then it is embedded in the actual system in the actual configuration used in operation.

Operational Environment: The environment in which the final product will be operated. In the case of spaceflight hardware/software, it is space. In the case of ground-based or airborne systems that are not directed toward spaceflight, it will be the environments defined by the scope of operations. For software, the environment will be defined by the operational platform.

Proof of Concept: Analytical and experimental demonstration of hardware/software concepts that may or may not be incorporated into subsequent development and/or operational units.

Prototype Unit: The prototype unit demonstrates form, fit, and function at a scale deemed to be representative of the final product operating in its operational environment. A subscale test article provides fidelity sufficient to permit validation of analytical models capable of predicting the behavior of full-scale systems in an operational environment

Relevant Environment: Not all systems, subsystems, and/or components need to be operated in the operational environment in order to satisfactorily address performance margin requirements. Consequently, the relevant environment is the specific subset of the operational environment that is required to demonstrate critical "at risk" aspects of the final product performance in an operational environment. It is an environment that focuses specifically on "stressing" the technology advance in question.

Appendix B: SBIR and the Technology Taxonomy

NASA's technology development activities expand the frontiers of knowledge and capabilities in aeronautics, science, and space, creating opportunities, markets, and products for U.S. industry and academia. Technologies that support NASA's missions may also support science and exploration missions conducted by the commercial space industry and other Government agencies. In addition, NASA technology development results in applications for the general population, including devices that improve health, medicine, transportation, public safety, and consumer goods.

The 2020 NASA Technology Taxonomy is an evolution of the technology roadmaps developed in 2015. The 2020 NASA Technology Taxonomy provides a structure for articulating the technology development disciplines needed to enable future space missions and support commercial air travel. The 2020 revision is composed of 17 distinct technical-discipline-based taxonomies (TX) that provide a breakdown structure for each technology area. The taxonomy uses a three-level hierarchy for grouping and organizing technology types. Level 1 represents the technology area that is the title of that area. Level 2 is a list of the subareas the taxonomy is a foundational element of NASA's technology management process. NASA's mission directorates reference the taxonomy to solicit proposals and to inform decisions on NASA's technology policy, prioritization, and strategic investments.

Details on the 2015 NASA Technology Roadmaps remain accessible here: https://www.nasa.gov/image-article/2015-nasa-technology-roadmap-poster/, and information on the new 2020 NASA Technology Taxonomy can be found at: (https://www.nasa.gov/sites/default/files/atoms/files/2020_nasa_technology_taxonomy_lowres.pdf).

The research and technology topics for the SBIR program are identified annually by mission directorates and center programs. The directorates identify high-priority research and technology needs for respective programs and projects.

Appendix C: List of NASA SBIR Phase I Clauses, Regulations and Certifications

Introduction

Offerors who plan to submit a completed proposal package to this solicitation will be required to meet specific rules and regulations as part of the submission and if awarded a contract. Offerors should ensure that they understand these rules and requirements before submitting a completed proposal package to NASA.

Below are the all the clauses, regulations and certifications that apply to Phase I submissions and contracts. Each clause, regulation and certification contain a hyperlink to the webpages from the NASA FAR Supplement, SBIR/STTR Policy Directive, and www.acquisition.gov where you can read about the requirements.

Federal Acquisition Regulations (FAR) Provisions and Clauses

FAC 2023-04; FAR Case 2023-010 Prohibition on a Byte Dance Covered Application (including TikTok) (Interim Rule)
52.202-1 DEFINITIONS. (Jun 2020)
52.203-3 GRATUITIES. (Apr 1984)
52.203-5 COVENANT AGAINST CONTINGENT FEES. (May 2014)
52.203-6 RESTRICTIONS ON SUBCONTRACTOR SALES TO THE GOVERNMENT. (Jun 2020)
52.203-7 ANTI-KICKBACK PROCEDURES. (Jun 2020)
52.203-8 CANCELLATION, RESCISSION, AND RECOVERY OF FUNDS FOR ILLEGAL OR IMPROPER ACTIVITY. (May 2014)
52.203-10 PRICE OR FEE ADJUSTMENT FOR ILLEGAL OR IMPROPER ACTIVITY. (May 2014)
52.203-11 CERTIFICATION AND DISCLOSURE REGARDING PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS. (Sep 2024)
52.203-12 LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS. (Jun 2020)
52.203-18 PROHIBITION ON CONTRACTING WITH ENTITIES THAT REQUIRE CERTAIN INTERNAL CONFIDENTIALITY AGREEMENTS OR STATEMENTS-REPRESENTATION (Jun 2020)
52.203-19 PROHIBITION ON REQUIRING CERTAIN INTERNAL CONFIDENTIALITY AGREEMENTS OR STATEMENTS. (Jan 2017)
52.204-7 SYSTEM FOR AWARD MANAGEMENT. (Nov 2024)
52.204-8 ANNUAL REPRESENTATIONS AND CERTIFICATIONS (DEVIATION 20-02B) (Jan 2025) (Deviation Feb 2025)
52.204-10 REPORTING EXECUTIVE COMPENSATION AND FIRST-TIER SUBCONTRACT AWARDS. (Jun 2020)
52.204-13 SYSTEM FOR AWARD MANAGEMENT MAINTENANCE. (Oct 2018)
52.204-16 COMMERCIAL AND GOVERNMENT ENTITY CODE REPORTING. (Aug 2020)
52.204-18 COMMERCIAL AND GOVERNMENT ENTITY CODE MAINTENANCE. (Aug 2020)
52.204-19 INCORPORATION BY REFERENCE OF REPRESENTATIONS AND CERTIFICATIONS. (Dec 2014)
52.204-21 BASIC SAFEGUARDING OF COVERED CONTRACTOR INFORMATION SYSTEMS (Nov 2021)
52.204-22 ALTERNATIVE LINE ITEM PROPOSAL. (Jan 2017)
52.204-23 PROHIBITION ON CONTRACTING FOR HARDWARE, SOFTWARE, AND SERVICES DEVELOPED OR PROVIDED BY KASPERSKY LAB AND OTHER COVERED ENTITIES. (Dec 2023)
52.204-24 REPRESENTATION REGARDING CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT (Nov 2021)
52.204-25 PROHIBITION ON CONTRACTING FOR CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT. (Nov 2021)
52.204-26 COVERED TELECOMMUNICATIONS EQUIPMENT OR SERVICES - REPRESENTATION. (Oct 2020)
52.204-27 PROHIBITION ON A BYTEDANCE COVERED APPLICATION. (Jun 2023)
52.204-29 FEDERAL ACQUISITION SUPPLY CHAIN SECURITY ACT ORDERS - REPRESENTATION AND DISCLOSURES (Dec 2023)

52.209-6 PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT. (Nov 2021)
52.213-4 TERMS AND CONDITIONS – SIMPLIFIED ACQUISITIONS (OTHER THAN COMMERCIAL PRODUCTS AND COMMERCIAL SERVICES (Jan 2025) (Deviation Feb 2025)
52.215-1 INSTRUCTIONS TO OFFERORS—COMPETITIVE ACQUISITION. (Nov 2021)
52.215-2 AUDIT AND RECORDS-NEGOTIATIONS (Jun 2020)
52.215-8 ORDER OF PRECEDENCE—UNIFORM CONTRACT FORMAT. (Oct 1997)
52.217-9 OPTION TO EXTEND THE TERM OF THE CONTRCT (Mar 2000)
52.219-6 NOTICE OF TOTAL SMALL BUSINESS SET-ASIDE (Nov 2020)
52.219-8 UTILIZATION OF SMALL BUSINESS CONCERNS. (Feb 2024)
52.219-28 POST-AWARD SMALL BUSINESS PROGRAM REPRESENTATION. (Feb 2024)
52.222-3 CONVICT LABOR. (Jun 2003)
52.222-35 EQUAL OPPORTUNITY FOR VETERANS. (Jun 2020)
52.222-36 EQUAL OPPORTUNITY FOR WORKERS WITH DISABILITIES. (Jun 2020)
52.222-37 EMPLOYMENT REPORTS ON VETERANS (Jun 2020)
52.222-50 COMBATING TRAFFICKING IN PERSONS. (Nov 2021)
52.222-54 EMPLOYMENT ELIGIBILITY VERIFICATION (May 2022)
52.225-1 BUY AMERICAN-SUPPLIES (Oct 2022)
52.225-13 RESTRICTIONS ON CERTAIN FOREIGN PURCHASES. (Feb 2021)
52.225-25 PROHIBITION ON CONTRACTING WITH ENTITIES ENGAGING IN CERTAIN ACTIVITIES OR TRANSACTIONS RELATING TO IRAN—REPRESENTATION AND CERTIFICATIONS. (Jun 2020)
52.226-7 DRUG-FREE WORKPLACE (May 2024)
52.226-8 ENCOURAGING CONTRACTOR POLICIES TO BAN TEXT MESSAGING WHILE DRIVING. (May 2024)
52.227-1 AUTHORIZATION AND CONSENT.- ALTERNATE I (Jun 2020)
52.227-2 NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT (JUN 2020)
52.227-11 PATENT RIGHTS—OWNERSHIP BY THE CONTRACTOR (May 2014) as Modified by NFS 1852.227-11.
52.227-20 RIGHTS IN DATA – SBIR PROGRAM (May 2014)
52.229-3 FEDERAL, STATE, AND LOCAL TAXES. (Feb 2013)
52.232-2 PAYMENTS UNDER FIXED-PRICE RESEARCH AND DEVELOPMENT CONTRACTS. (Apr 1984)
52.232-9 LIMITATION ON WITHHOLDING OF PAYMENTS. (Apr 1984)
52.232-12 ADVANCE PAYMENTS. (MAY 2001) AS MODIFIED BY NFS 1852.232-70 ALTERNATE IV (Apr 1984) ALTERNATE V (May 2001)
52.232-23 ASSIGNMENT OF CLAIMS. (May 2014)
52.232-25 PROMPT PAYMENT. (Jan 2017)
52.232-33 PAYMENT BY ELECTRONIC FUNDS TRANSFER—SYSTEM FOR AWARD MANAGEMENT. (Oct 2018)
52.232-39 UNENFORCEABILITY OF UNAUTHORIZED OBLIGATIONS. (Jun 2013)
52.232-40 PROVIDING ACCELERATED PAYMENTS TO SMALL BUSINESS SUBCONTRACTORS. (Mar 2023)
52.233-1 DISPUTES. (May 2014)
52.233-3 PROTEST AFTER AWARD. (Aug 1996)
52.233-4 APPLICABLE LAW FOR BREACH OF CONTRACT CLAIM. (Oct 2004)
52.242-13 BANKRUPTCY (Jul 1995)
52.242-15 STOP-WORK ORDER (Aug 1989)
52.243-1 CHANGES—FIXED PRICE. ALTERNATE V (Aug 1987)
52.244-6 SUBCONTRACTS FOR COMMERCIAL PRODUCTS AND COMMERCIAL SERVICES (Jan 2025) (Deviation Feb 2025)
52.246-7 INSPECTION OF RESEARCH AND DEVELOPMENT—FIXED PRICE. (Aug 1996)
52.246-16 RESPONSIBILITY FOR SUPPLIES. (Apr 1984)
52.247-34 F.O.B. DESTINATION (Jan 1991)
52.249-1 TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (FIXED-PRICE) (SHORT FORM) (Apr 1984)

52.252-1 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE. (Feb 1998)
52.252-2 CLAUSES INCORPORATED BY REFERENCE. (Feb 1998)
52.253-1 COMPUTER GENERATED FORMS (Jan 1991)

NASA Provisions and Clauses
1852.203-71 REQUIREMENT TO INFORM EMPLOYEES OF WHISTLEBLOWER RIGHTS (Jul 2023)
1852.204-76 SECURITY REQUIREMENTS FOR UNCLASSIFIED INFORMATION TECHNOLOGY RESOURCES. (DEVIATION 21-01)
1852.211-70 PACKAGING, HANDLING, AND TRANSPORTATION CERTIFICATIONS—OTHER THAN COMMERCIAL ITEMS (Sep 2005)
1852.216-78 FIRM FIXED PRICE. (Dec 1988)
1852.219-80 LIMITATION ON SUBCONTRACTING – SBIR PHASE I PROGRAM. (Oct 2011)
1852.219-83 LIMITATION OF THE PRINCIPAL INVESTIGATOR – SBIR PROGRAM. (Oct 2006)
1852.219-85 CONDITIONS FOR FINAL PAYMENT – SBIR AND STTR CONTRACTS (Oct 2006)
1852.225-70 EXPORT LICENSES (Feb 2000)
1852.225-71 RESTRICTION ON FUNDING ACTIVITY WITH CHINA (Feb 2012)
1852.225-72 RESTRICTION ON FUNDING ACTIVITY WITH CHINA – REPRESENTATION. (DEVIATION 12-01A) (Feb 2012)
1852.215-81 PROPOSAL PAGE LIMITATIONS. (Apr 2015)
1852.223-75 MAJOR BREACH OF SAFETY OR SECURITY. (Feb 2002)
1852.227-11 PATENT RIGHTS – OWNERSHIP BY THE CONTRACTOR (Apr 2015)
1852.227-72 DESIGNATION OF NEW TECHNOLOGY REPRESENTATIVE AND PATENT REPRESENTATIVE. (Apr 2015)
1852.232-80 SUBMISSION OF VOUCHERS FOR PAYMENT. (Apr 2018)
1852.233-70 PROTESTS TO NASA. (Apr 2015)
1852.235-70 CENTER FOR AEROSPACE INFORMATION. (Dec 2006)
1852.235-71 KEY PERSONNEL AND FACILITIES (Mar 1989)
1852.235-73 FINAL SCIENTIFIC AND TECHNICAL REPORTS. ALTERNATE III (Dec 2006)
1852.235-74 ADDITIONAL REPORTS OF WORK - RESEARCH AND DEVELOPMENT. (Feb 2003)
1852.237-72 ACCESS TO SENSITIVE INFORMATION. (Jun 2005)
1852.237-73 RELEASE OF SENSITIVE INFORMATION. **(Jun 2005)**
1852.239-73 REVIEW OF THE OFFEROR'S INFROMATION TECHNOLOGY SYSTEMS SUPPLY CHAIN (DEVIATION 15-03D) (Jan 2020)
1852.239-74 INFORMATION TECHNOLOGY SYSTEM SUPPLY CHAIN RISK ASSESSMENT. (DEVIATION 15-03D) (Jan 2020)
1852.244-70 GEOGRAPHIC PARTICIPATION IN THE AEROSPACE PROGRAM (Apr 1985)
1852.246-72 MATERIAL INSPECTION AND RECEIVING REPORT. (Apr 1985)
PCD 21-02 FEDERAL ACQUISITION REGULATION (FAR) CLASS DEVIATION – PROTECTION OF DATA UNDER THE SMALL BUSINESS INNOVATIVE RESEARCH/SMALL TECHNOLOGY TRANSFER RESEARCH (SBIR/STTR) PROGRAM
PCD 21-04A CLASS DEVIATION FROM THE FEDERAL ACQUISITION REGULATION (FAR) AND NASA FAR SUPPLEMENT (NFS) REGARDING REQUIREMENTS FOR NONAVAILABILITY DETERMINATIONS UNDER THE BUY AMERICAN STATUTE

Additional Regulations
SOFTWARE DEVELOPMENT STANDARDS
HUMAN AND/OR ANIMAL SUBJECT
HOMELAND SECURITY PRESIDENTIAL DIRECTIVE 12 (HSPD-12)
RIGHTS IN DATA DEVELOPED UNDER SBIR FUNDING AGREEMENT
INVENTION REPORTING, ELECTION OF TITLE, PATENT APPLICATION FILING, AND PATENTS

SBA Certifications required for Phase II

(1) CERTIFICATIONS.
(2) PERFORMANCE OF WORK REQUIREMENTS.
(3) EMPLOYMENT OF THE PRINCIPAL INVESTIGATOR/PROJECT MANAGER.
(4) LOCATION OF THE WORK.
(5) NOVATED/SUCCESSOR IN INTERESTED/REVISED FUNDING AGREEMENTS.
(6) MAJORITY-OWNED BY MULTIPLE VCOCS, HEDGE FUNDS, OR PRIVATE EQUITY FIRMS [SBIR ONLY].
(7) AGENCY BENCHMARKS FOR PROGRESS TOWARDS COMMERCIALIZATION.
(8) LIFE CYCLE CERTIFICATIONS