



SPACE GRANT EVALUATION UPDATE

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Space Grant Evaluation

- Draft evaluation questions address the following topics:
 - Compliance with Public Law 100-147 and alignment with the priorities of NASA Education and NASA research and technology development
 - Program management practices, including the application and award process
 - Consortium-level and overall program impact
 - Identification of effective practices in consortia partnerships
 - Challenges, barriers, and constraints to obtaining high-quality results

SG Evaluation Phases*



Planning

- Community consultation on evaluation questions, existing data sources, and past SG evaluation methods and rubrics
- Data quality assessment
- Evaluation planning



Data Collection & Analysis

- Collection and analysis of existing data held by NASA and other stakeholders
- Anticipate continuing some processes from past evaluations and introducing new processes



Reporting & Recommendations

- Comments period for draft report
- Community discussion of recommendations

STAKEHOLDER INVOLVEMENT

*This information is TENTATIVE, and for planning purposes only



Evaluation Planning

- i. To fully document the current SG program model in consultation with the SG stakeholder community;
- ii. To conduct an assessment of SG performance data, reporting and program documentation;
- iii. To prepare a design and plan for an external evaluation study and make formal recommendations to improve NASA's performance monitoring.

Technical assistance provided by Paragon TEC

SPACE GRANT LOGIC MODEL RECOMMENDATIONS

Space Grant National Model

*Something that's most unique about the Space Grant Program is that it's a **national program** with **shared goals** across the country where each state consortium contributes in a **unique** way to meeting the goals of the National Space Grant and that sets up **very different program models** across the country to **utilize some state resources** to best **meet individual state needs** all in the arena of working with NASA education to **meet NASA program goals**.*

--Space Grant Community Member

Space Grant Logic Model

- *Inputs* include other NASA funds and resources and matching funds but also leveraged funds, although the latter varies across consortia
- *Program activities*, with the exception of NASA sponsored research and under-represented student and workforce recruitment and development (fellowships and scholarships), were noted as highly variable across Space Grant consortia and consortium type.
- *Outputs* vary across consortia because of these variations in program strategy and also due to differences in definitions (e.g., fellowship)
- *Outcomes* also vary, although longitudinal tracking of students who continue further into academia or a STEM career was considered to be a common outcome measure.

Goal: contribute to the nation's science enterprise by funding education, research, and public service projects through a national network of university-based space grant consortia.

- Objectives:
- establish and maintain a national network of universities with interests and capabilities in aeronautics, space, and related fields;
 - Encourage cooperative programs among universities, aerospace industry, and federal, state and local governments;
 - Encourage interdisciplinary training, research, and public service programs related to aerospace;
 - Recruit and train U.S. Citizens, especially women, underrepresented minorities, and persons with disabilities, for careers in aerospace science and technology; and
 - Promote a strong science, mathematics, and technology education base from elementary through secondary levels.

| Inputs | Strategies/activities | Outputs | Outcomes | | |
|--|---|--|---|---|--|
| What we invest | What we do | What we create | Short-term | Intermediate-term | Long-term |
| NASA funding for space grant consortia in each state, DC and Puerto Rico (including center internships, fellowships, and scholarships) | Fund SG scholarships, fellowships and center and other internships. | <ul style="list-style-type: none"> • Number of scholarships, fellowships, and internships awarded by institution; • Number of awards made by demographic characteristics (e.g., sex, age, race, ethnicity, disability status); • # of students received significant investment (money and/or contact hours) | Offer authentic, hands-on student experiences in science and engineering disciplines—active participation by students in hands-on learning or practice with experiences rooted in NASA- related, stem-focused questions and issues, and the incorporation of real-life problem-solving as the context for activities. (NOTE: NASA education priorities in 2009 solicitation). | A stronger science, technology, engineering, and mathematics education base from elementary through secondary levels (while preparing teachers in these grade levels to become more effective at improving student academic outcomes) (SG obj1) | NASA education outcome 2 attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers, and faculty (educate and engage) |
| Trained and experienced staff | Emphasize diversity (underrepresented minority and institutional diversity) in each program element. | <ul style="list-style-type: none"> • Number of courses, workshops, and student activities developed; • Number of students attending courses, workshops and activities by demographic characteristics (e.g., Sex, age, race, ethnicity, disability status). | Provide summer opportunities on college campuses for secondary students, with the objective of increased enrollment in STEM disciplines or interest in STEM careers. (Listed as NASA education priorities--2009 solicitation, p. 6). | Establish national network of universities with interests and capabilities in aeronautics, space and related fields (SG obj2) . | NASA education outcome 3: build strategic partnerships and linkages between STEM formal and informal education providers that promote STEM literacy and awareness of NASA's mission (engage and inspire) |
| NASA 2014 strategic plan | Engage in collaborative efforts with NASA personnel and facilities. | Number and types of collaborative efforts with NASA personnel and facilities | Enhance the capability of teachers to provide authentic, hands-on middle school student experiences in science and engineering disciplines. (Listed as NASA education priorities-- 2009 solicitation, p. 6). | Encourage cooperative programs among universities, aerospace industry, and federal, state and local governments. (SG obj 3) | NASA education outcome 1: contribute to the development of the science, technology, engineering, and mathematics (STEM) workforce in disciplines needed to achieve NASA's strategic goals (employ and educate) |
| Participation in CoSTEM | Develop programs or efforts to increase learning, to educate students, educators and the general public. | <ul style="list-style-type: none"> • Number and types of programs or efforts to increase learning, educate students, educators, and general public, by duration (2 days or more) • Number of program attendees | Develop new relationships with community colleges as well as sustain and strengthen existing institutional relationships with community colleges. (Listed as NASA education priorities-- 2009 solicitation, p.7). | Encourage interdisciplinary training, research and public service programs related to aerospace (SG obj 4) | |
| NASA educator professional development | Competitively award NASA funds | Number of affiliates, i.e., Numbers and types of partnerships with colleges (including community colleges) and universities, federal, state, and local governments, and aerospace industries | Diversified institutions, faculty, and student participants. (Listed as NASA education priorities – 2009 solicitation) | U.S. Citizens, especially women, underrepresented minorities, and persons with disabilities, are recruited for careers in aerospace science and technology. (SG obj 5) | |
| NASA education priorities | Coordinate with EPSCoR effort (i.e., No duplicate, support or provide seed money for EPSCoR effort) –only 26, 7, or 8 states) | | | | |
| Matching / leveraged funds | Activities in informal education | | | | |
| | Working with affiliates | | | | |
| | | | Ed146: 250,000 educators participate in NASA supported professional development, research, and internships that use NASA unique STEM content | | |
| | | | Ed148: 1 million elementary and secondary students participate in NASA STEM engagement activities | | |
| | | | Ed145: maintain the NASA museum alliance and/or other STEM education strategic partnerships in no fewer than 30 states, us territories and /or dc. | | |

PERFORMANCE MEASUREMENT RECOMMENDATIONS

Data Collection

- Use the Space Grant logic model and data quality assessment to identify valid/reliable data to tell the Space Grant story
 - Continue to collect individual-level demographic information, such as gender, race, ethnicity, disability status, and institution attending of students who received scholarship/fellowship/internship and significant investment.
 - Continue to track participants longitudinally to capture if they are in the STEM pipeline or employed in a STEM field. NASA OE should specify a number of years after participation for tracking.
 - Continue data collection on affiliates and non-affiliates/partners and collect more systematic data on the nature of the relationship/partnership

Ensuring Data Quality

- Use clear definitions
- Report data collection methods including any uncertainty, such as potentially missing data
- Ensure access to student demographic information for fellowship, scholarship and funding awardees across consortia and affiliates.
- Establish data collection agreements with institutions

Consortia Reporting/OEPM

- Streamline the Space Grant data collection and reporting forms in the OEPM system with intent to reduce burden
- Ask consortia to report how their programming reflects their respective state's needs.
- Allow year round reporting to the OEPM system
- Office of Education should assess whether more people could have access to the OEPM system to enter data directly
- Office of Education should consider aligning consortia performance periods

Space Grant National Office Reporting

- Recommend Office of Education publish a program-level annual performance report in order to inform consortia about the status of the national program. The report should include:
 - Description of each consortium, to include program characteristics, area of focus, and key consortium outputs and outcomes;
 - Include qualitative data collection and analyses of report data to obtain more in-depth insight of Space Grant success and impact.
 - Presentation of key national indicators to assess the overall consortia's progress and outcomes



EVALUATION RECOMMENDATIONS

Evaluation Framework

| Evaluation Question | Evaluation Approach | Data Collection Approach | Data Analysis Approach |
|---|--|--|---|
| EQ1a. Were Space Grant activities, as defined in the 2010 solicitation, carried out in compliance with Public Law 100-147? | Discrepancy Evaluation—requires operationalizing PL requirements. | Gather all available Space Grant activity descriptions from APD Reports, OEPM data, and State Consortia records | Qualitative—Comparison of documented Space Grant activities against PL requirements |
| EQ1b. Were Space Grant activities, as defined in the 2010 solicitation, carried out in alignment with the priorities of NASA Education and NASA research and technology development? | Discrepancy Evaluation—requires operationalizing NASA education and NASA research and technology development priorities. | Gather all available Space Grant activity descriptions from APD Reports, OEPM data, and State Consortia records | Qualitative—Comparison of documented Space Grant activities against NASA education and NASA research and technology development priorities |
| EQ2a. To what extent did funded activities engage the intended populations (i.e., diverse students, faculty, and institutions) as defined in the 2010 solicitation? | Descriptive assessment of available program data. | Gather all available Space Grant funded activity descriptions and engaged populations information from Student Data Tables, ADP reports, and selected OEPM data | Quantitative--Descriptive analysis of number/percentage of populations engaged |
| EQ2b. To what extent did funded activities meet program goals as defined in the 2010 solicitation? | Discrepancy Evaluation—requires definition of 2010 solicitation goals. | Gather all available Space Grant funded activity descriptions from Student Data Tables, ADP reports, State Consortia records, and selected OEPM data | Qualitative--Comparison of documented activities and 2010 solicitation goals |
| EQ3. To what extent did the methods of soliciting applications or requests, review of those requests, and awarding and distributing Space Grant funds support the quality of the results? | Multiple Case Study | Gather all available Space Grant funded activity descriptions from Student Data Tables, ADP reports, and selected OEPM data; operationalize “quality of results” | Quantitative—relationship between methods and quality of results; Qualitative—examine association of methods and quality of results as reported by Consortia |

Evaluation Framework

| | | | |
|---|--|--|---|
| <p>EQ4a. What effective practices exist in Consortia partnerships among universities, federal, state, and local governments, and aerospace industries to encourage and facilitate the application of university resources to aerospace and related fields?</p> | <p>Multiple Case Study</p> | <p>Gather all available Space Grant activity descriptions from APD Reports, OEPM data; Interviews with State Consortia Directors</p> | <p>Qualitative--Descriptive analysis of Space Grant Consortia practices identified as “effective” and their relationship to university resources expended</p> |
| <p>EQ4b. To what extent did these practices ensure the quality of results?</p> | <p>Multiple Case Study</p> | <p>Gather all available Space Grant activity descriptions from APD Reports, OEPM data</p> | <p>Qualitative—descriptive relationship between effective practices and quality of results</p> |
| <p>EQ5. What have been Space Grant’s major contributions to NASA’s education mission?</p> | <p>Discrepancy Evaluation—requires definition of “major” contributions</p> | <p>Gather all available Space Grant activity descriptions from APD Reports, OEPM data</p> | <p>Qualitative—Comparison of documented Space Grant activities against NASA education mission</p> |
| <p>EQ6. Given the national investment in Space Grant program, what, if any, new approaches to the management of Space Grant program should NASA consider for the future?</p> | <p>Summative Evaluation</p> | <p>Gather all available Space Grant activity descriptions from APD Reports, OEPM data; Interviews with State Consortia Directors</p> | <p>Qualitative—identification of new approaches to the management of Space Grant program</p> |
| <p>EQ7. In all, what are the challenges, barriers, and constraints encountered in ensuring high- quality results?</p> | <p>Multiple Case Study—requires definition of “high quality” results</p> | <p>Gather all available Space Grant activity descriptions from APD Reports, OEPM data; Interviews with State Consortia Directors</p> | <p>Qualitative—identification of challenges, barriers, and constraints encountered in project activities yielding high quality results</p> |

Feedback Welcome

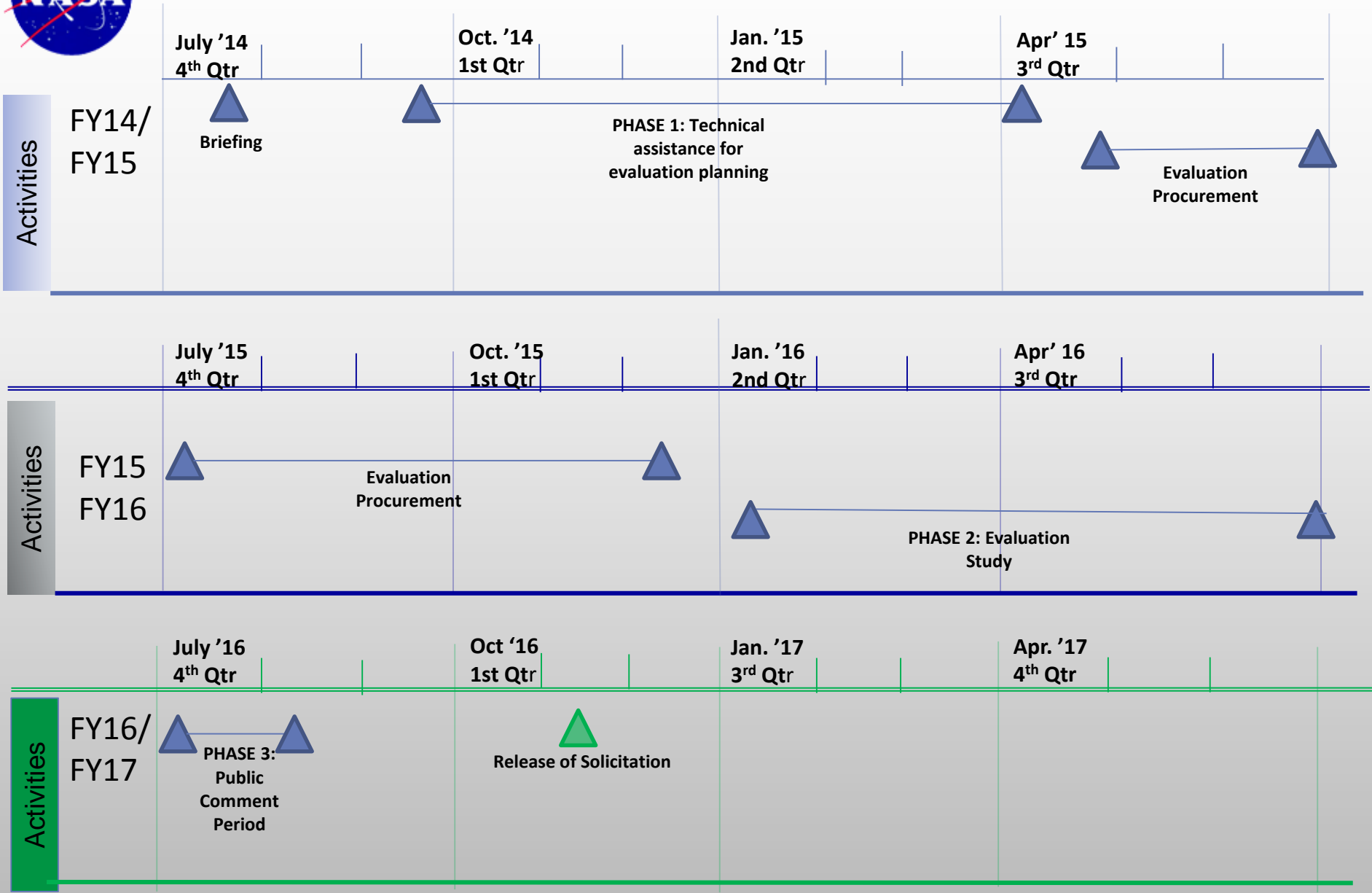
- NASA Office of Education encourages the Space Grant community to submit comments about the logic model and the recommendations.
- Submit comments in writing no later than October 23, 2015, to:
Patricia Moore Shaffer, Evaluation Manager
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Next Steps

- Release of detailed technical assistance report on NASA Performance Assessment website
- Office of Education procurement of evaluation contractors currently underway
- Report recommendations and community feedback incorporated into revision of reporting and performance measurement requirements and solicitation for evaluation study
 - Launch of external evaluation study by early 2016
 - Revision of OEPM data model and reporting forms beginning in FY2017



National Space Grant College and Fellowship Evaluation Milestones



COMMENTS:

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The executive summary report is available at:
<http://www.nasa.gov/offices/education/performance/index.html>

Thank you!