I. **Overview:** The NASA Pennsylvania Space Grant Consortium (PSGC) seeks proposals from accredited Pennsylvania colleges and universities to support projects and programs that align with the objectives of the NASA Office of STEM Engagement:

- Create cooperative programs among universities, aerospace industry, and Federal, state, and local governments to foster STEM ecosystems
- Encourage interdisciplinary training, research, and public service programs related to aerospace
- Establish and maintain a national network of universities with interests and capabilities in aeronautics, space, and related fields
- Attract, recruit and train U.S. citizens, especially women, underrepresented minorities, and persons with disabilities, for careers in aerospace science and technology
- Promote a strong STEM education base from elementary through secondary levels while providing support to teachers in these grade levels toward more effectively improving student academic outcomes
- Create opportunities that enable student contributions to the development of solutions addressing NASA Mission Directorate challenges
- Advance aerospace knowledge and expand related activities

Proposals must concisely describe the relevance of proposed work to NASA’s currently funded research priorities and programs of the NASA Mission Directorates and Centers:

- Science ([http://science.nasa.gov/](http://science.nasa.gov/))
- Space Technology ([http://www.nasa.gov/directorates/spacetech/home/index.html](http://www.nasa.gov/directorates/spacetech/home/index.html))

The PSGC accepts and reviews mini-grant proposals on a rolling basis. Awards are made based upon merit and funding availability. Mini-grant amounts are determined by the depth and breadth of the proposed project at three levels: $6,000, $12,000, and $25,000. Proposed project efforts may begin in summer 2020, fall 2020, spring 2021, or summer 2021 and should be completed within one year.

At this time, the PSGC will consider qualified proposals for awards in three program areas:

**Higher education:** projects that benefit the student directly. Funding for these projects may include, for example, student support (limited stipends or wages), materials and supplies for a student project, and student travel. Funding is provided to higher education projects, for both undergraduate and graduate levels. The PSGC emphasizes hands-on space hardware laboratories and other research-related student support. The PSGC also funds curriculum development, design, and implementation of relevant new major and minor areas of study.
Research infrastructure: programs that benefit the institution and its research efforts. Funding for these projects may include, for example, limited graduate student support (for a summer or one semester), limited support for a recent Ph.D. recipient (less than 4 months), limited support for an early-career faculty, and/or materials and supplies when appropriate. The PSGC supports research infrastructure projects by providing funding to institutions to enhance high-quality programs. This includes providing funding that may lead to other research grants in NASA-relevant areas. Exclusive of fellowship awards, this funding may also encompass limited research-related graduate student support.

Pre-college: K-12 programs and activities that enhance and broaden the knowledge of both the students and teachers. Award may include, for example, support for teacher preparation and enhancement, curriculum development, and student opportunities. The emphasis should be on the development of pre-service and/or in-service educators in the formal and informal educational arenas. Proposed student-based programs must demonstrate quantitatively how the program will increase enrollment in science, technology, engineering, and mathematics (STEM).

II. Proposal Requirements and Format:

1. PSGC template cover sheet
2. Statement of work that includes the following sections:
   a. PSGC Program Area focus (Higher Education, Research Infrastructure, Pre-College)
   b. Alignment with objectives of the NASA Office of STEM Engagement
   c. Relevance to NASA’s currently funded research priorities (see IV. Proposal Guidance for more information)
   d. Commitment to build a future STEM workforce that reflects the Nation’s diversity (see IV. Proposal Guidance for more information)
   e. Management strategy that will be used to accomplish the stated goals, including mitigation of potential impacts related to the global pandemic

3. S.M.A.R.T. Goals and Objectives for your project, activities, and/or collaborations. (see Appendix A for more information)

4. Budget Request that includes the following sections:
   a. PSGC template budget spreadsheet
   b. Source of non-Federal funds to match NASA funds by at least 1:1 ratio (see IV. Proposal Guidance for more information)
   c. Detailed budget justification (see IV. Proposal Guidance for more information)
   d. Acknowledgement that participants who receive direct funding must be U.S. citizens (see IV. Proposal Guidance for more information)

III. Completed mini-grant proposals should be submitted by email as a single PDF attachment to Dr. Christopher H. House, Director of the Pennsylvania Space Grant Consortium, at SpaceGrant@psu.edu.
IV. Proposal Guidance: Proposals will be evaluated based on merit, adherence to proposal requirements, and available funding.

NASA relevance
Proposals must concisely describe the relevance of proposed work to NASA’s currently funded research priorities and programs of the NASA Mission Directorates and Centers. The current NASA mission directorates are as follows:

Aeronautics Research: The Aeronautics Research Missions Directorate (ARMD) conducts high-quality, cutting-edge research that generates innovative concepts, tools, and technologies to enable revolutionary advances in future aircraft, as well as in the airspace in which they will fly.
http://www.aeronautics.nasa.gov/

Human Exploration Operations: The Human Exploration and Operations Mission Directorate (HEOMD) provides leadership and management of NASA space operations related to human exploration in and beyond low-Earth orbit. HEOMD also oversees low-level requirements development, policy, and programmatic oversight. The International Space Station (ISS) represents NASA exploration activities in low-Earth orbit. Exploration activities beyond low-Earth orbit include the management of Commercial Space Transportation, Exploration Systems Development, Human Space Flight Capabilities, Advanced Exploration Systems, and Space Life Sciences Research & Applications. HEOMD is similarly responsible for Agency leadership and management of NASA space operations related to Launch Services, Space Transportation, and Space Communications in support of both human and robotic exploration programs.
http://www.nasa.gov/directorates/neo/home/index.html

Science: The Science Mission Directorate (SMD) leads the Agency in four areas of research: Earth Science, Heliophysics, Planetary Science, and Astrophysics. SMD uses the vantage point of space to achieve, along with the science community and our partners, a deep scientific understanding of our planet, other planets and solar system bodies, the interplanetary environment, the Sun and its effects on the solar system, and the universe beyond. In so doing, SMD builds the intellectual foundation for the robotic and human expeditions of the future while meeting current needs for scientific information to address national concerns, such as climate change and space weather. http://science.nasa.gov/

Space Technology: The Space Technology Mission Directorate (STMD) is responsible for developing the crosscutting, pioneering, new technologies and capabilities needed by the Agency to achieve its current and future missions. STMD rapidly develops, demonstrates, and infuses revolutionary, high-payoff technologies through transparent, collaborative partnerships, expanding the boundaries of the aerospace enterprise. STMD employs a merit-based competition model with a portfolio approach, spanning a range of discipline areas and technology readiness levels. By investing in bold, broadly applicable, disruptive technology that industry cannot tackle today, STMD seeks to mature the technology required for NASA’s future missions in science and exploration while proving the capabilities and lowering the cost for other government agencies and commercial space activities.
http://www.nasa.gov/directorates/spacetech/home/index.html
Commitment to diversity and inclusion

An important objective of the NASA Office of STEM Engagement (OSTEM) is to attract, recruit and train U.S. citizens – especially women, underrepresented minorities, and persons with disabilities – for careers in aerospace science and technology. In line with OSTEM objectives, the PSGC is dedicated to building, sustaining, and deploying a skilled, high-performing and diverse workforce that meets the current and emerging needs of the Commonwealth of Pennsylvania, NASA, and the nation. Specific goals for proposed projects should be included with respect to participation by underrepresented minority and underserved students.

Budget: Matching non-Federal funds

To satisfy NASA’s grant cost-share requirements, the total PSGC award amount must be matched at least 1:1 by the proposing institution with non-federal funds in either cash, in-kind support, or both. Salary and waived/contributed indirect costs (F&A) are the most common forms of cost-share. *NOTE: Upon completion of any PSGC-funded project, the project lead must submit a signed report documenting the institution’s contributions to the committed cost sharing.*

Budget: Justification

A detailed breakdown of costs and justification or description of each cost and a total requested amount is required, with each category clearly labelled.

- a. Salary/Wages/Fringe Benefits - include hourly wage, fringe rate, percent of annual effort, etc.
- b. Scholarships/Fellowships/Internships - include amount of each, how many individual awards or positions, and recruitment and selection process.
- c. Travel - itemize to include airfare, vehicle rental, mileage, lodging, meals, registration fees, number of participants/travelers, etc. *NOTE: Foreign travel cannot be supported with NASA PSGC funds.*
- d. Materials and supplies - itemized list of materials and supplies. *NOTE: Equipment purchases cannot be funded.* Equipment is defined as an item (machinery or tool) that is not consumed or incorporated but is a long-term asset, such as a computer system, for which the value would depreciate over its lifespan
- e. Other direct expenses- itemized list of other qualifying direct expenses.
- f. Use of non-Federal matching funds (Cost-Share). *NOTE: NASA restrictions also apply to matching funds.*

U.S. citizenship requirement

NASA mandates that students or other participants who are directly supported and funded under this program must be U.S. citizens. Permanent residents do not qualify. Principal Investigators who are non-US citizens may be selected for funding provided that no salary, stipend, travel or other form of direct support is proposed.
Appendix A

NASA S.M.A.R.T. Goals and Objectives – Definitions

- **Goal(s):** Statement(s) about the broad, long-range, or more general aims or purposes of the program.
- **Objectives:** Brief, clear statements that describe how the goal(s) will be achieved.
- **Outcomes:** The concrete, specific, expected results of the program.
- **Metrics:** The specific quantitative (fact-based) and qualitative (subjective response such as survey) data that will be collected/measured to assess the extent to which expected outcomes have been achieved.
- **Target Number:** Quantitative measure of outcome.
- **Deadline:** Date for accomplishment/completion.

S.M.A.R.T. is a mnemonic that provides criteria to assist in project management.

**Specific** – Be precise about what you propose to achieve.
- Specify area of study or improvement and audience/impact
- Specify intended objective(s)
- Specify intended outcome(s)

**Measurable** – Quantify indicators of progress.
- Describe metrics to be used in program/project assessment and evaluation

**Achievable** – Show how the outcomes of the program/project can be attained.
- Explain how proposed statement of work and budget can produce desired outcome(s).

**Relevant** – Explain how the program/project aligns with NASA priorities and with the PSGC’s mission to expand opportunities for U.S. citizens to learn about and participate in NASA’s aeronautics and space programs by supporting and enhancing science and engineering education, research, and outreach programs.
- Reference specific NASA and/or PSGC alignment

**Time-Specific** – Describe program/project lifespan.
- Provide a timeframe that includes start and end dates as well as significant milestones for achieving objectives, assessment, and reporting.
- Provide a timeline for budget spending and reporting