



**National Aeronautics and Space Administration
NASA Headquarters
Advanced Exploration Systems Division
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Washington, D.C. 20546-0001**

Next Space Technologies for Exploration Partnerships -2 (NextSTEP-2)

Broad Agency Announcement NNH16ZCQ001K

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Refer To Appendices for Proposal Due Dates

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NextSTEP-2 Change Log

Version	Description of Changes	Date
Original Release	-----	Apr 19, 2016
Amendment 1	Section numbering starting with Section 2.1 was corrected to Fix a formatting error.	Apr 22, 2016
Amendment 2	Replaced announcement number “NNHZCQ001K” with correct announcement number “NNH16ZCQ001K. Section 5.2 - Changed the labels for assessment levels from “(Excellent, Very Good, Good, Poor)” to “(Very Good, Good, Satisfactory, Poor)”. This change does not impact the evaluation process.	Jun 3, 2016
Amendment 3	Extended Effective Date of Omnibus BAA from December 31, 2017 to December 31, 2018. Added Appendix B, In-Space Manufacturing Fabrication Laboratory	May 3, 2017
Amendment 4	Added Appendix C, Power and Propulsion Element (PPE) Studies	Aug 11, 2017
Amendment 5	Added Appendix D, In Situ Resource Utilization (ISRU) Technology	Dec 4, 2017
Amendment 6	Added Appendix F, Logistics Reduction (LR) in Space by Trash Compaction and Processing System (TCPS) Extended Effective Date of Omnibus BAA from December 31, 2018 to December 31, 2020	Jul 3, 2018
Amendment 7	Added Appendix G, Space Relay Partnership and Services Study	Sep 18, 2018
Amendment 8	Updated certified cost/price threshold from \$750K to \$2M Added Appendix E, Human Landing System Studies, Risk Reduction, Development, and Demonstration Removed proposal file size limit Corrected NextSTEP solicitation numbers in Appendix cover pages Clarified period of performance description	Feb 7, 2019
Amendment 9	Added Appendix I, Commercial Destination Development in Low Earth Orbit using the International Space Station Minor edits for format consistency and hyperlink updates	Jun 21, 2019
Amendment 10	Added Appendix J, Opportunities to Stimulate Demand in Low Low Earth Orbit through Applied Research Minor edits for format consistency	July 3, 2019

Amendment 11	Added Appendix H Draft RFP, Human Landing System Integrated Lander	July 19, 2019
Amendment 12	Updated Appendix H Draft RFP, Human Landing System	August 30, 2019
Amendment 13	Appendix H RFP, Human Landing System	September 30, 2019
Amendment 14a	Appendix K DRAFT, Commercial Destination Development in Low Earth Orbit (LEO) Free Flyer	October 3, 2019
Amendment 14b	Updated Appendix H RFP, Human Landing System	October 25, 2019
Amendment 15	Revisions to Section 3.2 Guidelines for International Participation Extended effectivity through December 31, 2021	October 8, 2020
Amendment 16	Appendix N: Sustainable Human Landing System Studies and Risk Reduction Updated Section 7 Points of Contact Updated links in Section 8	July 1, 2021
Amendment 17	Appendix N: Sustainable Human Landing System Studies and Risk Reduction Amendment 1 Revised Section 5.7 Points of Contact	July 20, 2021
Amendment 18	Appendix N: Sustainable Human Landing System Studies and Risk Reduction Amendment 2	July 22, 2021
Amendment 19	Extended Effective Date of Omnibus BAA from December 31, 2021 to December 31, 2022	November 15, 2021

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Next Space Technologies for Exploration Partnerships-2

Scope of this Solicitation

This National Aeronautics and Space Administration (NASA) Broad Agency Announcement (BAA), titled Next Space Technologies for Exploration Partnerships -2 (NextSTEP-2), solicits concept studies, basic and applied research and technology development and demonstrations in support of NASA's Advanced Exploration Systems Division (AES) within the Human Exploration and Operations Mission Directorate (HEOMD). NextSTEP-2 is an omnibus covering all aspects of basic and applied supporting research and technology for Human Space Exploration and robotic precursor activities. Research areas will be announced by issuing Appendices to this BAA, to include, but not limited to: studies to support mission architecture definition, new approaches to rapidly develop prototype systems, demonstration of key capabilities, validation of operational concepts for future human missions beyond low-Earth orbit, and end-to-end design, development, test, and in-space evaluation of future flight systems. The intent is that awards resulting from this BAA will enable public-private partnerships for robust exploration and implementation of opportunities managed by AES. The BAA anticipates that the capabilities and technologies developed through these partnerships also will provide significant commercial applications beyond NASA. In order to ensure the offerors have the incentive to develop commercial applications, NASA may require offerors provide corporate contributions. The long-term capability areas identified for research are intended to significantly benefit future human space exploration.

Specific Research Opportunities will be announced periodically as Appendices to this Omnibus BAA. Each appendix will contain detailed information about specific research emphases, concepts and technologies being sought, and solicitation logistics for that appendix. The appendices will have the funding and the specifics with regard to proposal instructions, eligibility, selection criteria and award decisions where they may differ from the content of this omnibus. Proposal due dates will be posted at <http://www.nasa.gov/nextstep> and the links provided below. Interested applicants should monitor <http://www.nasa.gov/nextstep>, <http://www.fbo.gov>, and <http://www.grants.gov/> (where applicable) for additional new program elements or amendments to this BAA through December 2022. A web archive for amendments, clarifications, and corrections to NextSTEP can be found at <http://nasa.gov/nextstep>. Proposals in research areas not requested in the solicitation appendix will be deemed non-compliant and will not be reviewed.

It is anticipated awards will range from under \$100K per year for focused, limited efforts (e.g. concept studies) to more than several million per year for extensive activities (e.g., development of engineering prototypes, flight experiment hardware and flight experiments). The funds available for awards will be listed in the Appendices. Awards will be made as grants, cooperative agreements, or contracts depending on the nature of the work proposed, the proposing organization, and/or program requirements. When appropriate, the Appendix will specify the type of vehicle contemplated for award and the anticipated period of performance. The period of performance typically varies from a few months up to five years, however some opportunities may extend beyond five years.

The Appendices will specify what types of organizations are allowed to submit proposals and/or participate for the particular program element research activity. Note: It is NASA policy that all investigations involving non-U.S. organizations will be conducted on the basis of no exchange of funds. Unless otherwise stated the rules in the Guidebook for Proposers Responding to a NASA Funding Announcement (hereafter referred to as the NASA Guidebook for Proposers) are the default, but NextSTEP-2 takes precedent where there are differences. Any changes or modifications to any of the guidelines in this Summary of Solicitation will be specified in the descriptions of the relevant program elements in the Appendices of this solicitation.

Order of Precedence: The Guidebook vs. NextSTEP-2 vs. Program Elements: Of course, statutes and regulations always apply and take precedence over any solicitation or guidance. There may be cases when the instructions in more than one of these documents are contradictory. In cases of contradictions between texts, individual Program Elements take precedence over this Summary of Solicitation, and this Summary of Solicitation takes precedence over the Guidebook.

Additional information or programmatic changes that may affect this omnibus BAA solicitation or any of its Appendices will be added as a formal amendment to this omnibus solicitation and posted on the solicitation's webpage at <http://www.nasa.gov/nextstep>, <http://www.fbo.gov> and <http://www.grants.gov/> (where applicable). It is each prospective applicant's responsibility to check the webpage for updates concerning the solicitation and the programs of interest. In addition, applicants should monitor the questions and answer log document posted on the NextSTEP webpage. The Q&A log will be updated periodically with questions and answers posed by potential offerors.

1. Introduction and Background

1.1 Overview

NASA has increasingly embraced public-private partnerships for achieving its strategic goals and objectives for expanding the frontiers of knowledge, capabilities, and opportunities in space. The next step for human spaceflight is the development of deep space exploration capabilities and demonstrating these capabilities in cislunar space. An important part of NASA's strategy is to stimulate the commercial space industry while leveraging those same commercial capabilities through future contracts and public-private partnerships to deliver mission capabilities. The initial Next Space Technologies for Exploration Partnerships (NextSTEP) Broad Agency Announcement (BAA) was released in 2014 with selections made in 2015. This effort, NextSTEP-2, will solicit additional proposals to continue NASA's development of space exploration technologies, capabilities, and concepts.

NASA's activities in enabling the pioneering of space are being driven by a set of guiding principles:

- **FISCAL REALISM:** Implementable in the near-term with the buying power of current budgets and in the longer term with budgets commensurate with economic growth;
- **SCIENTIFIC EXPLORATION:** Exploration enables science and science enables exploration; leveraging scientific expertise for human exploration of the solar system.
- **TECHNOLOGY PULL AND PUSH:** Application of high Technology Readiness Level (TRL) technologies for near term missions, while focusing sustained investments on technologies and capabilities to address the challenges of future missions;
- **GRADUAL BUILD UP OF CAPABILITY:** Near-term mission opportunities with a defined cadence of compelling and integrated human and robotic missions, providing for an incremental buildup of capabilities for more complex missions over time;
- **ECONOMIC OPPORTUNITY:** Opportunities for U.S. commercial business to further enhance their experience and business base.
- **ARCHITECTURE OPENNESS AND RESILIENCE:** Resilient architecture featuring multi-use, evolvable space infrastructure, minimizing unique developments, with each mission leaving something behind to support subsequent missions;
- **GLOBAL COLLABORATION AND LEADERSHIP:** Substantial new international and commercial partnerships, leveraging current International Space Station partnerships and building new cooperative ventures for exploration; and
- **CONTINUITY OF HUMAN SPACEFLIGHT:** Uninterrupted expansion of human presence into the solar system by establishing a regular cadence of crewed missions to cislunar space during ISS lifetime.

1.2 General Information for Participants

- **Agency:** National Aeronautics and Space Administration
- **Announcement Title:** NextSTEP Broad Agency Announcement -2
- **Responsible Office:** Advanced Exploration Systems Division
Human Exploration and Operations Mission Directorate NASA Headquarters
Washington, DC 20546

- **Point of Contact:** Director, Advanced Exploration Systems
Human Exploration and Operations Mission Directorate NASA Headquarters
E-mail: HQ-NextSTEP-BAA@mail.nasa.gov
- **Notice of Intent:** To assist in the planning of the proposal evaluation process, NASA strongly encourages the submission of a Notice of Intent (NOI) to propose by all prospective offerors. Due dates for the NOI will be specified in the element appendix. The NOI should contain the following information: name, address, telephone number, e-mail address, and institutional affiliation of the offeror, and the solicitation topic in which you intend to propose. NOIs shall be submitted electronically to the Point of Contact e-mail address below. Please note that NOIs are strongly encouraged, but are not required. Not submitting an NOI will not impact the selection process.
- **Proposal Submittals:** Proposals shall be submitted electronically in Adobe pdf format to the Point of Contact e-mail address below. Hard copies will not be accepted.
- **Inquiries:** There will be an opportunity to submit written questions for each appendix released. The questions shall not contain proprietary information nor require proprietary information in the response. NASA will not provide evaluations, opinions, or recommendations regarding any suggested approaches or concepts. All questions shall be directed to the NextSTEP e-mail box HQ- NextSTEP-BAA@mail.nasa.gov no later than the date specified in the appendix. Inquiries shall identify the BAA number and Appendix in the subject field of e-mails.
- **Industry Forum:** A NextSTEP Partnership virtual opportunity forum will be held electronically for each appendix released and proposers will have a chance to ask questions about that particular solicitation. The meeting agenda and related information will be posted to the NextSTEP website.
- **Web Site for Reference Information:** <http://www.nasa.gov/nextstep>

This solicitation constitutes a BAA as contemplated by Federal Acquisition Regulation (FAR) Part 35 and NASA FAR Supplement (NFS) Part 1835 and 1852.235-72.

NASA will not issue paper copies of this Announcement. The Announcement and associated Appendices related documents, and other information may be obtained and downloaded from <http://www.fbo.gov>, the NextSTEP Web site, and <http://www.grants.gov/> (where applicable). Reference information also may be found on <http://www.nasa.gov/nextstep>. Proposers are encouraged to refer regularly to this site for updates and other information. Responses to submitted questions concerning the Announcement will be posted periodically on this Web site.

2. Funding Opportunity Description

2.1 Advanced Exploration Systems Research Elements

The AES activities are organized into six major domains to facilitate management of related activities: Crew Mobility Systems, Habitation Systems, Vehicle Systems, Foundational Systems, Robotic Precursor Activities, and Strategic Operations, Integration, and Studies. AES activities focus on human spaceflight architecture analysis, human space flight systems for deep space and robotic precursor missions to identify and fill in knowledge gaps related to potential destinations in advance of flight missions. Major areas of work include systems development for more reliable life support; deep space habitation technology; advanced in-space propulsion; advanced space suit sub-system technology; landing capabilities; in situ resource prospecting and processing; and overall capabilities to reduce logistics requirements to support future human spaceflight missions.

Within this framework, AES is pursuing public-private partnerships to develop beyond Earth orbit habitation systems, life support systems, advanced electric propulsion systems, small satellites, commercial lunar landers, and in-situ

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resource utilization (ISRU) measurements and systems. These efforts will enable human space flight to become increasingly Earth independent and capable of expanding into the solar system. Through this pioneering work, we seek the capacity to learn, operate, and thrive safely in space for an extended, and eventually indefinite, period with a reduced supply chain from Earth.

The six functional domains from which research elements will derive are as follows:

1. **Crew Mobility Systems.** The Crew Mobility Systems domain encompasses capabilities that enable the crew to conduct “hands-on” exploration and in-space operations. EVA and space suit sub-system technology advancements will lead to next generation space suits and portable life support systems in the future that are significant advancements beyond the current capabilities used today.
2. **Habitat Systems.** The focus of the Habitat Systems domain is enabling the crew to live and work safely in deep space. Activities include the expandable habitat demonstration - BEAM, NextSTEP deep space habitation development efforts, reliable life support systems, fire safety, logistics reduction, and radiation measurements and protection. These investments will progressively move from habitation sub-systems to integrated systems and then transition to definition, design, and development of habitation capabilities and systems for use in conjunction with Orion and SLS on Exploration Missions in the Proving Ground.
3. **Vehicle Systems.** Within the Vehicle Systems domain are efforts to develop technologies needed for advanced in-space propulsion stages and small robotic landers. Activities which will benefit future robotic and human missions by improving autonomous precision landing on planetary surfaces, as well as potential new propellants and/or propulsion systems. NASA shares these landing capabilities through public-private partnerships with industry under the Lunar CATALYST initiative. In addition, the Ascent Abort-2 flight test is under this domain. Other ongoing initiatives include work on advanced propulsion under the NextSTEP BAA awards and modular power for multiple exploration vehicles and systems such as fuel cells.
4. **Foundational Systems.** The Foundational Systems domain focuses on systems to enable more efficient mission and ground operations, and those that allow for more Earth independence, including autonomous mission operations, avionics and software, in-situ resource utilization, in- space manufacturing, synthetic biology, and communications and networking technologies.
5. **Robotic Precursor Activities.** Robotic Precursor Activities focus on developing robotic missions and instruments to provide data and information for analyzing the feasibility of potential destinations for human missions. Current activities include the internal and public-private partnership EM-1 secondary missions and instruments planned for the Mars 2020 rover mission.
6. **Strategic Operations, Integration, and Studies.** Responsible for the management oversight of the HEO architecture and strategic planning, including mission and systems analysis and international coordination. Conduct studies and analyses to translate strategy into developmental (technology and capability) priorities and operational efficiencies.

2.2 Research Emphases of this Omnibus Solicitation

In pursuit of NASA’s strategic goal to send human missions beyond low Earth orbit and ultimately to the surface of Mars, this omnibus BAA solicits concepts and technologies to demonstrate key capabilities on ISS, in the proving ground of cislunar space, and Mars.

2.3 NASA Safety Policy

Safety is NASA’s highest priority. Safety is the freedom from those conditions that can cause death, injury, occupational illness, damage to or loss of equipment or property, or damage to the environment. NASA’s safety priority is to protect: (1) the public, (2) pilots, (3) the NASA workforce (including employees working under NASA instruments), and (4) high-value equipment and property. All research conducted under NASA auspices shall conform to this policy.

2.4 Availability of Funds for Award

There is no funding associated with this omnibus solicitation. All funding will be associated with each particular appendix. The Government’s ability to make awards is contingent upon the availability of appropriated funds and the receipt of proposals that NASA determines are acceptable for award under this solicitation.

2.5 Additional Funding Restrictions

In addition to the funding restrictions and requirements given in the NASA Guidebook for Proposers, 200, 2 C.F.R. 1800, 14 C.F.R. 1274 and the NASA Grant and Cooperative Agreement Manual (GCAM), the following restrictions are applicable to this solicitation:

- The estimated funding and number of proposals anticipated to be funded are subject to the availability of appropriated funds, as well as the submission of a sufficient number of proposals of adequate merit.
- It is not anticipated that this solicitation will require the construction of facilities (i.e., buildings, structures, or other real property). However, if new or modified facilities are required to further the technology, the applicants shall clearly state the rationale. For further information on allowable costs, refer to the cost principles cited 2 C.F.R. 200 Subpart E – COST PRINCIPLES.
- U.S. award recipients may directly purchase supplies and/or services that do not constitute research from non-U.S. sources, but award funds may not be used to fund research carried out by non-U.S. organizations. However, subject to export control restrictions, a foreign national may receive remuneration through a NASA award for the conduct of research while employed either full or part time by a U.S. organization (see Section 1.6 of the NASA Guidebook for Proposers).
- Typically travel, including foreign travel, is allowed as may be necessary for the meaningful completion of the proposed investigation, as well as for publicizing its results at appropriate professional meetings.
- Profit for commercial firms is not allowable under grant or cooperative agreement awards. Recovery of costs only (no profit) for commercial organizations is allowed under grant awards. Costs for managing the project may be allowed. These costs, whether direct charges or part of the indirect cost agreement, must be consistent with 2 CFR 200 Subpart E.

Personnel from NASA Centers shall propose budgets based on Full Cost Accounting (FCA) regardless of whether functioning as a Principal Investigator or as a team member. Non-NASA U.S. Government organizations shall propose based on FCA unless no such standards are in effect; in that case such applicants shall follow the Managerial Cost Accounting Standards for the Federal Government as recommended by the Federal Accounting Standards Advisory Board. For further information, see <http://www.hq.nasa.gov/fullcost/>.

If not specified in an appendix, the NASA Awards Officer will determine the appropriate award instrument for the selections resulting from this solicitation. Grants and cooperative agreements will be subject to the policies and provisions identified in the regulations at 2 C.F.R. 200 and 1800, 14 C.F.R. 1274, NASA GCAM, and Appendix D of the NASA Guidebook for Proposers located at <http://www.hq.nasa.gov/office/procurement/nraguidebook/>. In the case of any conflict, the regulations at 2 C.F.R. 200 and 1800 and the GCAM take precedence over the NASA Guidebook for Proposers. Contract awards will be subject to the provisions of the Federal Acquisition Regulations (FAR; <http://www.acquisition.gov/far/>) and the NASA FAR Supplement (NFS; <https://www.hq.nasa.gov/office/procurement/regs/NFS.pdf>).

2.6 Access to Research Results/Data Management Plan

In keeping with the “NASA Plan for Increasing Access to Results of Federally Funded Research” (located at http://www.nasa.gov/sites/default/files/files/NASA_Data_Plan.pdf), new provisions/terms and conditions about making manuscripts and data publically accessible may be attached to awards that derive from this BAA. Proposals to NextSTEP-2 may be required to provide a data management plan (DMP) or an explanation of why one is not necessary given the nature of the work proposed. The specific research opportunity will provide additional information. As applicable, each proposal must include a DMP that describes how data generated by proposed research will be shared and preserved and how data collected will be made available to the public. If a DMP is required, the offeror must justify any exceptions to making data publicly available, explaining why data-sharing and/or preservation is not possible or scientifically appropriate. Additionally, the DMP must describe how data sharing and preservation will enable validation of results, or how results could be validated if data are not shared or preserved. DMPs must provide a plan for making all research data underlying results and findings in publications digitally accessible at the time of publication. NASA will review DMPs during the evaluation/peer review of your proposal. Costs of the DMP should be included in the proposed budget.

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NASA anticipates that, starting in 2016, award recipients will be required to archive all as-accepted manuscript versions of publications that result from NASA contract and financial assistance awards in the National Institutes of Health PubMed Central full-text archive located at <http://www.ncbi.nlm.nih.gov/pmc/>. This requirement will not go into effect until it is included in the provisions/terms and conditions of the awards. Details and instructions for archiving manuscripts will be fully described in future procurement/grant information circulars, Frequently Asked Questions (FAQs) and other official Agency announcements and training materials.

2.7 Intellectual Property Developed Under an Award

As noted, the objective of an award made under this BAA is to provide recipients with the incentive to develop commercial applications of technologies developed through the partnership. The intent is that awards resulting from this BAA will enable public-private partnerships for robust exploration and implementation of opportunities managed by AES. The BAA anticipates that the capabilities and technologies developed through these partnerships also will provide significant commercial applications beyond NASA. In order to ensure the offerors have the incentive to develop commercial applications, NASA may require offerors to provide corporate contributions.

2.7.1 Data Rights

Normally, the government has unlimited rights in technical data created by a contractor under a NASA contract. In some situations, recipients may protect qualifying limited rights data and restricted computer software, which has been developed at private expense, by withholding the data from the Government and instead delivering form, fit, and function data. However, even when delivery of limited rights data or restricted computer software is required to satisfy NASA's own needs, the government is under legal obligation to only use such data for prescribed purposes associated with the contract and to refrain from disclosing the data to unauthorized parties.

2.7.2 Patent Rights

The government will have certain statutory rights in an invention that is conceived or first actually reduced to practice under a NASA award. 51 U.S.C. 20135 (awards to large entities) provides that title to such inventions vests in the United States, except where 35 U.S.C. 202 provides otherwise for nonprofit organizations or small business firms.

Where 51 U.S.C. 20135 applies i.e., under an award with a large entity, a recipient may request a waiver to obtain title to inventions made under the award in accordance with 51 U.S.C. 20135(g) and 14 C.F.R. 1245 Subpart 1. Such a request may be made in advance of the award or within 30 days thereafter. Even if a waiver request is not made, or denied, a large business recipient may request a waiver on individual inventions made during the course of the award.

NASA normally grants requests for waiver unless the interests of the United States are better served by restricting or eliminating all or part of the rights of a contractor as set forth in 14 CFR 1245.104(b). Among the most important goals are providing incentives to foster inventiveness and encouraging the reporting of inventions. As noted previously, corporate contributions are encouraged.

For joint inventions, NASA will typically agree, pursuant to a Joint Ownership Agreement, to refrain from exercising its undivided interest in a manner inconsistent with a recipient's commercial interest.

For all recipients, the patent rights provision in a resulting award will require the disclosure to NASA of all subject inventions made under the contract. NASA/AES considers the reporting of inventions an important metric that will be used to measure whether new technologies are being developed. Reporting of inventions also protects a recipient's ownership to such inventions since NASA has the right to obtain title in unreported inventions.

3. Eligibility Information

3.1 Eligibility of Applicants

Participation in this program is open to all categories of U.S. and non-U.S. organizations, including educational institutions, industry, nonprofit organizations, NASA Centers and other Government agencies. Principal Investigators

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(PIs) may collaborate with investigators from universities, Federal Government laboratories, the private sector, state and local government laboratories, and other countries. Note: Specific appendices may limit the eligibility of applicants. It is NASA policy that research with foreign organizations will be accomplished on a no-exchange-of-funds basis. For further information, please see Section 3.2 for Guidelines for International Participation. For grants and cooperative agreements, NASA policy on research with foreign organizations is covered in 2 C.F.R. 1800.3. Exceptions or amendments to the eligible participants and partnerships for each solicitation topic are specified in the appendices to this omnibus announcement.

3.2 Guidelines for International Participation

3.2.1 Guidelines for International Team Members on U.S. Proposals

U.S. proposals may include international team members, subcontractors, or suppliers if proposed in accordance with the restrictions specified herein. International collaborations that demonstrate clear scientific benefits or cost savings are particularly encouraged. While Co-Investigators or collaborators employed by non-U.S. organizations may be identified as part of a proposal submitted by a U.S. organization, NASA funding through this BAA may not be used to support research and development efforts by non-U.S. organizations at any level. However, the direct purchase of supplies and/or services that do not constitute research from non-U.S. sources by U.S. award recipients is permitted. Furthermore, Principal Investigators and other team members, including graduate students, who are not U.S. citizens but are employed by or studying at a U.S. organization, may receive funding to support their research activities through this BAA.

3.2.2 Guidelines for International Proposals

NASA will consider, consistent with U.S. Government laws, policies and regulations, proposals from outside the U.S. However, foreign entities are not eligible for funding from NASA. Therefore, unless otherwise noted in the BAA, proposals from foreign entities should not include a cost plan unless the proposal involves collaboration with a U.S. institution, in which case a cost plan for only the participation of the U.S. entity must be included. Proposals from foreign entities and proposals from U.S. entities that include foreign participation must be endorsed by the respective government agency or funding/sponsoring institution in the country from which the foreign entity is proposing. NASA shall give careful consideration to proposals from foreign entities with such endorsements. If the proposal is selected, sufficient funds will be made available to the foreign entity by his/her country's government agency or funding/sponsoring institution to undertake the activity as proposed.

All foreign proposals must be typewritten in English and comply with all other submission requirements stated in the BAA. All foreign proposals will undergo the same NASA evaluation and selection process as those originating in the U.S. All proposals must be received before the established closing date. Those proposals received after the closing date will be treated in accordance with the NASA Guidebook for Proposers. Sponsoring foreign government agencies or funding institutions may, in exceptional situations, forward a proposal without endorsement if endorsement is not possible before the announced closing date. In such cases, the NASA sponsoring office should be advised when a decision on endorsement can be expected. Foreign entities that have submitted proposals, whether they have been selected or not, will be contacted directly by the NASA sponsoring office. Copies of these letters will be sent to the foreign sponsor.

Should a foreign proposal or a U.S. proposal with foreign participation be selected, and if otherwise necessary, NASA's Office of International and Interagency Relations will follow the procedures specified at NASA FAR Supplement 1835.016-70(b).

NASA's policy is to conduct research with non-U.S. entities on a no-exchange-of-funds basis. For further reference, please see NASA Policy Directive 1360.2B Initiation and Development of International Cooperation in Space and Aeronautics Programs (Revalidated w/Change 2), at the following address:
https://nodis3.gsfc.nasa.gov/npg_img/N_PD_1360_002B_/N_PD_1360_002B__main.pdf

3.2.3 Export Control Guidelines Applicable to Proposals Including Foreign Participation

Performance of activities under this BAA may require access to data that is subject to export control regulations. Any entity proposing for a contract under this BAA in order to be considered for award shall

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comply with all U.S. export control laws and regulations, including the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120 through 130, and the Export Administration Regulations (EAR), 15 CFR Parts 730 through 799, and must demonstrate their compliance and process in the performance of this contract.

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 contract 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 further information on ITAR visit: http://www.pmdotc.state.gov/regulations_laws/itar.html

For further information on EAR visit <https://www.bis.doc.gov/index.php/regulations/export-administration-regulations-ear>

3.2.4 Assurance of Compliance – China Funding Restriction

Proposals must not include bilateral participation, collaboration, or coordination with China or any Chinese-owned company or entity, whether funded or performed under a no-exchange-of funds arrangement. For grants and cooperative agreements—as stated in 2 CFR 1800 Appendix A, NASA requires Certifications, Assurances, and Representations, including Certifications and Assurances to implement restrictions in Appropriation Acts, which are applicable to all awards. By submission of a proposal, proposers are certifying that the proposing organization has read and is in compliance with all the Certifications, Assurances, and Representations, including that proposals must not include bilateral participation, collaboration, or coordination with China or any Chinese-owned company or entity, whether funded or performed under a no-exchange-of funds arrangement.

For all proposals, the following applies—an Assurance of Compliance with restrictions:

- (1) NASA is restricted from using funds appropriated in the Acts to enter into or fund any grant or cooperative agreement of any kind to participate, collaborate, or coordinate bilaterally with China or any Chinese-owned company, at the prime recipient level and at all sub-recipient levels, whether the bilateral involvement is funded or performed under a no exchange of funds arrangement.
- (2) Definition: “China or Chinese-owned Company” means the People’s Republic of China, any company owned by the People’s Republic of China, or any company incorporated under the laws of the People’s Republic of China.
- (3) The restrictions in the Acts do not apply to commercial items of supply needed to perform a grant or cooperative agreement.
- (4) By submission of its proposal, the applicant represents that the applicant is not China or a Chinese-owned company, and that the applicant will not participate, collaborate, or coordinate bilaterally with China or any Chinese-owned company, at the prime recipient level or at any sub- recipient level, whether the bilateral involvement is funded or performed under a no-exchange of funds arrangement.

Active Procurement Information Circulars (PICs) 12-01A instructs Contracting Officers to add certification NFS 1852.225-72 entitled “Restriction on Funding Activity with China – Representation” as well as NFS clause 1852.225-71 entitled “Restriction on Funding Activity with China” in all contract awards.

3.2.5 Corporate Resources (Contracts)

For most research efforts, offerors will be required to show a specified amount of corporate contribution, made within the last five years, that is directly relevant to the proposed overall effort. Having the required corporate contribution is an eligibility requirement for award. The level of corporate contribution may vary and will be specified in the appendix. The overall effort is defined as the combination of corporate contribution and government resources required for the proposed effort. Corporate contributions are expected to be in the form of direct labor, travel, consumables or other direct in-kind contributions. Also, other reasonable forms of corporate contribution may include investments in special facilities or equipment, tooling or other prior private investment, including Independent Research and Development (IRAD). In most cases, NASA expects proposals will have a mix of in-kind contributions to the proposed effort as opposed to claiming all corporate contributions based on prior investments.

Offerors shall describe how they intend to meet this eligibility requirement level in the proposal. An appendix to the proposal shall provide documentation showing proof of corporate contribution. An example of how to provide verifiable corporate contributions would be a table containing a synopsis of each IRAD activity, relevance to the proposal, corporate dollar investment and/or fraction of the relevant portion for that activity to the proposal, database or project reference identifier (for example the Defense Technical Information Center (DTIC) IR&D database source codes). For equipment or facility use, corporate contribution should be based on "Fair Market Value" (e.g. equivalent equipment or facility rental/lease rates for the period of use) with the contributions for the space or equipment limited to that necessary for the proposed effort.

For this BAA, state and local government contributions may be included with private corporate resources.

The value of participation by federally funded government funded participants and/or the use of federal government facilities shall be added to the price to the government for determining whether the required level corporate contribution for that research element has been met.

Criteria and procedures for the allowability and allocability of cash and non-cash contributions shall be governed by FAR Parts 30 and 31, and NFS Parts 1830 and 1831 NASA reserves the right to hold due diligence discussions to make reasonable determinations regarding corporate contributions.

3.2.6 Cost Sharing or Matching (Grants and Cooperative Agreements)

For an institution of higher education, hospital, or other non-profit organization seeking to receive a grant or cooperative agreement, cost-sharing is not required; however, NASA can accept cost sharing if it is voluntarily offered. See 2 C.F.R. 200.306, 2 C.F.R. 1800.306 and 2 C.F.R. 1800.922 for more information on Cost Sharing.

Cost sharing is required by 14 C.F.R. 1274 for a commercial firm seeking to receive a grant or cooperative agreement, unless the commercial firm can demonstrate that they will not receive substantial compensating benefits for performance of the work. Cost sharing is not required but can be accepted if no substantial compensating benefits will be received. The regulations at 2 C.F.R. 200.306, 2 C.F.R. 1800.306 and 2 C.F.R. 1800.922 describe cost sharing and allow-ability for awards. Acceptable forms of cost sharing for commercial firms are discussed in the Regulations at 14 C.F.R. 1274.204, 'Costs and Payments,' located at https://prod.nais.nasa.gov/pub/pub_library/grantd.html#1274204

4. Proposal Submission Information

4.1 Instructions for Proposals

All information needed to respond to appendices issued in accordance with this solicitation is contained in this solicitation, in the relevant appendices, and in the April 2017 edition of the NASA Guidebook for Proposers, located at <http://www.hq.nasa.gov/office/procurement/nrguidebook/>

Additionally, applicants shall prepare proposals in accordance with 48 C.F.R. 1852.235-72, Instructions for Responding

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to NASA Broad Agency Announcements. These regulations can be found at: http://www.ecfr.gov/cgi-bin/text-idx?SID=406e676673b2f2ddf3520d74f5f4192d&node=pt48.6.1852&rgn=div5%23se48.6.1852_1235_672#se48.6.1852_1235_672

The information in this BAA supersedes and provides additional direction to that found in the NASA Guidebook for Proposers and provides additional direction consistent with the NASA FAR Supplement Provision. Proposals that do not conform to the standards outlined in this solicitation will be declared noncompliant and will not be evaluated.

Applicants are responsible for understanding and complying with the procedures in the Guidebook before preparing and submitting proposals. Proposals that do not conform to the requirements outlined in this Omnibus and any Appendices to it may be declared noncompliant and rejected without review. Where this solicitation and the NASA Guidebook for Proposers are in conflict, this solicitation takes precedence. In addition, the provisions in any appendix will apply to that specific opportunity and will supersede any conflicting provisions in this solicitation or in the NASA Guidebook for Proposers.

Proposal submission questions will be answered and published in a Question and answer log. Individual responses will not be provided. NASA will not provide evaluations, opinions, or recommendations regarding any suggested approaches or concepts. This Q&A log will be posted on the NextSTEP website, and will be updated periodically between solicitation release and the proposal due date.

4.1.1 Proposal Submissions

Proposals shall be submitted electronically in Adobe pdf format to the Point of Contact e-mail address above and in the Appendices. Hard copies will not be accepted. Proposals or proposal modifications received after the latest date specified for receipt may be considered if a significant reduction in cost to the Government is probable or if there are significant technical advantages, as compared with proposals previously received.

Most appendices to this document will use a submission process consisting of a Notice of Intent (NOI) followed by a full proposal. To facilitate planning for the review process, applicants are strongly encouraged to submit a NOI to the NextSTEP mailbox. NOIs must be electronically submitted by the date specified on the appropriate appendix.

Applicants shall use the hq-nextstep-baa@mail.nasa.gov mailbox for both proposal submissions and notifications of intent (NOIs). The e-mail submission shall identify the BAA name and Appendix in the subject field of the e-mail and whether it is a “proposal” or “NOI”.

4.1.2 Proposal Format and Contents

The proposal format and content requirements as outlined in this section below are the same for all proposals. The required sections of the proposal must be submitted as one searchable, unlocked PDF file with edit permission enabled. Applicants must comply with the format and page limit requirements described in this omnibus BAA, as well as any additional requirements specified in the appendices. The provisions in each appendix will apply to that specific opportunity and will supersede any conflicting provisions in this omnibus solicitation.

While page limitations are specifically identified in this BAA and may be tailored in each subsequent appendix, there is no file-size limit for proposals (This is an exception to Section 3.23 of the NASA Guidebook for Proposers). Only attachments that are specifically requested either in this solicitation or in appendices to this solicitation should be submitted.

Requirements in the appendices supersede any requirements in the NASA Guidebook for Proposers or in this omnibus solicitation.

Title Page	1
Executive Summary (Section I)	1
Table of Contents	1
Proof of Eligibility (Section II)	3
System Concept & Scientific/Technical Approach (Sections III-IV)	15
Capabilities (Section V)	2
Data Rights (Section VI)	1
Price Proposal (Section VII)	No limit
Attachments	No limit

Attachments may be specified as needed:

A page is defined as one side of a sheet, 8 1/2" x 11" with at least one-inch margins on all sides, using not smaller than 12-point font, with the exception of tables and figures, which may use 8-point font. Pages in excess of the page limits for each section will not be evaluated.

4.1.2.1 Title Page:

- Include any Notice of Restriction on Use and Disclosure of Proposal Information.
- An optional graphic image may be included.
- The Proposer's name of the proposal or proposed project
- Date of the proposal
- The title, solicitation number and Appendix being responded to of this Announcement
- Organization name and address (including 9-digit ZIP+4 code, if applicable).
- Proposer Point of Contact name, title, e-mail address, and phone number.

4.1.2.2 Executive Summary: Describe the proposal's prominent and distinguishing features. The Executive Summary should provide an overview of the proposed effort that is suitable for release through a publicly accessible archive should the proposal be selected.

4.1.2.3 Table of Contents: Offerors should include a one-page Table of Contents that provides a guide to the organization and contents of the proposal.

4.1.2.4 Proof of Eligibility: Provide information showing that the Respondent and all team members are eligible participants as stipulated in Section 3 of this Announcement. Describe compliance with participation requirements as needed. As applicable, explain how the required corporate contribution, cost-sharing or matching resources will be satisfied.

4.1.2.5 System Concept: The offeror shall describe the system concept and its functions, how it addresses the objectives and requirements in this Announcement, and its maturity (Technology Readiness Level, if appropriate).

4.1.2.6 Scientific/Technical Approach: The offeror shall describe the approach and schedule for designing, analyzing, and testing the proposed system concept, including the plans to mature key technologies.

4.1.2.7 Capabilities: The offeror shall provide evidence of existing capabilities for designing and developing space-qualified systems applicable to the objectives of this Announcement.

4.1.2.8 Intellectual Property: The offeror shall describe the approach for data rights and inventions, and how they meet the objectives outlined under Section 2.7, Intellectual Property.

4.1.2.9 Data Management Plan (DMP): In keeping with the NASA Plan for Increasing Access to

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Results of Federally Funded Research, (located at <https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20150020926.pdf>) proposals may need to include a DMP or an explanation of why one is not necessary given the nature of the work proposed. See Section 2.6 Access to Research Results/Data Management Plan and the NASA Guidebook for Proposers

4.1.2.10 Cost/Price Proposal: For programs awarding contracts, the price proposal shall include the overall firm fixed price for the concept study or capability/technology development project. The offeror shall provide total direct labor hours by skill mix, travel, and subcontracts when a contract is used as the award vehicle. See a sample format in Attachment A. The price section shall also include the listing of GFP/GFE and the estimated fair market value or of the requested government contribution. For proposals exceeding \$2M, fully certified cost or pricing data will be required. Offerors should reference corporate resources described in Section 3 (Eligibility). For programs awarding grants or cooperative agreements, the budget shall include all the information described in the NASA Guidebook for Proposers. As applicable, offerors should reference cost-sharing or matching described in Section 3.4 Cost Sharing or Matching.

4.1.2.11 Attachments:

- **Quad chart:** For programs awarding contracts, the proposal shall contain a quad chart in MS PowerPoint format summarizing the proposed objectives, team, major milestones, and funding requirements. A template of the chart will be posted with this Announcement.
- **Resumes:** Resumes may be included for key personnel. In general, resumes should be limited to no more than 2 pages each.
- **Draft Statement-of-Work:** For programs awarding contracts, the offeror shall provide a draft statement-of-work that includes a work breakdown structure and a description of the major tasks, milestones and deliverables.
- **Proposed Technical and Payment Milestones:** For programs awarding contracts and commercial firms submitting proposals for cooperative agreements, the offeror shall provide a list of proposed capability/technology development and demonstration milestones. Each milestone shall include a descriptive title, objective success criteria, and planned achievement dates (month and year). Milestones should represent significant technical and business progress in the program. At least one milestone per calendar quarter is recommended. The proposal shall also include payment milestones with a title, associated objective success criteria, payment amount, and planned dates for completion of the milestone.
- **Corporate Resources documentation (as specified):** This documentation evidences the corporate contributions or cost-sharing/matching is being proposed. Corporate Contribution Worksheets may be required, per instructions for individual appendices.

The NASA Guidebook for Proposers is located at <http://www.hq.nasa.gov/office/procurement/nraguidebook/>

4.2 Proprietary Information

All proposals containing proprietary data should have the cover page and each page containing proprietary data clearly marked as containing proprietary data. It is the applicant's responsibility to clearly define to the Government what is considered proprietary data. Additional information can be referenced in the NASA Guidebook for Proposers.

Refer to the appendices for specific due dates.

5. Proposal Review Information

NASA reserves the right to select for negotiations all, some, or none of the proposals received in response to this Announcement.

5.1 Compliance Review

NASA will prescreen all proposals for compliance with requirements of this solicitation and its subsequent appendices. This includes submission of a complete proposal with all required elements:

- Submission of a proposal that is consistent with the research areas identified in the Appendix.
- Submission of a proposal from an eligible applicant as specified in the Eligibility Information in this omnibus BAA and relevant appendix.
- Submission of a budget that includes all required details and that is for a funding period and amount consistent with this omnibus BAA and relevant Appendix.
- Submission of a proposal that is consistent with the page limitations in the relevant Appendix and formatting guidelines specified in this omnibus BAA.

NASA reserves the right to conduct due diligence exchanges with offerors regarding compliance with the eligibility criteria, including how an offeror satisfies any required corporate contribution requirement or cost-sharing/matching. Non-compliant proposals will be withdrawn from the review process and declined without further review. Compliant proposals submitted in response to this BAA will undergo an intrinsic scientific/technical merit review. In addition, the provisions in any appendix will apply to that specific opportunity and will supersede any conflicting provisions in this solicitation or in the NASA Guidebook for Proposers.

5.2 Evaluation

A NASA Evaluation Panel will evaluate proposals deemed compliant according to the evaluation criteria described in Section 5.5. The Evaluation Panel will summarize the strengths and weaknesses of each proposal and assign an overall consensus rating (Very Good, Good, Satisfactory, or Poor). NASA may ask about a specific point or points in a proposal and conduct fact finding or due diligence activities. These activities may result in a request for a revised proposal. NASA has the ability to determine the appropriate method for any such communications, e.g., be in writing, virtual, or person. The information resulting from the reviews will be used to prepare selection recommendations. Selection for funding will be made by the designated NASA Selection Official.

5.3 Selection Official

Unless otherwise specified in the Appendix, the Director for the Advanced Exploration Systems Division for the Human Exploration and Operations Mission Directorate will make selections.

5.4 Personnel

NASA takes seriously its responsibility for ensuring that proposals are treated with the utmost confidentiality and are evaluated fairly and objectively without conflict of interest on the part of the reviewers. Therefore, regardless of the mailing address or Web-site to which a funding announcement may direct proposals to be sent, it is NASA policy that NASA Civil Service personnel will be in charge of and direct all aspects of the review and selection processes, including the identification and invitation of peer review personnel, in-person monitoring of the deliberations of any peer review panel, and the adjudication of conflicts of interest that may be declared by panel personnel (ref. list of potential conflicts of interest in Appendix E.3 of the Guidebook for Proposers). Also, all non-Government reviewers are prohibited from making unauthorized disclosure of proposal information and evaluation materials and/or information (ref. the sample Nondisclosure Agreement in Section E.2, Appendix E of the Guidebook for Proposers).

Government employees who may be involved in the peer review process are bound by Government law and regulation not to make unauthorized disclosure of trade secrets and confidential commercial and financial information contained in proposals.

NASA may use contractor support personnel to provide technical, business, and investment expertise when evaluating proposals. Any support contractor involved in the evaluation process will be bound by appropriate nondisclosure agreements to protect proprietary and competition sensitive information and must have accepted limitations on future

5.5 Evaluation Criteria

NASA will use the following evaluation factors, with each factor having equal weight:

5.5.1 Factor 1 - Relevance:

The Government will evaluate the ability of the proposal to contribute to NASA's mission and meet the objectives stated in the appendix of this BAA for which the proposal was submitted.

5.5.2 Factor 2 – Scientific/Technical Merit:

The Government will evaluate the quality, depth, and thoroughness of the proposed scientific/technical approach and the organization's capabilities and the qualifications of key personnel.

5.5.3 Factor 3 – Cost/Price:

For programs awarding contracts, the Government will evaluate the overall price reasonableness of the firm fixed price to the Government. For programs awarding grants and cooperative agreements, the Government will evaluate the realism and reasonableness of the proposed cost. Also an analysis will be done on the corporate contribution or cost-sharing (as applicable) to ensure that it properly aligned with the proposed effort. The cost of the proposed work and the programmatic relevance of the proposed work to NASA will not affect the score assigned by a panel conducting a merit peer review. As part of the panel's review, however, the evaluation may include comments regarding appropriateness of proposal budgets in relationship to the work proposed. Such comments will not be part of the scientific/technical merit score.

5.6 Cost/Price Review and Programmatic Relevance/Balance

Only those proposals most highly rated under technical merit and of acceptable implementation risk to the government will be reviewed for Cost/Price and Programmatic Relevance/Balance. Some proposals judged to be of high risk to implement which show potential for important scientific/technology gain can also advance. This review will evaluate the programmatic relevance/balance, hardware availability and cost/price of all proposals that are technically meritorious and feasible to implement. This review will be conducted by NASA Program Scientists and Managers. Evaluation of the cost/price of a proposed effort includes consideration of the realism and reasonableness of the proposed cost/price and the relationship of the proposed cost/price to available funds. Programmatic relevance is determined by the contribution of the proposed work to the balance of scientific and technical issues identified by agencies in their Broad Agency Announcements.

5.7 Process for Appeals

5.7.1 Ombudsman Program

The NASA Procurement Ombudsman Program is available under NRAs as a procedure for addressing concerns and disagreements. The clause at NASA FAR Supplement (NFS) 1852.215-84, Ombudsman, is incorporated into NRAs by reference. The cognizant Ombudsman is as follows:

William Roets, Director, Contract and Grant Policy Division Office of Procurement
NASA Headquarters Washington, DC 20546
Telephone: 202-358-4483
Facsimile: 202-358-3082
Email: william.roets-1@nasa.gov

5.7.2 Protests

Only prospective proposers seeking contract awards (not grant and/or cooperative agreement awards) under BAAs have the right to file a protest either with the Government Accountability Office (GAO) or with the Agency, as defined in FAR 33.101. The provisions at FAR 52.233-2, Service of Protest, FAR 52.233-3, Protest after Award, and NASA FAR Supplement (NFS) 1852.233-70, Protests to NASA, are incorporated into BAAs

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by reference. The designated official for receipt of protests to the Agency and copies of protests filed with the GAO is as follows:

Karla Smith Jackson, Assistant Administrator for Procurement Office of Procurement
NASA Headquarters Washington, DC 20546.
Telephone: 202-358-1299
Facsimile: 202-358-3082
Email: karla.s.jackson@nasa.gov

5.8 Review of Applicants in the Federal Awardee Performance and Integrity Information System (FAPIS)

NASA, prior to making a Federal award with a total amount of Federal share greater than the simplified acquisition threshold (currently \$250,000), is required to review and consider any information about the applicant that is in the designated integrity and performance system (currently the Federal Awardee Performance and Integrity Information System—FAPIS) accessible through the System for Award Management (SAM, <https://www.sam.gov>) (see 41 U.S.C. 2313).

An applicant, at its option, may review information in FAPIS and comment on any information about itself that NASA previously entered and is currently in FAPIS.

NASA will consider any comments by the applicant, in addition to the other information in FAPIS, in making a judgment about the applicant's integrity, business ethics, and record of performance under Federal awards when completing the review of risk posed by applicants. For grant and cooperative agreement awards, this process is described in 2 CFR 200.205 Federal awarding agency review of risk posed by applicants.

6. Award Administration Information

6.1 Award Notices

At the end of the selection process, each proposing organization will be notified of its selection or non-selection status. NASA will provide debriefings to those applicants who request one. Selection notification will be made electronically by a letter signed by the selecting official. The selection letters are not an authorization to begin performance. The selected organization's business office will be contacted by a NASA grant or contract officer to negotiate an award. Any costs incurred by the applicant in anticipation of an award are at their own risk until RECEIVING AN AWARD by a NASA grant officer or NASA contracting officer. The NASA Procurement Office will request further business data, and negotiate the resultant action. For contract awards, performance shall not begin until the contract is signed by both parties. NASA grant officers/contracting officers are the only personnel with the authority to award NASA grants and obligate government funds. NASA reserves the right to offer selection of only a portion of a proposal. In these instances, the applicant will be given the opportunity to accept or decline the offer.

Additional information can be referenced in the NASA Guidebook for Proposers.

6.2 Administrative and National Policy Requirements

For grant and cooperative agreement awards, general terms and conditions for awards can be found at 2 C.F.R. 1800 Appendix B. As applicable, all award requirements can be found at 2 C.F.R. 1800, 14 C.F.R. 1274, and the GCAM (located at https://prod.nais.nasa.gov/pub/pub_library/grantnotices/GrantNotices.html). Additional information on award and intellectual property may also be found at that site. Please note that it is expected that applicants will comply with Homeland Security Presidential Directive/ HSPD-12. HSPD-12 applicability will be determined during negotiation for award for selected proposals.

Additionally, award recipients that have individuals working under the award who need access to NASA facilities and/or systems must work with NASA program staff to ensure proper credentialing. Such individuals include U.S. citizens, lawful permanent residents ("green card" holders), and foreign nationals (those who are neither U.S. citizens nor permanent residents).

6.3 Post-Award Program Reporting

6.3.1 Annual Reporting

For activities extending beyond a year an annual report may be required. The Appendices will define whether annual reports are required.

6.3.2 Other Reporting

Award recipients may also be subject to reporting requirements under the NASA Plan for Increasing Access to Results of Federally Funded Research. Any such requirements will be identified in the award document.

If the Federal share of any award issued under this BAA is more than \$500,000 over the period of performance, additional reporting requirements will apply. For grant and cooperative agreement awards, see 2 CFR 200 Appendix XII—Award Term and Condition for Recipient Integrity and Performance Matters located at http://www.ecfr.gov/cgi-bin/text-idx?SID=4b63b1740bdb186d3bf5d346f5ddf42c&mc=true&node=ap2.1.200_1521.xii&rgn=div9.

7. Contacts

Additional programmatic information for this BAA is available from:

Deputy Director Strategic Integration & Management Division
Director, Advanced Exploration Systems Division
E-mail: hq-nextstep-baa@mail.nasa.gov

8. References

1. Guidebook for Proposers Responding to a NASA Funding Announcement, April 2021 Edition (*NASA Guidebook for Proposers*).
https://www.nasa.gov/sites/default/files/atoms/files/may_2021_ed_nasa_guidebook_for_proposers.pdf
 2. Federal Acquisition Regulation (FAR) is available online at the following addresses: <http://www.acquisition.gov/far/> or <http://farsite.hill.af.mil/>
 3. NASA Federal Acquisition Regulations Supplement (NFS).
<http://www.hq.nasa.gov/office/procurement/regs/NFS.pdf>
 4. 48 C.F.R. 1852.235-72, Instructions for Responding to NASA Broad Agency Announcements.
http://www.ecfr.gov/cgi-bin/text-idx?SID=406e676673b2f2ddf3520d74f5f4192d&node=pt48.6.1852&rgn=div5#se48.6.1852_1235_6_72
 5. NASA Grant and Cooperative Agreement Manual. https://www.nasa.gov/sites/default/files/atoms/files/nasa_gcam_-_revised_nov_12_2020.pdf
 6. Grants.gov electronic proposal submission system <http://grants.gov/>
-

Attachments

ATTACHMENT A: Price Proposal Sample Format

FIRM FIXED PRICE		
ELEMENTS	6 months	
Direct Labor Price from Labor Template	\$	-
Overhead (List)		
1. (Name & Description of Base)	\$	-
Overhead Rate	0.00%	
Overhead Price	\$	-
2. (Name & Description of Base)	\$	-
Overhead Rate	0.00%	
Overhead Price	\$	-
Total Overhead Price	\$	-
Subcontract Price		
1. (Subcontractor Name);(provide detailed description of work proposed)	\$	-
2. (Subcontractor Name); (provide detailed description of work proposed)	\$	-
Total Subcontract Price	\$	-
'Other Direct Costs (ODCs)'		
1. ODCs from ODC Breakdown Section (following page)	\$	-
2. Travel (provide separate breakdown of proposed travel price)	\$	-
3. Other ODCs; (provide description)	\$	-
Total Price for Other Direct Costs	\$	-
G&A Price		
1. (Description of G&A Base)	\$	-
G&A Rate	0.00%	
G&A Price	\$	-
Subtotal	\$	-
1. (Description of Profit Base)	\$	-
Profit Rate	0.00%	
Profit	\$	-
Total Price	\$	-

LABOR PRICE BREAKDOWN				
Labor Category Name	WYEs	Labor Hours	Labor Rate	Labor Price
	0.00	0.00	\$0.00	\$0.00
	0.00	0.00	\$0.00	\$0.00
	0.00	0.00	\$0.00	\$0.00
	0.00	0.00	\$0.00	\$0.00
	0.00	0.00	\$0.00	\$0.00
	0.00	0.00	\$0.00	\$0.00
	0.00	0.00	\$0.00	\$0.00
	0.00	0.00	\$0.00	\$0.00
	0.00	0.00	\$0.00	\$0.00
	0.00	0.00	\$0.00	\$0.00
	0.00	0.00	\$0.00	\$0.00
	0.00	0.00	\$0.00	\$0.00
	0.00	0.00	\$0.00	\$0.00
	0.00	0.00	\$0.00	\$0.00
	0.00	0.00		\$0.00

OTHER DIRECT COSTS PRICE BREAKDOWN			
Item Name & Description	Quantity	Unit Price	Total Price
	0.00	0.00	\$0.00
	0.00	0.00	\$0.00
	0.00	0.00	\$0.00
	0.00	0.00	\$0.00
	0.00	0.00	\$0.00
	0.00	0.00	\$0.00
	0.00	0.00	\$0.00
	0.00	0.00	\$0.00
	0.00	0.00	\$0.00
	0.00	0.00	\$0.00
	0.00	0.00	\$0.00
	0.00	0.00	\$0.00
	0.00	0.00	\$0.00
	0.00	0.00	\$0.00
			\$0.00

APPENDIX TITLE PAGES



**National Aeronautics and Space Administration
NASA Headquarters
Advanced Exploration Systems Division
300 E ST SW
Washington, D.C. 20546-0001**

Next Space Technologies for Exploration Partnerships -2 (NextSTEP-2)

Broad Agency Announcement NNH16ZCQ001K-Habitat

Appendix A: Habitat Systems

**Originally Issued: April 19, 2016
NOIs Due: May 13, 2016, 5:00 PM Eastern Time
Proposals Due: June 16, 2016, 5:00 PM Eastern Time**

Note: Appendix A contained in a separate file



National Aeronautics and Space Administration
NASA Headquarters
Advanced Exploration Systems Division
300 E ST SW
Washington, D.C. 20546-0001

Next Space Technologies for Exploration Partnerships -2 (NextSTEP-2)

Broad Agency Announcement NNH16ZCQ001K-ISM FabLab

Appendix B: In-Space Manufacturing (ISM) Multi-material Fabrication Laboratory (FabLab)

Originally Issued: May 3, 2017
NOIs Due: June 16, 2017, 5:00 PM Eastern Time
Proposals Due: August 2, 2017, 5:00 PM Eastern Time

Note: Appendix B contained in a separate file

**National Aeronautics and Space Administration
NASA Headquarters
Advanced Exploration Systems Division
300 E ST SW
Washington, D.C. 20546-0001**

Next Space Technologies for Exploration Partnerships -2 (NextSTEP-2)

Broad Agency Announcement NNH16ZCQ001K-PPE

Appendix C: Power and Propulsion Element (PPE) Studies

**Originally Issued: August 30, 2017
Proposals Due: September 26, 2017, 5:00 PM Eastern Time**

Note: Appendix C contained in a separate file

National Aeronautics and Space Administration

**Advanced Exploration Systems Division
Human Exploration and Operations Mission Directorate
NASA Headquarters
300 E ST SW
Washington, D.C. 20546-0001**

**Next Space Technologies for Exploration Partnerships -2
(NextSTEP-2)**

Appendix D: In-Situ Resource Utilization (ISRU) Technology

Broad Agency Announcement NNH16ZCQ001K-ISRU

Originally Issued: December 4, 2017

Proposals Due: March 5, 2018 by 5:00 PM Eastern Time

Note: Appendix D contained in a separate file

National Aeronautics and Space Administration

**Advanced Exploration Systems Division
Human Exploration and Operations Mission Directorate
NASA Headquarters
300 E ST SW
Washington, D.C. 20546-0001**

**Next Space Technologies for Exploration Partnerships -2
(NextSTEP-2)**

**Appendix E: Human Landing System Studies, Risk Reduction,
Development, and Demonstration**

Broad Agency Announcement NNH19ZCQ001K_APP-E

Originally Issued: February 7, 2019

Proposals Due: March 25, 2019 by 5:00 PM Eastern Time

Note: Appendix E contained in a separate file

**National Aeronautics and Space Administration
NASA Headquarters
Advanced Exploration Systems Division
300 E ST SW
Washington, D.C. 20546-0001**

**Next Space Technologies for Exploration Partnerships -2
(NextSTEP-2)**

Broad Agency Announcement NNH16ZCQ001K-TCPS

**Appendix F: Logistics Reduction (LR) in Space by Trash
Compaction and Processing System (TCPS)**

Originally Issued: July 3, 2018

NOIs Due: July 30, 2018, 5:00 PM Eastern Time

Proposals Due: August 22, 2018, 5:00 PM Eastern Time

Note: Appendix F contained in a separate file

National Aeronautics and Space Administration
NASA Headquarters
Advanced Exploration Systems Division
300 E ST SW
Washington, D.C. 20546-0001

Next Space Technologies for Exploration Partnerships -2 (NextSTEP-2)

Broad Agency Announcement NNH16ZCQ001K-SRP

Appendix G: Space Relay Partnership and Services Study NNH16ZCQ001K-SRP

Originally Issued: September 18, 2018

Proposals Due: November 2, 2018, 12:00 PM Eastern Time

Note: Appendix G contained in a separate file

National Aeronautics and Space Administration
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Washington, D.C. 20546-0001

Next Space Technologies for Exploration Partnerships -2 (NextSTEP-2)

Broad Agency Announcement NNH19ZCQ001K_APPENDIX-H-HLS

Appendix H: Human Landing System

Originally Issued: September 30, 2019

Note: Appendix H and attachments contained in a separate file

National Aeronautics and Space Administration
NASA Johnson Space Center
Houston, TX 77058

Next Space Technologies for Exploration Partnerships -2 (NextSTEP-2)

Broad Agency Announcement NNH16ZCQ001K-CDISS

Appendix I: Commercial Destination Development in Low Earth Orbit using the International Space Station

Originally Issued: June 21, 2019

NOIs Due: June 28, 2019, 5:00 PM Central Time

Proposals Due: August 5, 2019, 5:00 PM Central Time

Note: Appendix I contained in a separate file

National Aeronautics and Space Administration
NASA Johnson Space Center
Houston, TX 77058

**Next Space Technologies for Exploration Partnerships -2
(NextSTEP-2)**

Broad Agency Announcement NNH16ZCQ001K-_APP-J

**Appendix J: Opportunities to Stimulate Demand in Low Earth Orbit
through Applied Research**

Originally Issued: July 3, 2019

NOIs Due: August 2, 2019, 5:00 PM Eastern Daylight Time

Proposals Due: September 13, 2019, 5:00 PM Eastern Daylight Time

Note: Appendix J contained in a separate file

National Aeronautics and Space Administration

NASA Johnson Space Center

Houston, TX 77058

Next Space Technologies for Exploration Partnerships -2 (NextSTEP-2)

Broad Agency Announcement NNH16ZCQ001K-_CDFE

Appendix K: Commercial Destination Development in Low Earth Orbit (LEO) Free Flyer

Draft: October 3, 2019

NOIs Due: TBD, 2019, 4:00 PM Central Time

Proposals Due: TBD, 2020, 4:00 PM Central Time

Note: Appendix K contained in a separate file

National Aeronautics and Space Administration

**Advanced Exploration Systems Division
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**Next Space Technologies for Exploration Partnerships -2
(NextSTEP-2)**

Appendix N: Sustainable Human Landing System Studies and Risk Reduction

Broad Agency Announcement NNH19ZCQ001K_APP-N

Originally Issued: 1 July 2021

Amendment 1: 20 July 2021

Amendment 2: 22 July 2021

Proposals Due: 2 August 2021, by 5:00 PM Central Time