National Aeronautics and Space Administration

2026 Request for White Papers: NASA SBIR Phase II Sequential Awards

1. Background

NASA is considering inviting companies to propose for Sequential Phase II awards with higher award values ranging between $2.5 Million to $4 Million through the Agency's Small Business Innovation Research (SBIR) program in 2027. These awards would facilitate rapid post Phase II development of technologies with the goal to infuse key technologies that reach specific milestones into specific NASA programs.

2. Purpose

Why is NASA requesting this information? The NASA SBIR program is performing a portfolio evaluation exercise with the aim of determining what NASA SBIR Phase II technologies show the promise of risk reduction for key programs and what firms are capable candidates for further investment through a potential Sequential Phase II award. NASA has a large SBIR Phase II portfolio to evaluate, and this exercise will help accomplish two objectives: 1. Highlight and map SBIR Phase II technologies to key programs with white papers providing additional context and details about opportunities for small business technology development. 2. Provide a participatory method for interested parties to communicate that they are engaged and ready to support a subset of NASA's priorities that may be appropriate for small business participation, as described in this call for white papers.

3. Disclaimer

NASA reserves the right to use the information received from these white papers in any way it chooses, including determinations to invite companies to propose for a Phase II Sequential award. A Phase II awardee may receive one additional, sequential Phase II award to continue the work of an initial Phase II award without additional competition. Responding to this call for white papers is not a prerequisite to participating in any post-Phase II program. This white paper can be used for programmatic planning to assess the state of small business capability and does not constitute a funding opportunity or a formal competition. Respondents should be advised that NASA takes no financial responsibility for any expenses incurred for responding to the white paper call.

Respondents should not expect to receive feedback or response to their submission. Future awards (if any) will be subject to and contingent upon the availability of funds. If proposal invitations do occur, NASA notionally anticipates reaching out to firms around January 2027.

4. Timeline and Method for Responses

NASA uses electronically supported business processes for the SBIR/Small Business Technology Transfer (STTR) programs. Respondents must have internet access and an email address. Hard copy paper submissions are not accepted.

For the submission of these white papers, NASA is using ProSAMS. ProSAMS requires firm registration for new users and login. To access ProSAMS, go to https://prosams.nasa.gov/https://prosams.nasa.gov/. For firms new to ProSAMS, NASA recommends that an authorized small business representative be the person to register the firm in ProSAMS and complete the system required firm level forms. They will be the only person allowed to edit the firm level forms. For successful submission of a complete white paper package, you must complete all required and applicable forms and upload the required documents per the submission requirements indicated in ProSAMS. The following firm-level forms are required to be completed once per respondent for all white paper packages submitted to a single request:

- Firm Certifications
- Audit Information
- Prior Awards Addendum
- Commercialization Metrics Survey (CMS)
- Disclosures of Foreign Affiliations or Relationships to Foreign Countries

Firm Certifications
Firm certifications that are applicable across white paper packages submitted to this request must be completed via the Firm Certifications section of ProSAMS. The respondent shall answer “Yes” or “No” as applicable***. The designated firm administrator, typically the first person to register your firm, is the only individual authorized to update the certifications.***

Audit Information
Although firms are not required to have an approved accounting system, knowledge that a firm has an approved accounting system facilitates NASA’s determination that rates are fair and reasonable. The Contracting Officer will advise respondents what is required to determine reasonable cost and/or rates in the event the Audit Information is not adequate to support the necessary determination of rates. The respondent shall complete the questions in the Audit Information form regarding the firm’s 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 shall also be completed. If your firm has 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 designated firm administrator, typically the first person to register your firm, is the only individual authorized to update the audit information.***

Prior Awards Addendum
If the respondent has 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 topic or subtopic title for each Phase II. If your firm has received any SBIR or STTR Phase II awards, even if it has received fewer than 15 in the last 5 years, it is still recommended that you complete this form for those Phase II awards your firm did receive. This information will be useful when completing the Commercialization Metrics Survey (CMS) and in tracking the overall success of the SBIR and STTR

programs. Any NASA Phase II awards your firm has received will be automatically populated in the electronic form, as are any Phase II awards previously entered by the SBC during prior submissions (you may update the information for these awards). ***The designated firm administrator, typically the first person to register your firm, is the only individual authorized to update the addendum information.***

Commercial Metrics Survey (CMS)
NASA has instituted a comprehensive commercialization survey/data gathering process for firms with prior NASA SBIR/STTR awards. If the SBC has received any Phase III awards resulting from work on any NASA SBIR or STTR awards, provide the related Phase I or Phase II contract number, name of Phase III awarding agency, date of award, Funding Agreement number, amount, project title, and period of performance. The survey will also ask for firm financial, sales, and ownership information, as well as any commercialization success the firm has had as a result of SBIR or STTR awards. This information will allow firms to demonstrate their ability to carry SBIR/STTR research through to achieve commercial success and allows agencies to track the overall commercialization success of their SBIR and STTR programs. The survey should be limited to the information requested above.

The CMS is a required part of the white paper package submissions process and must be completed via ProSAMS. ***Information received from SBIR/STTR awardees completing the survey is kept confidential and will not be made public except in broad aggregate, with no firm-specific attribution.***

Disclosures of Foreign Affiliation or Relationships to Foreign Countries
Each respondent is required to complete the Disclosures of Foreign Affiliations or Relationships to Foreign Countries form. The respondent shall answer “Yes” or “No” as applicable and provide the requested information related to each “yes” response. ***The designated firm administrator, typically the first person to register your firm, is the only individual authorized to update the disclosures.***

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 may result in the declination of your application during the administrative screening.

Deadline for White Paper Package Submission
<u>The submissions site will be available from August 12, 2026, to September 11, 2026, at 5:00 p.m. Eastern Time</u>

A complete white paper package shall be received no later than 5:00 p.m. ET on <u>September 11, 2026 via ProSAMS.</u> ProSAMS will no longer accept submissions after this deadline. For incomplete white paper packages, any remaining parts of the package cannot be uploaded or able to be completed. If a complete white paper package, containing all requested content per section 8 of this Request for White Papers, is not received by the 5:00 p.m. Eastern Time deadline, the white paper package will be determined to be incomplete and will not be assessed. Neither the NASA SBIR/STTR Technical Support Help Desk nor the NASA SBIR/STTR Program Management Office will be able to accept white paper packages after the 5:00 p.m. Eastern Time on <u>September 11, 2026</u>.

5. Eligibility

Firms are eligible to submit a white paper if they have a prior NASA SBIR Phase II award from Program Years 2014 to present as long as the prior Phase II contract has not already received a Sequential Phase II award, from any government agency including NASA.

Technical Need Areas (TNAs) indicate subtopics which the SBIR program has assessed as having content that may be applicable to these TNAs. However, firms with prior SBIR Phase IIs from NASA Program Years 2014 to present who have not yet received a Sequential Phase II award on that prior Phase II from any agency may submit a white paper in response to a TNA so long as they justify in the white paper how the continued development of their prior Phase II innovation meets stated goals within the Technical Need Area.

Prior Phase II awards must also be completed, including any option periods, by April 5, 2027. Completed awards are awards where contract period of performance has expired, and all deliverables have been accepted by the Government. The prior Phase II contract also must not have already received a Sequential Phase II award, from any government agency including NASA.

Firms must justify in the white paper how the continued development of their prior Phase II innovation meets stated goals within the TNA. Development efforts should largely continue from the end status and Technology Readiness Level (TRL) development status of the prior Phase II development and/or any continued efforts that happened since the end of the Phase II effort. The detailed effort should involve and justify the continued development of at least one of the primary technologies already developed during the prior applicable Phase II. While some re-development may be required for the specific application purposes called out in these Technical Need Areas, any significant new developments that differ from the prior Phase II technology or re-developments that impact the technology should be justified as pertinent to the original Phase II award and the TNA the white paper is being submitted under. Likewise, impacts to the starting TRL should be justified. White papers on technologies that are not adequately justified as relevant continuations of the prior cited Phase II or are not compliant may not be assessed or considered.

Additionally, only firms who continue to qualify as Small Business Concerns (SBCs), as defined here: SBIR/STTR Program Definitions, are eligible to submit white papers.

White paper submissions are limited to a **maximum of 2 (two) responses per TNA**.

These TNAs may have multiple vested programs and/or use cases. Within that TNA, white papers may justify the technology as applicable to as few or as many of those applicable programs or cases as is appropriate; however, each white paper may only pertain to one TNA.

These TNAs have been identified for this announcement due to their near-term NASA relevance. Topics/subtopics within the TNA were identified based on the technical applicability of the original solicitation subtopic to current needs, pertinence and timeliness to priority objectives and needs, evaluations against the current state of the art and available technologies, and cross program relevance. Note that the lack of inclusion of a given subtopic/program year and the technologies developed from that cycle does not reflect a NASA position on those technologies.

Note that while some topics/subtopics in given program years are identified for a TNA, the original scope of those topics/subtopics, and original awards therein, may have been more expansive than the current stated need. While a given prior award may be included within that topic/subtopic and program year, please review the need statement for that TNA to decide if you think that your technology is pertinent to this current development opportunity. White papers on technologies that are not applicable, or whose development path diverges from the stated need, will not be considered.

Developments must be directly related to and continue the prior Phase II work and must demonstrate relevance to both the applicable original solicitation subtopic and current cited NASA goals in this area. Note that any further development beyond the prior Phase II conducted (through various NASA SBIR program funding vehicles, other NASA mechanisms, or other development avenues), that may be completed or ongoing, should be discussed in establishing the current state of the technology leading into a potential future development effort. If there is ongoing work on the technology, detail the work, the anticipated completion timeframe, and any known risks/implications to a follow-on development resulting from the ongoing work.

6. Technical Need Areas

6.1 Technical Need Area 2026-1: 22N ASCENT Thruster Development

NASA is seeking to advance and implement technologies that enable Technology Readiness Level (TRL) advancement of the 22N (5-lbf) thruster scale for the domestic non-toxic thrusters. The thruster is capable of generating thrust by the catalytic decomposition or a reactor combustion (i.e. non-catalytic) scheme using a low toxicity propellant (specifically, Advanced Spacecraft Energetic Non-Toxic or ASCENT). The major components of the thruster include the flow control valve, catalyst bed for propellant decomposition and/or reaction chamber for propellant combustion, a nozzle, and thermal hardware for heating and measuring necessary components. The thruster valve is a normally closed valve that requires power to open the valve and then return to a closed position in the absence of power.

Use cases for this class of thruster include Evolved Expendable Launch Vehicle Secondary Payload Adapter (ESPA) or Grande-ESPA class spacecraft for the near term. Size, weight and power (SWaP) are key elements to consider for these thrusters as the catalyst heating may be limited due to the overall spacecraft power budget. Initially, the 22N class could be used for larger delta-velocity (delta-V) requirements while smaller existing thrust classes could be used for roll, pitch and yaw attitude control for some spacecraft applications. Eventually as the non-toxic thrusters grow in thrust class (>110N class) to be used for even larger delta-V applications, then 22N might be prevalently used as attitude control for those larger spacecraft applications. It is for this reason that the specification referenced prescribes the key requirements for both larger and shorter burn durations to satisfy both applications (delta-V and attitude control) for the 22N class.

While non-catalytic solutions could be offered, NASA is concerned on the ability of that particular combustion method being able to provide the minimum pulse widths identified in the specification. Therefore, NASA's preference is to seek a catalytic solution due to the longer duration burns as well as the shorter, multiple pulse trains that could be required for attitude control and/or fine maneuvering. Respondents could provide non-catalytic solutions but must address if they could meet the shorter pulse widths or describe the limitations with the specification based upon their design.

The effort must address catalyst life and thermal management approach for their design. Initial thermal and structural analyses should reveal that the design should survive hotfire test conditions without melting the valve or causing ASCENT to decompose upstream of the thruster. Consideration may be given to use of additive manufacturing a thermal standoff to obtain the mechanical stiffness/thermal conductivity balance. The challenge with lower thruster classes has been solving thermal issues while larger thruster classes (like the 22N) may impact the power demands for both catalyst bed heating and thermal ignition starts.

Initial demonstrations of an engineering development unit conducted at atmospheric test conditions will be acceptable for the purposes of this Phase IIS effort, but future performance testing would require vacuum chamber use to assess the relevant environment. Future (Phase III) SBIR awards may be possible and would include full qualification and potential buildup of flight thrusters as Government Furnished Equipment (GFE) for missions of NASA's choice. For the Phase IIS proposals, the respondent should provide a rough order of magnitude (ROM) cost and schedule based upon the specification requirements for future qualification of the 22N class.

In Summary:

- NASA is seeking TRL advancement of the 22N thruster scale using the ASCENT propellant.
- A catalytic solution is desired due to long duration burns as well as multiple pulse trains.
- Use cases include ESPA or Grande-ESPA class spacecraft for the near term.
- Key concerns and factors of consideration: effort must address catalyst life and thermal management approach for the design.
- Initial demonstrations of an engineering development unit conducted at atmospheric test conditions are acceptable.

Past Applicable SBIR Subtopics:

Year	Subtopic
2017	NASA S3.02, USAF AF151-066
2019	T2.03
2020	H10.01
2022	NASA S3
2023	Space Force SF222-D014
2024	USAF AF212-0011

References:

1. 22N Thruster Specification released on August 27, 2025, through a Request for Information. https://sam.gov/workspace/contract/opp/539409eac9b94fd681690a5ad1b0d05e/view

6.2 Technical Need Area 2026-2: Responsive Access to Deep Space for Agile Missions

NASA and industry have a critical need for vehicles, platforms, and technologies that enable responsive access to cislunar and deep space environments. These destinations include the lunar surface, lunar orbits, Earth-Moon Lagrange points (e.g., E-M L3), the Near Rectilinear Halo Orbit (NRHO), near-Earth objects, and Martian or Venusian space. The goal is to leverage the advantages of low-cost, rapidly produced small spacecraft by expanding their reach into these orbits. To achieve this, NASA seeks hosted platforms and vehicle systems that provide the necessary physical accommodations, power, data, and appropriate environmental control for technology and science payloads.

Reaching these deeper space destinations demands highly capable spacecraft systems. Currently, many deep space trajectories are unreachable through standard rideshare launches alone. Developing technologies such as Orbital Maneuvering Vehicles (OMVs) and small launch interplanetary transfer stages is highly capital intensive. The SBIR Phase II Sequential—providing up to $4 million over approximately two years—is uniquely suited to support this need area by providing the necessary capital entry point to mature these complex, high-capability systems toward commercial and mission readiness.

To support NASA's end goal for the establishment of responsive deep space access, proposed activities must target development leading to the production of a full vehicle/stage or fully integrated system. Proposals focused solely on single component-level technology development will not be considered.

Specific needs include one or more of the following:

- *Orbital Maneuvering Vehicles (OMVs) and Interplanetary Transfer Stages*: Systems designed to guide and propel small spacecraft or payloads to deep space and enable their insertion into target orbits within a responsive timeframe. OMVs should provide support services to expand payload mission utility, such as position, navigation, and timing (PNT) services and deep space communications relaying.
- *Modular Small Spacecraft Systems and Subsystems:* Interchangeable modules that can be combined to support various mission profiles, ensuring the fully integrated system achieves a low total SWaP-C (size, weight, power, and cost). This need includes basic bus platforms configurable to varying mission requirements without extensive engineering effort. Ideally, this "plug-and-play" capability facilitates batch production, additive manufacturability, and machine-learning optimized system design. Modular systems would ideally enable repeatable design, verification, and validation activities to achieve 1-year timelines from authority to proceed through launch.
- *Novel Small Spacecraft Form Factors*: Designs that enable new mission architecture or new cost-effective utilization of small spacecraft.

White papers should discuss the development of the proposed technology and its feasibility for deep space and cislunar applications. Detail the interface(s); identify requirements that would be imposed on payloads including mechanical, communications, power, and control needs. Describe the method(s) to deploy one or more payloads into target trajectories or orbits. Provide at least one design reference mission with associated performance metrics that demonstrate the responsiveness of the proposed technology.

OMV architectures and designs shall be compatible with U.S. small launch vehicles that are currently flying or will be launching imminently, as well as secondary launch opportunities/secondary payload adapters (e.g., ESPA). Define the transfer capability of the proposed system (i.e., from Low Earn Orbit (LEO) or Geostationary Transfer Orbit (GTO) to Low Lunar Orbit (LLO), NRHO, E-M L3, Mars transfer, etc.). NASA anticipates a need for small OMVs capable of imparting 2.5 to 5 km/s ΔV for payloads on cislunar missions, and >10 km/s ΔV for Heliophysics and deeper space applications.

To accelerate the transition of these technologies into operational capabilities, proposers are encouraged to design concepts that culminate in flight demonstration missions within the scope and timeline of the Sequential award. Executing an in-space flight demonstration during the award period is strongly desired to burn down risk, validate performance in the relevant environment, and prove the viability of the platform for deep space applications.

The development discussion should detail comprehensive testing and verification approaches, and how the effort addresses key technical risks that would need to be overcome to enable infusion and/or commercialization. Systems must be tolerant to deep space radiation and associated environments from launch through lunar/cislunar use. Finally, features or developments associated with ensuring production quality, short lead times, and the ability to reliably manufacture systems that can achieve consistent performance metrics across multiple units and volume production runs should be detailed.

Past Applicable SBIR Subtopics:

Year	Subtopic
2015	T1.01, S3.02, SB152-008 (DOD)
2016	T1.01, S3.02, AF162-009 (DOD), AF162-010 (DOD), H5.01, T11.02
2017	T1.01, S3.02, S3.04, Z8.01, Z8.02, Z8.04, Z9.01, SB173-006 (DOD)
2018	Z8.01, Z9.01, Z10.02
2019	Z8.01, Z9.01
2020	Z8.09, Z20.01
2021	Z8.02, Z8.09, Z8.11, Z8.12
2022	Z8.02, Z8.09, Z8.10, Z8.13
2023	Z8.02, Z8.09, Z8.13
2024	Z8.02, Z8.09, Z8.13
2025	Z8.02, Z8.09, Z8.13, Z-EXPAND.02, Z-EXPAND.03, Z-EXPAND.05

References:

1. State-of-the-Art of Small Spacecraft Technology: State-of-the-Art of Small Spacecraft Technology - NASA, S3VI
2. LunaNet Interoperability Specification: LunaNet Interoperability Specification - NASA

6.3 Technical Need Area 2026-3: Radiation-Hardened Power Components and Power Management and Distribution Tech for Surface Systems

NASA is seeking to advance radiation-hardened power components and power management and distribution technologies to support lunar surface applications to help address Civil Space Technology Priority Shortfalls, namely SF02 (Develop infrastructure and capabilities for assets to operate for extended duration in the lunar environment.) These technologies and their components may support a variety of missions with wide ranges in power level, transfer distance, and lifetime. Technologies that support high power applications are of particular interest.

NASA seeks radiation-hardened (rad-hard) power electronics technologies to enable reliable, long-duration robotic and human operations on the lunar surface. These systems will be central to powering habitats, mobility assets such as rovers, and in-situ resource utilization (ISRU) infrastructure. To meet mission demands, multiple interconnected component systems with exceptionally high reliability, durability, and environmental robustness will be required.

Proposed technologies must withstand the full range of lunar surface environmental hazards, including:

- High-energy particle events leading to Single-Event Effects (SEE) and Single-Event Burnout (SEB)
- Extreme thermal cycling across the lunar day/night cycle
- Persistent exposure to abrasive lunar regolith and dust

NASA is soliciting innovations that advance the state of practice in rad-hard power electronics and support the development of resilient Power Management and Distribution (PMAD) architectures suitable for long-duration missions.

Technologies responsive to this solicitation typically demonstrate characteristics such as:

- Robust, efficient, and highly reliable power conditioning, conversion, control, and PMAD technologies. Architectures may include modular or distributed power conversion units that can be combined to meet higher-power needs.
- Radiation shielding solutions that incorporate optimized materials selection, structural and thermal design approaches, and considerations for mass efficiency, manufacturability, and cost.
- Radiation-tolerant electronic components capable of maintaining performance under both induced radiation conditions (e.g., solar particle events, cosmic rays) and the steady ambient radiation environment of space.

NASA seeks proposals for advanced power distribution and management technologies to support sustained human and robotic operations on the lunar surface. Lunar surface systems may require power produced either locally at the point of use or remotely and transmitted over significant distances. To enable high-power (greater than 10 kW) and extended-reach distribution architectures, NASA is soliciting innovative solutions that substantially improve the performance, efficiency, and resilience of lunar power systems.

Technologies of interest include, but are not limited to:

- Low-mass, high-efficiency power electronic regulators
- Advanced switchgear and connector systems
- Wireless power and sensing components

- Power scavenging technologies
- Intelligent power management and distribution (PMAD) control systems

All proposed technologies must be capable of operating within extreme lunar environmental conditions, including the severe thermal swings of the lunar day/night cycle, pervasive abrasive dust/regolith, and space radiation. Solutions should demonstrate minimal performance degradation under these conditions and be suitable for long-duration missions.

Power management systems are expected to provide robust monitoring, regulation, health assessment, and control capabilities to ensure reliable power availability throughout all mission phases. NASA is particularly interested in state-of-the-art, durable electronics designed for maintainability in the lunar environment, as well as autonomous or semi-autonomous PMAD systems capable of self-diagnosis, troubleshooting, and fault correction which are critical for missions where communication delays and maintenance opportunities are limited.

Proposed advancements should address key program needs related to size, mass, efficiency, capacity, durability, and reliability of electrical power components and systems.

Technologies responsive to this solicitation typically exhibit the following attributes:

- Robust, reliable power conversion technologies and controllers
- High-power-density, high-efficiency power electronics and switching drivers
- Non-traditional or novel switching device approaches
- Lightweight, highly conductive cabling or structure-integrated cabling solutions
- Intelligent, fault-tolerant electrical components and PMAD architectures

Past Applicable SBIR Subtopics:

Year	Subtopic
2018	S3.03
2019	S3.03, S4.04
2020	Z1.05, Z1.06, Z8.03
2021	Z1.05, Z1.06
2022	Z1.05, Z1.06
2023	Z1.05
2025	T3.05, Z-ENABLE.01

References:

1. https://www.nasa.gov/spacetechpriorities/
2. https://ntrs.nasa.gov/api/citations/20230013199/downloads/Thomas_P_20230013199_GridStudy_2023ASCEND_LasVegas.pdf
3. https://ntrs.nasa.gov/api/citations/20230008947/downloads/20230008947-Osheroff-2023-NEPP-ETW-Presentation.pdf

7. Formatting Constraints:

Note: The government administratively screens all white papers and may not assess any response that does not conform to the following formatting requirements and page limitations.

Page Limitations and Margins

A white paper must not exceed a total of 10 standard 8 1/2 x 11-inch (21.6 x 27.9 cm) pages. White papers uploaded with more than 10 pages may not be accepted by the ProSAMS system or assessed. Each page should be numbered consecutively at the bottom. Margins should be 1.0 inch (2.5 cm). The space allocated to each part of the white paper will depend on the project chosen and the company's approach. The additional fields required for submission in the system will not count against the 10-page limit.

Type Size
Use 10 point or larger type size for text or tables, except as legends on reduced drawings. White papers prepared with smaller font sizes may not be assessed.

Header/Footer Requirements
For the header, include firm name, Phase II contract number, and white paper title. For the footer, include the page number and proprietary markings if applicable. Margins can be used for header/footer information.

Classified Information
NASA does not accept white papers that contain classified information.

Project Title
The white paper project title must be concise and descriptive of the proposed effort. The title should not use acronyms or words like "Development of" or "Study of." The research topic title or TNA title must not be used as the white paper title.

8. Requested Content of White Paper

This part of the submission must consist of all seven (7) parts listed below in the given order. All seven parts of the white paper must be numbered and titled. Parts that are not applicable must be included and marked "Not Applicable." The requested table of contents is provided below:

Part 1: Table of Contents - Page 1
Part 2: Identification and Significance of the Innovation and Results of the Phase II Contract
Part 3: Technical Objectives for the Sequential Phase II
Part 4: Work Plan
Part 5: Key Personnel
Part 6: Facilities/Equipment/Corporate Capabilities
Part 7: Related, Essentially Equivalent and Duplicate Proposals and Awards

8.1. Detailed White Paper Content Requirements

Part 1: Table of Contents

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

Part 2: Identification and Significance of the Proposed Innovation

Succinctly describe:

- The proposed innovation.
- The proposed innovation relative to the state of the art.
- Current development status, including any work beyond the initial Phase II.
- The relevance and significance of the proposed innovation to an interest, need or needs described in sections 5 and 6 (Eligibility and Technical Need Areas).
- The product-market fit, identifying specific NASA programs or missions and/or commercial services or capabilities as the intended market.

Please be advised that the evaluators may review the Phase II final technical report to verify accuracy of this summary. However, respondents should not rely on this and should include relevant high-level Phase II results in the white paper.

Part 3: Technical Objectives

Define the specific objectives of the Sequential Phase II research and technical approach. This section should be high-level.

Part 4: Work Plan

Include a high-level description of the Sequential Phase II Research/Research and Development (R/R&D) plan to meet the technical objectives and to align with the identified NASA program or mission and/or commercial services or capabilities. The work plan should indicate what will be done, where it will be done and how the R/R&D will be carried out. Discuss the methods planned to achieve each task or objective. High-level task descriptions and planned accomplishments including high-level project milestones shall be included. Milestones should include major tests and/or resulting points of TRL advancement within the overall development effort. Identify the estimated milestone payments and schedule (at a high level) and if these subset efforts can be accomplished in parallel or in sequence. Discuss the rationale for why these milestones have been chosen and how their completion enables the further infusion, commercialization, and/or the next appropriate ground or flight demonstration of this technology.

Period of performance can be determined by the firm based on the specific project, but 24 months can be used as a general guideline.

Please also mention any significant subcontracts or consultants and the approximate percentage of work they will be performing. Subcontractors are subject to the same limitations as in a regular Phase II project. 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 (G&A) costs) in comparison to the total effort (total contract price including cost sharing, if any, less profit if any)].

Part 5: Key Personnel/ Corporate Capabilities

Identify the Principal Investigator and any other critical participants and provide an abbreviated description of their experience and credentials. Please do not provide full curriculum vitae (CVs). Briefly describe the workforce plan to perform the proposed work and the company's overall resources and capability to manage larger ($2.5M-4M) contracts. Also include a description of any corporate or subcontractor/consultant flight hardware development experience.

Part 6: Facilities/Equipment

Briefly describe the necessary instrumentation and facilities to be used to perform the proposed work, Companies must ensure their resources are adequate and address any reliance on external sources, such as government furnished equipment or facilities.

Part 7: Related, Essentially Equivalent, and Duplicate Proposals and Awards

WARNING – While it is permissible with proposal notification to submit identical proposals or proposals containing a significant amount of essentially equivalent work for consideration under numerous federal program solicitations, it is unlawful to enter into funding agreements requiring essentially equivalent work.

This white paper submission is being used for informational purposes only, but in the case that NASA chooses to invite a full proposal based on the white paper, it would be beneficial to be aware of any potentially related, essentially, equivalent, or duplicate proposals/awards. Please list any such proposals/awards in this section, indicating:

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 topics for each proposal submitted for award received.
5. Titles of research projects.
6. Name and title of principal investigator or project manager for each proposal submitted or award received.

8.2. Additional Information and Uploads

Briefing Chart

A briefing chart is required to assist in the review of white papers. The following information fields will be included during the submissions process which will provide NASA with the information needed to generate a briefing chart:

- Technical Abstract
- Identification and Significance of Innovation
- Technical Objectives
- Proposed Deliverables
- NASA Applications
- Non-NASA Applications
- Graphic

Note: The briefing chart is public information and may be disclosed. Do not include proprietary information in this form.

Summary Budget

Please provide a high-level estimated total cost for each of the following elements in the template that has been provided in ProSAMS:

- Direct Labor
- Overhead
- General & Administrative (G&A)
- Profit
- Subcontractors/Consultants
- Materials
- Supplies
- Equipment
- Travel
- Other Direct Costs

The minimum budget that can be requested is $2.5 million, and the maximum is $4 million over the period of performance of the effort.

Additional Uploads

Additional uploads other than those requested (white paper, budget, graphic) will not be considered during the review of the white paper. Please do not upload letters of support.

9. Help and Support

For any questions regarding clarification of white papers instructions and any administrative matters, the Help Desk may be contacted by email at agency-sbir@mail.nasa.gov.

- Note: The requestor must provide the name and telephone number of the person to contact, the organization name and address, and the specific questions or requests.

Acronyms

Abbreviation	Meaning
G&A	General and Administrative

R/R&D	Research/Research and Development
CV	Curriculum Vitae
SWaP-C	Size, Weight, Power and Cost
Delta-V	Delta-velocity
ISRU	In-Situ Resource Utilization
LEO	Low Earth Orbit
GTO	Geostationary Transfer Orbit
LLO	Low Lunar Orbit
GFE	Government Furnished Equipment
OMVs	Orbital Maneuvering Vehicles
SEE	Single-Event Effects
SEB	Single-Event Burnout
PMAD	Power Management and Distribution
PNT	Position, Navigation, and Timing
ROM	Rough Order of Magnitude
NRHO	Near Rectilinear Halo Orbit
OH	Overhead
ESPA	Evolved Expendable Launch Vehicle Secondary Payload Adapter
CMS	Commercialization Metrics Survey
SBC	Small Business Concern
SBIR	Small Business Innovation Research
STTR	Small Business Technology Transfer
TRL	Technology Readiness Level
TNA	Technical Need Area