

Guidelines and Requirements for Preparing 2011 NASA EPSCoR Proposals

1. NASA EPSCOR OBJECTIVES

The following are the specific objectives of NASA EPSCoR:

- Contribute to and promote the development of research infrastructure in NASA EPSCoR jurisdictions in areas of strategic importance to the NASA mission;
- Improve the capabilities of the NASA EPSCoR jurisdictions to gain support from sources outside the NASA EPSCoR program;
- Develop partnerships between NASA research assets, academic institutions, and industry;
- Contribute to the overall research infrastructure, science and technology capabilities, higher education, and/or economic development of the jurisdiction; and
- Work in close coordination with Space Grant to improve the environment for science, technology, engineering and mathematics education in the jurisdiction.

2. NASA EDUCATION PORTFOLIO

Because NASA EPSCoR is managed by the Office of Education, NASA EPSCoR follows the requirements of the Agency's Education portfolio. This portfolio is guided by three Outcomes:

- Outcome 1: Contribute to the development of the STEM workforce in disciplines needed to achieve NASA's strategic goal through a portfolio of investments.
- Outcome 2: Attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers, and faculty.
- Outcome 3: Build strategic partnerships and linkages between STEM formal and informal education providers that promote STEM literacy and awareness of NASA's mission.

All NASA Higher Education projects, including EPSCoR, directly support Outcome 1. Outcome 1 comprises five Objectives. EPSCoR directly contributes to Objectives 1.1 and 1.5 and may also contribute to Objectives 1.2, 1.3, and 1.4.

Objective 1.1 – Faculty and Research Support: Provide NASA competency-building education and research opportunities for faculty, researchers, and post-doctoral fellows.

Objective 1.2 – Student Support: Provide NASA competency-building education and research opportunities to individuals to develop qualified undergraduate and graduate students who are prepared for employment in STEM disciplines at NASA, industry, and higher education.

Objective 1.3 – Student Involvement, Higher Education: Provide opportunities for groups of post-secondary students to engage in authentic NASA-related mission-based research and development activities.

Objective 1.4 – Course Development: Develop NASA-related course resources for integration into STEM disciplines.

Objective 1.5 – Targeted Institution Research and Academic Infrastructure: Improve the ability of targeted institutions to compete for NASA research and development work.

This means a competitive NASA EPSCoR proposal will:

- Emphasize infrastructure building
- Involve and nurture junior faculty and students (a mix of undergraduates, graduate students and postdocs, to the extent possible). NASA is concerned about the STEM pipeline (Its own as well as the nation's)
- Be unique. The project must not be an extension of existing work but may take an existing project to a much higher level with infrastructure building and the STEM pipeline as critical outcomes.
- Not be made up of ONLY established faculty – Nurture the STEM pipeline from a higher education perspective
- Align with NASA's research and technology priorities – be as specific as possible.
- Include collaborations with one or more NASA scientists at one or more of the NASA research centers. NASA scientists are considered collaborators in the project and must not receive NASA EPSCoR funds.
- Include collaborations with other non-NASA institutions, to the extent possible. Although NASA EPSCoR encourages such collaborations only if it benefits your project and institution, DO NOT force collaborations for the sake of collaborations.
- Do not include outreach to K-12
- Diversity is a critical factor with NASA. Make every effort to include members of the underrepresented community and women in your proposal. NASA encourages collaboration with predominately minority institutions or institutions with large minority student populations. Again, do not force the collaboration if it does not make sense.

3. COMPONENTS OF A PROPOSAL

Project Summary

Provide a brief 200-300 words description of the project, objectives, method of approach, and outcomes.

Font Size

Single-spaced, typewritten, English-language text, formatted using one or two columns, and **using an easily read font** having no more than ~10 characters per inch (typically 12-point font). In addition, the text shall have no more than 5.5 lines per inch of text. Offerors should not use a smaller font or squeeze lines of text in order to gain more text per page as it makes the evaluation process difficult. Pages should have at least 1-inch (2.5 cm) margins on all sides. Not inclusive to tables and illustrations.

Sections (must be labeled accordingly)

Table of Content – 1 to 2 pages

Project Description – 17 pages (max)

Subsections must be labeled as follows:

1. Intrinsic Merit
 - 1.1 Proposed Research
 - 1.2 Existing Research
2. NASA Alignment and Partnerships
 - 2.1 Relevance to NASA and to Maine

- 2.2 Partnerships/Sustainability
- 2.3 NASA Interactions
- 2.4 Diversity
- 3 Management and Evaluation
 - 3.1 Results of Prior NASA EPSCoR Research Support
 - 3.2 Personnel
 - 3.3 Research Project Management
 - 3.4 Project Evaluation
 - 3.5 Tracking of Program Progress
 - 3.6 Continuity

References or Citations – no page limit, as needed.

Biographical Sketches

- Science-PI: max two pages
- Co-PI: 1 page
- Other key personnel: 1 page

Current and Pending Support: no page limited, as needed

Budget and Budget Justification: No page limit, as needed

- See last section of this document.

Appendices

- Appendices will not be accepted

Letters of Support

- Statements of Commitment are addressed through NSPIRES when each Science-PI, co-PI and Collaborator registers for the proposed project. When I include them on a project, they each will get an e-mail indicating that they were placed as participants on the project. They will be asked to respond to the e-mail in order to confirm their commitment to the project. Please inform your co-PI, students, contractors, sub recipients, NASA collaborators.
- Letters of Support are defined as letters coming from participants in the project who have resources that are important to your project. For example, a NASA scientist may have a piece of equipment you need. Such letters will be required as part of your submission. Other letters of support, such as congressional delegation, etc.. do not fit this definition and will not be accepted.

ANYTHING IN RED MUST BE ADDED TO THE FINAL PROPOSAL. YOU MAY EDIT THE SECTIONS TO ACCOMMODATE THE PAGE LIMITATION AS LONG AS THE INTENT OF THE STATEMENTS ARE NOT LOST.

INTRINSIC MERIT

Proposed Research

The lead institution and fiscal agent for this NASA EPSCoR proposal is MSGC. Dr. Terry Shehata, Executive Director of MSGC and the State NASA EPSCoR Director, is the Principal Investigator. MSGC is governed by a 15-member Board of Directors whose membership reflects a balanced representation of private and public affiliate members who are involved in space and aeronautics-related activities. [Name of Science-PI] is the technical lead for this effort. At the [University or Organization] level, the oversight and management (including financial) will be the responsibility of [name of individual and title].

MSGC has established a nine-member Technical Advisory Committee (TAC) to provide guidance to the State NASA EPSCoR program, and to assist in reviewing program and research progress and accomplishments. The TAC is chaired by Dr. Shehata and includes: Dr. Charles Liarakos, Senior Advisor, NSF Biological Sciences; Dr. Jerry Grey, Research and Engineering Consultant, and member of the Board of Advisors for the NASA Institute for Advanced Concept; Dr. Al Teich, Director of Science Policy, AAAS; Vicki Nemeth, Director of Research Administration & Maine NSF EPSCoR Associate Project Director, University of Maine; Dr. Samantha Langley-Turnbaugh, Associate Vice President of Academic Affairs for Research, University of Southern Maine; and Dr. Catherine Renault, Director, Office of Innovation, Maine Department of Economic and Community Development and State EPSCoR Director (State Government). With the assistance of the TAC, MSGC will monitor the progress of the proposed research program at the [name of institution] according to the schedule in Table-X and the proposed program evaluation discussed in the next section. MSGC will provide the State EPSCoR Committee a copy of the annual progress report.

C. Program Evaluation

A critical component of your proposal is the metrics table, a requirement of Program Evaluation. Please include the following statement in your proposal. You must also include a Program Evaluation Metrics table for the three-year period. The following table is provided as an example. The Category column and categories are required but you may change the contents within the metrics and outcomes columns.

MSGC will conduct the evaluation according to the schedule described in Table-XJ with the assistance of the TAC and the Science-PI’s research team, and evaluate the project’s impact on increasing the competitiveness of the research for publication and for NASA and non-NASA mainstream funding opportunities, and levels of collaboration and student training.

Table XJ: Program Reporting

Report/6 month Block	1	2	3	4	5	6
Semi-annual progress meeting with MSGC staff						
Progress report to NASA/annual progress review by TAC						
Final report to NASA and MSGC						

Data will be gathered on the identified parameters for the prior 3 calendar years and used as a baseline comparison for the data collected annually during the project timeframe. Evaluation data will be presented to the TAC during annual meetings to allow an assessment of progress towards national competitiveness and sustainability, and to solicit recommendations for improvement. Table XX provides evaluation metrics and outcomes which will be utilized for this

project, with data collected from progress reports and presentations to MSGC and the TAC and compared to the baseline data.

Table XX: Program Evaluation Metrics-3 year period [NOTE: numbers in table are examples only]

Category	Metrics	Outcomes
Research Competitiveness	9 papers published in refereed journals; 10 presentations or abstracts at scientific meetings; 9 grant proposals submitted- 3 of them funded	Increased expertise and recognition as a leading center in wireless sensor networks and inflatable structures
Research successes of students	5 graduate & 15 undergraduate students supported; 10 abstracts or presentations at professional meetings	Increased Maine student participation in STEM research
Collaboration with Universities and Colleges	9 multi-institutional proposals submitted – 3 of them funded; 2 additional collaborators added	Increased R&D capacity at █████ in targeted research areas; increased participation of Maine students in STEM research
Collaboration with NASA Centers	3 articles published in refereed journals with NASA co-authors; 6 presentations/abstracts with NASA co-authors	Increased research and collaboration with NASA scientists
Continuity	15 undergraduate and 5 graduate student applications submitted to NASA’s undergraduate/graduate research programs	Increased student participation in STEM research and collaboration with NASA scientists
Sustainability	3 funded grant proposals; Philanthropy campaign; 20 additional students involved.	Increased expertise and recognition as a leading center in wireless sensor networks for space structures; Increased R&D capacity in targeted research areas; Increased participation in STEM research
Annual Progress and Final Reports	3 annual progress reports and one 3-year cumulative report	<u>NASA awareness of</u> successes and performance

Student Tracking:

This section requires a statement on how you plan to track students that participant in your project. Please include the following statement.

MSGC incorporated a student longitudinal tracking system when it developed a new undergraduate program in 2003, and subsequently expanded it to other Space Grant programs such as the Scholarship and Fellowship, Research Infrastructure, and Higher Education programs. Notices are sent out to all students twice annually requesting information on their academic and workforce status as well as data on publications, presentations, and proposals submitted to other funding agencies as a result of their award. MSGC will expand its current database to include student participants from this EPSCoR project.

Tracking of Program Progress:

This subsection refers to how you plan to track your project’s progress beyond NASA EPSCoR funding to national competitiveness. The following paragraph is provided as an example. Please note that reference to masters students may not be applicable for some applicants.

For progress beyond the award period we will track the following parameters: 1) the masters student at [name of institution] will graduate and continue their work on NASA projects,

possibly as a doctoral student at [name of institution]; 2) The doctoral students will have published 2 or more papers and be well into their dissertation project; 3) faculty will be pursuing more grants with a target of 2 large funded proposals each year; 4) the undergraduates will be pursuing graduate degrees of interest to NASA; 5) high school students who were part of this project will be pursuing an undergraduate degree in a STEM area; and 6) the [name of institution] Research Team will be attracting significant funding from both the public and private sector and attracting new students and research faculty. Progress will be tracked by [name of institution] EPSCoR director and MSGC for a period of three years beyond the period of performance.

Continuity:

This subsection refers to how you plan to engage your students to continue their work beyond NASA EPSCoR funding and get them more involved in NASA funding opportunities. The following paragraph is provided as an example.

Students will be provided opportunities to continue and expand their research activities and careers beyond the period of performance and to provide NASA with long-term quality research and development. Eligible **undergraduate junior and senior students** participating in this project will be encouraged to apply to NASA’s Undergraduate Student Research Program starting in the first year of the project. Every effort will be made to provide these students the 10-week summer research experience at [name of NASA center] under the mentorship of [your NASA collaborator/mentor], with research projects negotiated between [Science-PI name and NASA mentor]. Alternatively, NASA centers and mentors will be identified for the students if required. Eligible **graduate students** participating in this project will be encouraged to apply to NASA’s Graduate Student Research Program starting in the second year of the project. Students and his/her faculty advisor will select the appropriate research projects from the GSRP’s website. Where possible, we will discuss with [NASA mentor’s name] the possibility of hosting students in his/her laboratory or at a colleague’s laboratory to ensure alignment with the proposed NASA EPSCoR research. **Doctoral graduate students** who intend to continue their research and careers with NASA will be encouraged to pursue research opportunities under the NASA Postdoctoral Program.

BUDGET

NASA requires the budget justification to include a Table of Proposed Work Effort. The following is provided as an example. Work effort could be in %, academic months and/or hours).

Table of Proposed Work Effort – Cumulative three year period

Personnel	Title	Number of Person-Months		
		Yr-1	Yr-2	Yr-3

