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EXECUTIVE SUMMARY

This National Aeronautics and Space Administration (NASA) Research Announcement (NRA), entitled *Education Opportunities in NASA STEM (EONS) – 2018*, solicits education opportunities in support of NASA’s Office of Education (OE) under the Minority University Research and Education Project (MUREP). NASA may elect to support some or none of the proposals submitted under this NRA through the use of non-MUREP funds if such funds are available from other NASA or federal sources.

The purpose of MUREP is to increase NASA’s responsiveness to Federal mandates related to Historically Black Colleges and Universities (HBCU), Hispanic Serving Institutions (HSI), Tribal Colleges and Universities (TCU), Asian American and Native American Pacific Islanders Serving Institutions (AANAPSI) and other Minority Serving Institutions (MSI). Currently, MUREP activities address Presidential Executive Orders No. 13779 on HBCUs; No. 13592 on American Indian and Alaska Native Education; No. 13555 on Educational Excellence for Hispanic Americans; No. 13515 on Increasing Participation of Asian American and Pacific Islanders (AAPI); and No. 13621 on Educational Excellence for African Americans in Federal Programs and Predominantly Black Institutions. The MUREP program team at NASA is responsible for developing agency-wide policies, procedures, and guidelines that enhance the involvement of all MSIs in NASA’s mission through MUREP-related activities.

Activities supported by MUREP provide underrepresented and underserved students majoring in a science, technology, engineering, or mathematics (STEM) discipline and also provide faculty at MSIs access to NASA research and education opportunities. Students and faculty supported by MUREP are provided opportunities to engage in NASA-related research and mission-specific technology development. MUREP projects are also designed to address the national challenges of attracting and retaining underrepresented and underserved undergraduate and graduate students in STEM.

The funds available for awards in each activity offered in this NRA can range from less than one million to five million dollars. This allows selection from a few to as many as several dozen proposals, depending on the proposed activity objectives and the submission of proposals of merit. Awards will be made as grants or cooperative agreements, depending on the nature of the proposing institution and/or activity requirements. The typical period of performance for an award is one to three years, although some project activities may specify shorter or longer (maximum of five years) periods. Any changes or modifications to any of these guidelines will be specified in the descriptions of the relevant activities in the Appendices of this solicitation.

Details of the solicited activities are included in the Appendices of this NRA. Proposal due dates are given in Table 2, Section 2 of this NRA. Interested Proposers are responsible for monitoring
the NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES) website http://nspires.nasaprs.com/ for new activities or amendments to this NRA.
SUMMARY OF SOLICITATION

1. FUNDING OPPORTUNITY DESCRIPTION

1.1 Background

The NASA Minority University Research and Education Project (MUREP) is administered through NASA’s Office of Education. The purpose of MUREP is to increase NASA’s responsiveness to Federal mandates related to Historically Black Colleges and Universities (HBCUs), Hispanic Serving Institutions (HSIs), Tribal Colleges and Universities (TCUs), Asian American and Native American Pacific Islanders Serving Institutions (AANAPISIs) and other Minority Serving Institutions (MSIs). Currently, MUREP projects address Presidential Executive Orders No. 13779 on HBCUs; No. 13270 on TCUs; No. 13230 on Educational Excellence for Hispanic Americans; No. 13515 on Increasing Participation of Asian American and Pacific Islanders (AAPI); and No. 13621 on Educational Excellence for African Americans in Federal Programs and Predominantly Black Institutions.

The MUREP team at NASA is responsible for developing agency-wide policies, procedures and guidelines that enhance the involvement of all MSIs in NASA’s mission through MUREP related activities. Activities supported by MUREP provide underrepresented and underserved students majoring in a STEM discipline and also provide faculty at MSIs with access to NASA research and education opportunities. Students and faculty supported by MUREP are provided opportunities to engage in NASA-related research and mission-specific technology development. MUREP projects are designed also to address the national challenges of attracting and retaining underrepresented and underserved undergraduate and graduate students in STEM.

1.2 NASA Strategic Plan and Relevance to Education

The NASA 2014 Strategic Plan includes the focus on the development of STEM disciplines along with the engagement of academic institutions and students in accomplishing NASA’s vision and mission. NASA contributes to national efforts for achieving excellence in STEM education through a comprehensive education portfolio implemented by the Office of Education, the Mission Directorates, and the NASA Centers. NASA will continue the Agency’s tradition of investing in the Nation’s education programs and supporting the country’s educators who play a key role in preparing, inspiring, exciting, encouraging, and nurturing the young minds of today who will manage and lead the Nation’s laboratories and research centers of tomorrow.

NASA Strategic Goal and Objective relevant to education are outlined by the 2014 NASA Strategic Plan https://www.nasa.gov/sites/default/files/files/FY2014_NASA_SP_508c.pdf:

Strategic Goal 2: Advance understanding of Earth and develop technologies to improve the quality of life on our home planet.

Objective 2.4: Advance the Nation’s STEM education and workforce pipeline by working collaboratively with other agencies to engage students, teachers and faculty in NASA’s mission and unique assets.
NASA’s Performance Goals and Annual Performance Indicators (APIs) are outlined in NASA FY 2015 Annual Performance Report FY 2017 Annual Performance Plan


Planned Future Performance for FY 2017:

- **ED-17-1:** Provide significant, direct student awards in higher education to (1) students across all institutional categories and levels (as defined by the U.S. Department of Education), (2) racially or ethnically underrepresented students, (3) women, and (4) persons with disabilities at percentages that meet or exceed the national enrolled percentages for these populations, as determined by the most recent, publicly available data from the U.S. Department of Education’s National Center for Education Statistics for a minimum of two of the four categories.

- **ED-17-2:** Engage with at least 10,000 educators in NASA educator professional development through face-to-face, online, partner-delivered, and community-requested activities.

- **ED-17-3:** Ensure that at least 30 percent of grantees and cooperative agreement awardees conduct independent evaluations and report to NASA on their evaluation activities.

- **ED-17-4:** Support informal education institutions, including youth-serving organizations, to use NASA-unique content in no fewer than 40 states, U.S. Territories and/or the District of Columbia.

- **ED-17-5:** Provide NASA STEM engagement to at least 50,000 elementary, secondary, and higher education students through authentic STEM experiences.

1.3 Guidebook for Proposers

All policies and procedures for the preparation and submission of proposals, as well as those for NASA’s review and selection of proposals for funding, are presented in a separate document entitled *Guidebook for Proposers Responding to a NASA Funding Announcement (NFA)* (the Guidebook for Proposers) that is located at [https://www.hq.nasa.gov/office/procurement/nraguidebook/Proposer2017.pdf](https://www.hq.nasa.gov/office/procurement/nraguidebook/Proposer2017.pdf). The 2017 Guidebook for Proposers is hereby incorporated into this NRA by reference, and Proposers are responsible for understanding and complying with its procedures before preparing and submitting their proposals. Unless otherwise noted, proposals that do not conform to the standards in the Guidebook for Proposers may be deemed noncompliant and rejected without peer review. The chapters and appendices in the Guidebook for Proposers provide supplemental information about the entire NRA process, including NASA policies for the solicitation of proposals; guidelines for writing complete and effective proposals; NASA policies and procedures for the review and selection of proposals; as well as for issuing and managing the
awards to the institutions that submitted selected proposals. Note that NASA’s policy for proposals involving non-U.S. participants is provided in Appendix A of the Guidebook for Proposers.

1.4 NASA’s Safety Policy

All proposals shall take into consideration NASA’s priority emphasis on safety.

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) astronauts and pilots, (3) the NASA workforce (including employees working under NASA award instruments), and (4) high-value equipment and property.

Proposers shall have a written safety policy. MUREP awardees shall notify the NASA Shared Services Center (NSSC) of any mishaps and close calls related to award implementation within ten (10) business days of the occurrence of the close call or mishap. The following NASA procedural requirement applies to NASA entities and may be useful to non-NASA entities for benchmarking purposes:

NPR 8621.1C: NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping

Responsible Office: Office of Safety and Mission Assurance
http://nodis3.gsfc.nasa.gov/displayDir.cfm?t=NPR&c=8621&s=1C

For additional information on the NASA Safety and Mission Assurance Program see:
http://sma.nasa.gov.

1.5 NASA’s Plan for Increasing Access to Results of Federally Funded Research

In keeping with NASA’s Plan for Increasing Access to the Results of Scientific Research (https://www.nasa.gov/sites/default/files/atoms/files/206985_2015_nasa_plan-for-web.pdf), new terms and conditions about making manuscripts and data publically accessible may be attached to awards issued under this NRA. For projects proposing scientific research, Proposers shall include a Data Management Plan (DMP). DMPs shall describe how data generated by proposed research will be shared and preserved and how data collected will be made available to the public. If the Proposer does not believe data should be publically shared, then the Proposer shall provide an explanation as to why data-sharing and/or preservation is not possible or scientifically appropriate. Additionally, the DMP shall 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 shall 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 proposals. Costs of the DMP shall be included in the proposed budget. Also see Section 3.11 in the NASA Guidebook for Proposers and the following website: https://www.nasa.gov/open/researchaccess.
2. AWARD INFORMATION

2.1 Award Type and Availability of Funds for Awards

Awards made resulting from this NRA will be in the form of grants or cooperative agreements, depending on the nature of the submitting institution and/or the specific requirements for awards given in each activity description in the appendices. The type of award to be offered to selected Proposers will generally follow the policies in Appendix F of the Guidebook for Proposers, although in a few cases, only one type of award may be offered, as specified in the activity description. NASA will determine the appropriate award instrument for the selections resulting from this solicitation. Grants and cooperative agreements will be subject to the provisions of 2 CFR 1800, the NASA Grant and Cooperative Agreement Manual (GCAM), and Appendix D of the Guidebook for Proposers (all found at https://prod.nais.nasa.gov/pub/pub_library/srba/index.html). In the case of any conflict between the content of this NRA and the Guidebook for Proposers, this NRA takes precedence. Prospective Proposers to this NRA are advised that in general, funds are not available to award all solicited activities at the time of this NRA release. The Government’s obligation to make awards is contingent upon the availability of sufficient appropriated funds from which payment can be made and the receipt of proposals that NASA determines are acceptable for award under this NRA. Further, continuation of the awards in the second and subsequent years (if applicable) will be contingent on the availability of appropriated funds, progress of the project, and continued relevance of the project to NASA programs.

The amount of funds expected to be available for new awards for proposals submitted in response to this NRA is given in the Summary of Key Information at the end of each activity description in the appendices. Given the submission of meritorious proposals, the number of awards that may be made for each activity is also provided. A list of MUREP solicited activities is provided in Table 2 at the end of Section 2.

2.2 Award Period of Performance

The maximum period of performance (duration) for awards made under this NRA is given in the Summary of Key Information at the end of each activity description in the appendices. Any proposed period of performance shall be justified in the proposal. The appropriateness of the proposed period of performance will be evaluated by peer review. NASA may select proposals for shorter award durations than proposed.

2.3 Cancellation of NASA Research Announcement (NRA)

NASA reserves the right not to make any awards under this NRA and/or to cancel this NRA at any time prior to award. NASA assumes no liability (including reimbursement of proposal costs) for canceling the NRA or for any entity’s failure to receive an actual notice of cancellation.

2.4 Schedule for Awards

Every effort will be made to announce selections within six (6) months from the proposal submission deadline. Selection notifications will be communicated electronically via NSPIRES to the institution’s Authorized Organization Representative (AOR) and Principal Investigator (PI). NSPIRES sends a decision notice via email requesting the PI or AOR to log into NSPIRES. This decision notice e-mail means that NSPIRES has been updated to indicate the
status of a proposal in NASA’s selection review process. When a PI or AOR logs into NSPIRES the following are examples of the type of decisions possible:

- A “declined” status means that: 1) NASA’s review of the proposal is concluded; and 2) no NASA funds are available to support the proposed project.
- A “selected” or “selectable (pending)” status means that the proposal’s review continues and the proposal has NOT received an award. A “selected” or “selectable (pending)” proposal status in NSPIRES is NOT a commitment that a proposal has or will receive an award by the NSSC nor that any funds have been or will be transferred from NASA Headquarters to a NASA Field Center.

Proposers are cautioned that only a NASA Grant Officer may make commitments, obligations or awards on behalf of NASA or authorize the expenditure of funds. No commitment on the part of NASA should be inferred from technical or budgetary discussions with anyone other than a NASA Grant officer. A PI or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by a NASA Grant Officer does so at their own risk. Please refer to Section 5.4 of the Guidebook for Proposers for more information.

### 2.5 Successor Proposals and Resubmissions

Generally, researchers holding previous awards selected through any of the projects offered through earlier NRAs may submit “successor” proposals that seek to continue a previously funded line of work. However, each individual project will provide specific information on eligibility as outlined in the Appendix. For future offerings under continuing proposals, it is NASA Office of Education’s policy that successor proposals will be considered along with new proposals submitted for that same activity; will undergo the full peer review process, and will not be advantaged nor disadvantaged in the evaluation process because they are successor proposals. Instructions regarding successor proposals may be found in Section 3.5 of the Guidebook for Proposers.

Proposals that were submitted but not selected from any previous NASA solicitation may be submitted either in a revised or original form. Such proposals will undergo full peer review, along with new proposals that NASA receives, and will not be advantaged nor disadvantaged in the evaluation process because they were previously submitted.

### 2.6 Proposal Funding Restrictions

In addition to the funding restrictions and requirements included in the Guidebook for Proposers, 2 CFR 1800, and the GCAM, the following restrictions are applicable to this EONS NRA.

- As directed in the Guidebook for Proposers, Section 3.18, other than the special cases discussed in the same Section 3.18, and unless specifically noted otherwise in the specific EONS activity appendix, the proposing PI institution shall subcontract the funding of all proposed Co-Is who reside at other non-Government institutions.
- The construction of facilities is not allowed for any of the activities solicited in this NRA unless specifically stated. For further information on what costs are permissible, refer to the cost principles in Subpart E of 2 CFR 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards.
• U.S. award recipients may directly purchase supplies and/or services from non-U.S. sources that do not constitute research, but award funds may not be used to fund research carried out by non-U.S. institutions. However, a foreign national may receive payment through a NASA award for the conduct of research while employed either full-time or part-time by a U.S. institution (see Section 3.2 of the Guidebook for Proposers; see also Appendix B and C).

• Reasonable and justified travel by a participant in the research investigation, whether for the purpose of conducting the research, for collaboration, or for attending a conference, is considered to be a reasonable expense. NASA conducts its collaborations with foreign institutions on a no-exchange-of-funds basis. NASA funding may not be used for foreign institutions to conduct research efforts at any level. Therefore, NASA funding shall not be used for travel expenses for any participant who is not employed either full-time or part-time by a U.S. institution (see Section 3.2 of the Guidebook for Proposers; see also Appendix B and C).

### TABLE 2. MUREP Solicited Activities [1]

<table>
<thead>
<tr>
<th>APPENDIX</th>
<th>ACTIVITY</th>
<th>Notice of Intent (NOI) DUE DATE</th>
<th>PROPOSAL DUE DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>MUREP Aerospace Academy (MAA)</td>
<td>01/18/18</td>
<td>3/22/18</td>
</tr>
</tbody>
</table>

Notes:
[1] Amended due dates and new activities will be indicated with bold red text as EONS-2018 is amended through the 2018 fiscal year.

### 2.7 Intellectual Property Developed under Awards

#### 2.7.1 Data Rights

NASA encourages the widest practicable dissemination of research results at any time during the course of the investigation. The award will contain the Rights in Data clause at 2 CFR 1800.909 that allows a Grant/Cooperative Agreement recipient to assert copyright in any work that is subject to copyright and was developed, or for which ownership was acquired, under the NASA award. NASA will reserve a royalty-free, nonexclusive and irrevocable right to reproduce, publish, or otherwise use the work for Government purposes, and to authorize others to do so, in any such copyrighted work. Note that the Grant Officer may revise the language under this Rights in Data clause to modify each party's rights based on the particular circumstances of the program and/or the recipient's need to protect specific proprietary information.
2.7.2 Patent Rights

Awards are subject to the provisions of 37 CFR 401.3(a) which requires use of the standard clause set forth at 37 CFR 401.14 “Patent Rights (Small Business Firms and Nonprofit Organizations),” and 2 CFR 1800.908 “Patent Rights.”

3. ELIGIBILITY INFORMATION

3.1 Proposing Institutions

The following categories of U.S. institutions are eligible to propose to the various activities under MUREP. Refer to each activity description for more details.

Table of Eligibility for Lead Institution

<table>
<thead>
<tr>
<th>MUREP ACTIVITY SAMPLE</th>
<th>SAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historically Black Colleges and Universities (HBCU)</td>
<td>✓</td>
</tr>
<tr>
<td>Hispanic Serving Institutions (HSI)</td>
<td>✓</td>
</tr>
<tr>
<td>Tribal Colleges and Universities (TCU)</td>
<td>✓</td>
</tr>
<tr>
<td>Asian American and Native American Pacific Islander-Serving Institutions (AANAPISIs)</td>
<td>✓</td>
</tr>
<tr>
<td>American Indian and Alaskan Native Serving Institution (AIANSI)</td>
<td>✓</td>
</tr>
<tr>
<td>Predominately Black Institutions (PBI)</td>
<td>✓</td>
</tr>
<tr>
<td>Minority Serving Community Colleges</td>
<td>✓</td>
</tr>
<tr>
<td>Nonprofit Institutions (see Note 1)</td>
<td>✓</td>
</tr>
</tbody>
</table>

Note 1. See Guidebook for Proposers, Section 3.18.

For a list of designated MSIs, please go to: http://www.ed.gov/about/offices/list/ocr/edlite-minorityinst.html

For institutions that serve a substantial Hispanic enrollment but have not been designated as an HSI or MSI by the US Department of Education, the institution shall submit documentation that its full-time undergraduate Hispanic enrollment is at least 25 percent of its total enrollment.
NASA Centers, Federal Agencies, Federally Funded Research and Development Centers, non-minority serving higher education institutions, state agencies, local agencies, federally recognized tribal government agencies, science museums and planetariums, for-profit companies, non-U.S. institutions and other institutions including those types listed in the table above may participate through a partnership with the lead institution.

All institutions receiving funds shall be listed on the proposal cover page.

Work to be performed through subcontracts/subawards shall be proposed in accordance with Section 3.20 of the Guidebook for Proposers.

In accordance with Federal statutes and NASA policy, no eligible applicant shall be excluded from participation in, denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance from NASA on the grounds of race, color, creed, age, sex, national origin, or disability.

For more information on national policy with regard to MSIs, please see the following websites:

- White House Initiative on Educational Excellence for African Americans http://sites.ed.gov/whieea/
- White House Initiative on Historically Black Colleges and Universities http://www.ed.gov/edblogs/whhbcu/
- White House Initiative on Educational Excellence for Hispanic Americans http://www2.ed.gov/about/its/list/hispanic-initiative/index.html
- White House Initiative on American Indian and Alaska Native Education http://www.ed.gov/edblogs/whiaiane/
- White House Initiative on Asian American and Pacific Islanders https://sites.ed.gov/aapi/

3.2 Number of Proposals and Teaming Arrangements

The individual appendices contain specific requirements regarding the number of proposals that an institution may submit as well as information regarding teaming arrangements. If more than one proposal is allowed, each proposal shall be a separate, stand-alone, complete document in order for NASA to evaluate it.

3.3 Principal Investigators and Proposal Team Members

Every institution submitting a proposal in response to this NRA shall designate a single individual, the Principal Investigator (PI), who will be responsible for the quality and direction of the entire proposed effort and for the use of all awarded funds. Because EONS does not accept the designation of a “Co-Principal Investigator;” there shall be only one PI who is solely responsible for the proposed investigation.

Individuals from institutions other than eligible lead institutions may be identified in a proposal as a Co-Investigator (Co-I) or other type of team member/collaborator but not as a PI. (See Section 3.17 of the Guidebook for Proposers). Proposals that include the participation of an individual from a NASA Center or Jet Propulsion Laboratory (JPL) shall include a statement of commitment acknowledging his/her participation, and should identify such team member(s) with

3.4 Cost Sharing or Matching

Responders to this NRA are not required to propose or provide matching funds; nonetheless, NASA can accept cost sharing if it is voluntarily offered (see 2 CFR 200.306 “Cost Sharing or Matching”).

3.5 Special considerations for NASA team members

Any proposal that includes a NASA team member shall include the NASA Center on the cover page. The total budget request for the NASA Center (as stipulated in the accompanying Letter of Support) shall also be specified under the NASA Partner team member.

Since NASA funding sent to NASA Centers shall be obligated in the same fiscal year (FY) in which it is received, proposals including NASA Centers (except JPL) shall provide a breakdown of funding by NASA Center and by fiscal year, assuming the start date given in the “Summary of Key Information” table at the end of the appendix (the default is six months after proposal submission). For example, an EONS-2018 proposal for a two-year award that starts in late FY 2018 could phase the funds for civil servants as follows: 1/4 of a year’s funding in FY 2018, a full year’s funding in FY 2019, and 3/4 of a year’s funding in FY 2020.

3.6 Submissions from Non-Domestic Entities

NASA may consider proposals from entities outside the U.S. However, foreign entities are generally not eligible to receive funding from NASA. Therefore, unless otherwise noted in this NRA, 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 U.S. entity’s participation shall be included. Proposals from foreign entities and proposals from U.S. entities that include foreign participation shall be endorsed by the respective government agency or funding/sponsoring institution in the country from which the foreign entity is proposing. Such endorsement shall indicate that the proposal merits careful consideration by NASA, and if the proposal is selected, that sufficient funds will be made available to execute the activity as proposed.

4. CERTIFICATIONS OF COMPLIANCE

See the Certifications and Assurances link on the NASA Grant and Cooperative Agreement webpage and Section 3.9 of the Guidebook for Proposers. Both can be found at the following site: https://prod.nais.nasa.gov/pub/pub_library/srba/index.html.

The AOR’s signature automatically certifies that the proposing organization has read and is in compliance with the identified certifications, assurances, and representations.
5. PROPOSAL INSTRUCTIONS AND SUBMISSION INFORMATION

5.1 Proposal Submission Date and Time

All information needed to apply to this solicitation is contained in this EONS NRA and in the companion document, the **Guidebook for Proposers**. For each solicitation opportunity (activity) provided in the appendices of this NRA, the electronic proposal shall be submitted in its entirety by an Authorized Organizational Representative (AOR) no later than the proposal deadline on the appropriate proposal due date given in Table 2 of this NRA. Unless stated otherwise in the relevant appendix to this NRA, the proposal deadline is 11:59 p.m. Eastern Time. Please refer to the activity descriptions in the appendices for specific due dates.

On-time electronic submission is required for every proposal. While every effort is made to ensure the reliability and accessibility of the websites and to maintain a help center via e-mail and telephone, difficulty may arise at any point on the internet, including with the user’s own equipment. Prospective Proposers are urged to familiarize themselves with the NSPIRES or Grants.gov site and to submit the required proposal materials well in advance of the proposal submission deadline. Difficulty in registering with or using the NSPIRES or Grants.gov proposal submission systems is not, in and of itself, a sufficient reason for NASA to consider a late proposal. Proposers may contact the NSPIRES help desk by email at nspires-help@nasaprs.com or by calling, Monday through Friday from 8:00 am to 6:00 pm Eastern Time at (202) 479-9376, excluding federal holidays. The grants.gov contact center is available by email at support@grants.gov, or by calling 1-800-518-4726 and via website at [http://www.grants.gov/](http://www.grants.gov/).

5.2 Submission of Proposals

All proposals submitted in response to this EONS NRA shall be submitted in a fully electronic form. Hard copy proposal or components of the proposal submissions will not be accepted. Electronic proposals shall be submitted by one of the officials at the PI’s institution who is authorized to make such a submission, the AOR. The AOR’s electronic submission of the proposal fulfills the requirement for signature of the proposal by an authorized official of the proposing institution.

Proposers may opt to submit proposals in response to this EONS NRA via two different electronic proposal submission systems: either NSPIRES or Grants.gov. In all cases, registration on NSPIRES is required for review and award of any funded activity offered through this solicitation; therefore, Proposers are encouraged to use the NSPIRES system for submission of the proposal. Proposals submitted via Grants.gov will be transferred to NSPIRES for review. Additional information about NSPIRES and Grants.gov can be found in Sections 4.2 and 4.3 of the **Guidebook for Proposers**. Note that entities may begin working in these systems as soon as the NRA is released. Further, entities may edit the required information as many times as needed until the proposal and accompanying cover sheet information are ready for submission.

**IMPORTANT NOTICE ABOUT GRANTS.GOV:** Beginning January 1, 2018, applicants will no longer be able to download the single PDF application package of forms in Grants.gov. Instead, applications submitted through Grants.gov must be submitted through the “Workspace” feature. Information on the Workspace feature can be found at the Grants.gov Workspace Overview Page. If the application package is downloaded on or before December 31, 2017, then you may submit through PDF until the closing date of the
appendix or March 31, 2018, whichever is earlier. All instructions provided in this NRA and in the Guidebook for Proposers are for the PDF application package.

5.3 Registration

In order to submit a proposal, all team members and their institutions shall first be registered in the NSPIRES (http://nspires.nasaprs.com) system. Proposers submitting through Grants.gov shall also register on Grants.gov. Details of the multi-step registration process, which takes three (3) business days (or up to four (4) weeks if all steps are not completed in a timely manner) to register a new institution, are described in http://www.grants.gov/help/html/help/index.htm#t=Get_Started%2FGet_Started.htm. Registration in NSPIRES cannot be accomplished until each applicable institution obtains a Data Universal Number (DUNS) and registers in the System for Award Management (SAM - http://sam.gov). Once the DUNS and SAM steps are complete, the institutions and each team member shall then register with NSPIRES and with Grants.gov if that submission medium will be used. PLEASE NOTE: registration with NSPIRES is required in order to complete transfer of the Grants.gov proposal to NASA for review. Linking a team member’s registration with its institution will automatically associate all required numbers (DUNS, CAGE, and EIN) with the same proposal.

To identify the AOR, who also can register the institution if it is not already registered, a potential PI can contact his or her Sponsored Research Office (SRO). If that fails or there is no SRO, the NSPIRES Help Desk can determine who the AOR is from the SAM system. If an institution is not registered in SAM, then the point of contact (POC) from the Office of Sponsored Research/Electronic Business POC shall register it in SAM.

No later than the due date for proposals, Proposers to this NRA are required to have:
1) a Data Universal Numbering System (DUNS) number;
2) a valid registration with the System for Award Management (SAM);
3) a valid Commercial And Government Entity (CAGE) Code; and
4) a valid registration with NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES) (this also applies to any entities proposed for subawards or subcontracts).

5.4 Special Advisory Regarding Grants.gov Submissions to an EONS Appendix

Applicants choosing to submit a proposal via Grants.gov shall also register in the NSPIRES site well in advance of the proposal due date. Grants.gov proposals are transcribed manually to NSPIRES so that NASA is able to review them. Grants.gov proposals cannot be transcribed for entities that are: 1) not eligible to compete or 2) not registered in NSPIRES by the due date for proposals for this NRA. Technical Note: Grants.gov does not use the NASA budget template and lacks data quality control checks available to proposals that are submitted via NSPIRES.

In order to submit a proposal via Grants.gov, Grants.gov requires that the PI download an application package from Grants.gov. Identifying the appropriate application package requires the funding opportunity number for that program; the funding opportunity number may be found in the Summary of Key Information subsection for each Appendix that concludes each activity.
description. Proposals submitted via Grants.gov shall be submitted by the AOR.

Additional instructions for formatting and submitting proposals via Grants.gov may be found in the NASA Guidebook for Proposers, Sections 4.3.

Instructions for NASA-specific forms and NASA program-specific forms are included in the solicitation and at http://nspires.nasaprs.com/external/faq.do - eq2. These NASA program-specific forms are required, and failure to properly include them with the NSPIRES and/or Grants.gov submissions may result in the proposal being deemed nonresponsive and rejected without peer review. For any questions that cannot be resolved with the available on-line help menus and documentation, requests for assistance may be directed by e-mail to support@grants.gov or by telephone to (800) 518-4726.

Assembly of Electronic Proposals (see Section 3.22 of the NASA Guidebook for Proposers).

For proposals submitted electronically, the Scientific/Technical/ Management Section and other required sections of the proposal are submitted as one unlocked, searchable PDF file that is attached to the electronic submission using one of the proposal submission systems. All required and permitted appendices and attachments shall be submitted in the PDF file that is attached to the electronic submission. Including any part of the proposal twice creates an additional burden on the peer reviewers. Each Proposer shall assemble its proposal into one PDF file before submission. Forms submitted in any other format may not be accepted and will not be forwarded for peer review. Proposals may be deemed noncompliant if they are not submitted in the required PDF format.

Sections of proposals transferred from Grants.gov to NSPIRES may appear in a slightly different order. This will be considered compliant as long as the Proposer originally submitted all of the required forms and documents to Grants.gov.

NASA Requirements for Uploaded PDF Files (see Section 3.23 of the NASA Guidebook for Proposers).

It is essential that the PDF file submitted meet NASA requirements. This will ensure that the submitted file can be accepted by NSPIRES, regardless of whether the proposal is submitted via NSPIRES or Grants.gov. This will also ensure that proposals can be accessed by community reviewers and NASA staff using a wide variety of computers, operating systems, and PDF readers. At a minimum, it is the responsibility of the Proposer to ensure:

(1) that the PDF file is unlocked and that edit permission is enabled,
(2) that all fonts are embedded in the PDF file, and
(3) that only Type 1 or TrueType fonts are used.

In addition, any Proposer who creates files using TeX or LaTeX is required to first create a DVI file and then convert the DVI file to Postscript and then to PDF.

All Proposers are encouraged to reference http://nspires.nasaprs.com/tutorials/PDF_Guidelines.pdf for more information on creating PDF
documents that are compliant with NSPIRES. There have been recent occurrences in which pdf files produced using newer versions of Microsoft Word have not been accepted properly into NSPIRES. PDF files that do not meet NASA requirements cannot be accepted by the NSPIRES system; such files may be deemed noncompliant and not submitted to peer review for evaluation.

It is the responsibility of each applicant to verify the accuracy and completeness of its proposal, including all text, figures, tables, and required forms. NSPIRES provides the “Generate” function (found on the “View Proposal” page within NSPIRES) to allow applicants to verify before submission that all information contained in proposal PDF file(s) being provided to NSPIRES is complete and accurate. Well in advance of the proposal due date, the applicant shall “Generate” the “Complete Proposal,” then download and review the resulting file from NSPIRES to ensure that all text, figures, tables, and required forms are complete and accurate. The applicant should immediately call the NSPIRES Help Desk for assistance with any proposal that is not complete and correct.

The file size limit for proposals submitted electronically to NASA through either NSPIRES or Grants.gov is ten (10) MB. This limit applies to the combined size of all files that are uploaded for a single proposal. Note that large file sizes can impact the time it takes for NASA and peer reviewers to download and access each proposal. In order to increase the ease in reviewing proposals, applicants shall crop and compress any embedded photos and graphic files to an appropriate size and resolution.

Grants.gov provides proposals to NASA and then those proposals are transcribed to NSPIRES for applicants that registered in NSPIRES by the proposal due date. NSPIRES then generates a NASA proposal number for the Grants.gov users and sends a notification e-mail. Depending on the volume of proposals submitted to Grants.gov, Grants.gov users can expect an email no earlier than 15 business days from the proposal due date. If a Grants.gov submitter has not submitted a complete registration in NSPIRES (including AOR, PI, proposed sub awards) by the time NASA is ready to transcribe the proposal from Grants.gov into NSPIRES, the proposal shall be considered late. (See Appendix C of this NRA.)

Finally, if a Grants.gov submitter did not format the proposal so it can be transcribed cleanly (without consultation with the submitter) into NSPIRES for review, NASA shall consider the Grants.gov proposal to be late. Grants.gov users are responsible for understanding all the required fields in NSPIRES to ensure accurate transcription. NASA is not responsible for transcription errors in NSPIRES resulting from proposals that were originally submitted to Grants.gov.

5.5 Notice of Intent to Propose

To assist in the planning of the proposal evaluation process, NASA strongly encourages all prospective Proposers to submit a Notice of Intent (NOI) to propose by the date given in each appendix. An NOI is not required, but is strongly encouraged. The information contained in an NOI is used to help expedite the proposal review activities; therefore, it is of considerable value to both NASA and the Proposer. To be of maximum value, NOIs are to be submitted electronically by entering the requested information through NSPIRES at http://nspires.nasaprs.com by the dates given in Table 2 of this NRA for each activity in the relevant appendix. Note that NOIs may be submitted within NSPIRES directly by the PI; no action by an institution’s AOR is required to submit an NOI.
Grants.gov does not provide NOI capability; therefore, NOIs shall be submitted via NSPIRES, regardless of whether the proposal will be submitted via NSPIRES or Grants.gov. Interested Proposers shall register with NSPIRES before it can be accessed for use. NSPIRES is open for the submission of NOIs for typically 30 days, starting about 90 days in advance of the due date for proposals. Since NOIs submitted after these deadlines may still be useful to NASA, late NOIs may be submitted as directed in Section 3.3 of the Guidebook for Proposers.

NOIs also aid NASA in establishing a peer review process that is free from conflicts of interest and that incorporates the requisite expertise. A separate NOI should be submitted for each intended proposal. The submission of a NOI is not a commitment to submit a proposal, nor is information contained therein considered binding on the submitter. NOIs will be treated as competition-sensitive material. Additional information about the NOI can be found in Section 3.3 of the Guidebook for Proposers.

5.6 Team Member Confirmation

Each individual team member (e.g., PI, Co-Is, etc.), including all personnel listed on the proposal’s electronic cover page, shall confirm their participation on that proposal (indicating team member role) and specify an institutional affiliation. For proposals submitted via NSPIRES, this confirmation is via NSPIRES. For proposals submitted via Grants.gov, this confirmation is via “Statements of Commitment” included within the proposal. The institutional affiliation specified on the cover page shall be the institution through which the team member would work and receive funding while participating in the proposed investigation. If the individual has multiple affiliations, then this institution may be different from the individual’s primary employer or preferred mailing address. Any institution requesting NASA funds through the proposed investigation shall be listed on the Proposal Cover Page. Team members shall ensure that their contact information is current. Changes can be made using the “Account Management” link on the “NSPIRES Options” page.

5.7 Withdrawal of Proposals

The Proposer may withdraw proposals at any time before award. Proposers shall timely notify NASA if the proposal is funded by another institution or of other changed circumstances that necessitate withdrawal of the proposal.

5.8 Questions Related to this NRA

Questions regarding this NRA or its activities shall be directed to the cognizant Project Manager identified in the Summary of Key Information subsection that concludes each activity description. Any clarifications or questions and answers that are published will be posted on the relevant activity’s NSPIRES web page. Interested Proposers shall routinely check for such information prior to submitting their proposals.

Clarification questions regarding this solicitation shall be submitted in writing or via E-mail as soon as possible but no later than ten (10) days prior to the proposal due date to the designated Activity Manager given in each activity.

5.9 Conflict of Interest Check Information

NASA requires all peer reviewers and/or panelists to disclose any conflicts of interest (see the Guidebook for Proposers). Peer reviewers are also expected to disclose situations that may give
the appearance of bias, or that may cause a reasonable observer to question the ability of the reviewer to provide an unbiased evaluation of a proposal. Peer reviewers are required to sign a nondisclosure/conflict of interest form prior to being granted access to proposals. To facilitate this check for conflicts of interest, any institution requesting NASA funds through the proposal SHALL be listed on the proposal cover page.

5.10 Other Submission Requirements

All proposals shall comply with the general requirements of this NRA. Upon receipt, proposals will be reviewed for compliance to ensure that the proposal includes the following:

- Submission of a complete proposal with all required elements.
- Submission of a proposal from an eligible Proposer as specified in the Eligibility Information. (Section 3 of this NRA).
- Submission of a budget narrative that includes details of any subawards and that is for a funding period consistent with this NRA.
- Submission of a proposal that is consistent with the page limitations and formatting guidelines specified in this NRA and the Guidebook for Proposers.

At NASA’s discretion, non-compliant proposals may be rejected and not evaluated further.

5.11 Content and Format of the Proposal Submission

Required elements of the proposal as described below shall be submitted via the NSPIRES website or Grants.gov. Proposers shall assemble their proposal into one PDF file (except the NSPIRES-generated Proposal Cover Page) prior to upload of the proposal. Proposers shall comply with all format requirements identified in this NRA and in the Guidebook for Proposers. Please refer to Section 3 of the Guidebook for Proposers for more information on proposal submission procedures. Section 3.6 of the Guidebook for Proposers provides important guidelines for style formats. A sample proposal cover page can be found in Appendix B.
NSPIRES Cover Page and Budget Form (Section 3.7 of the Guidebook for Proposers): The NSPIRES Cover Page contains the following:

**Proposal Information:** PI information, proposal title, proposed start and end dates, submitting institution information, certification and authorization.

**Certifications Regarding Lobbying, Disbarment, Suspension and Other Responsibility Matters:** The AOR’s signature on the Proposal Cover Page automatically certifies that the proposing organization has read and shall comply with these certifications. No additional form is necessary. See 2 CFR 1800, Appendix A.

**Team Members:** Names, institution and contact information. (Note: Each team member shall register him/herself in NSPIRES and complete all required data. Each team member shall establish an organizational relationship; i.e., identify the organization or other auspices through which the person is participating in the proposal. A proposal cannot be submitted if an organizational relationship within NSPIRES is missing for any team member.)

**Proposal Title:** Include a meaningful title for the proposed project applicable to specific Appendix. (Note: Title length may not exceed 255 characters including spaces.)

**Project Summary** *(max. 4000 characters, Section 3.7 & 3.9 of the Guidebook for Proposers):* Provide a brief description of the project, including objectives, targeted audience, partners, method of approach, relevance to NASA themes, use of NASA content, and outcomes.

**Budget Figures:** Include figures for each year (up to the number of years of the period of performance) of the proposed project in the spaces provided. This is the total budget, including any subawards.

**Note:** Sample Cover Pages are located in Appendix B of this NRA. NASA is not permitted to fund institutions that are not listed on the Proposal Cover Page. This includes NASA Centers.
<table>
<thead>
<tr>
<th>Proposal Elements</th>
<th>Page Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Table of Contents (TOC)</strong> (Section 3.7 &amp; 3.12 of the <em>Guidebook for Proposers</em>)</td>
<td>1-2 pages</td>
</tr>
<tr>
<td>NSPIRES does not offer a stand-alone TOC file upload choice. If not uploading a complete end-to-end proposal in a single PDF, include a TOC as the first page(s) of the project description even if that results in the project description being longer than 15 pages.</td>
<td></td>
</tr>
<tr>
<td><strong>Project Description</strong>: A detailed description of the proposed plan. Page limit includes all illustrations, tables, and figures, where each “n-page” foldout counts as n-pages and each side of a sheet containing text or an illustration counts as a page.</td>
<td>maximum 15 pages</td>
</tr>
<tr>
<td><strong>References and Citations</strong> (Section 3.14 of <em>Guidebook for Proposers</em>)</td>
<td>1 or more (if applicable)</td>
</tr>
<tr>
<td><strong>Biographical Sketches</strong>: Submit sketches for key personnel using the guidelines from Section 3.15 of <em>Guidebook for Proposers</em> and references therein.</td>
<td>PI: max 2 pages</td>
</tr>
<tr>
<td><strong>Past, Current and Pending Support</strong> (Section 3.16 of <em>Guidebook for Proposers</em> and references therein):</td>
<td>Each Co-I and Other Key Personnel: max 1 page</td>
</tr>
<tr>
<td><strong>Statements of Commitment and Letters of Support</strong> (Section 3.17 of <em>Guidebook for Proposers</em>)</td>
<td>1 or more (if appropriate)</td>
</tr>
<tr>
<td><strong>Budget Justification: Narrative and Details</strong> (Section 3.18 of <em>Guidebook for Proposers</em>): Include a budget breakdown for each year of proposed work, along with total budget figures for the entire period of performance.</td>
<td>1 or more</td>
</tr>
</tbody>
</table>

Note: To improve proposal reviewability, Proposers shall submit one PDF file to NSPIRES that begins with the Table of Contents and includes all information described below:
<table>
<thead>
<tr>
<th>Proposal Elements</th>
<th>Page Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendix C of the <em>Guidebook for Proposers</em> contains Facilities and Administrative (F&amp;A)/Indirect Costs proposal guidelines and submission instructions.</td>
<td></td>
</tr>
<tr>
<td><strong>Special Notifications and/or Certifications</strong></td>
<td>As needed</td>
</tr>
</tbody>
</table>
6. PROPOSAL EVALUATION AND SELECTION

6.1 Proposal Review Information

Unless specifically stated in the individual Appendices (specific activities), all NASA-sponsored education activities are evaluated, at a minimum, against the following criteria: (1) **Intrinsic Merit**, (2) **Relevance to NASA**, and (3) **Budget/Cost** (see Appendix D of the *Guidebook for Proposers*). Additional criteria may be added based upon the uniqueness of the requirement of the activity. NASA’s Education Operating Principles are integrated into these evaluation criteria. Refer to each individual appendix for specific details on proposal evaluation criteria.

6.2 Review and Selection Processes

Review of proposals submitted to this announcement will be consistent with the general policies and provisions given in the *Guidebook for Proposers*, Appendix D. Evaluation criteria described in Appendix D of the *Guidebook for Proposers* are superseded by the evaluation criteria described in each EONS activity. Selection procedures will be consistent with the procedures identified in Appendix D of the *Guidebook for Proposers*.

Proposals will be evaluated by a merit review process composed of the Proposers’ professional peers (government and non-government), including STEM education and evaluation experts, who have been screened in advance for any conflicts of interest. Unless specifically stated in the individual Appendices (specific activities), proposals will be evaluated and assessed on the strengths and weaknesses for each of the three criteria (Intrinsic Merit, Relevance to NASA, and Budget/Cost) and their sub-elements.

NASA seeks a balanced project award portfolio. NASA also considers diversity factors in the final award portfolio, such as but not limited to, different types of institutional representation, participation by individuals traditionally underrepresented in STEM studies and careers, and geography.

The Selecting Official for each activity is identified in the *Summary of Key Information* at the end of each appendix description.

6.3 Review of Applicants in the Federal Awardee Performance and Integrity Information System (FAPIIS)

Prior to making a Federal award with a total amount of Federal share greater than the simplified acquisition threshold (currently $150,000), NASA 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—FAPIIS) accessible through the System for Award Management (SAM, https://www.sam.gov) (see 41 U.S.C. 2313).

At its option, an applicant may review information in FAPIIS and comment on any information about itself that NASA previously entered and is currently in FAPIIS.

NASA will consider any comments by the applicant, in addition to the other information in FAPIIS, 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 as described in 2 CFR 200.205 Federal awarding agency review of risk posed by applicants.

7. AWARD ADMINISTRATION INFORMATION

7.1 Notice of Award

NASA is committed to announcing selections and initiating awards as quickly as possible, consistent with ensuring the quality of the selection and award process and subject to the appropriation of Federal funds for the initiation of new research awards.

Selections are typically announced between 150-210 days after the proposal due date. The initiation of the award typically occurs between 45 and 90 days after the announcement of selections (see NASA Guidebook for Proposers Section 6 Award Notification).

NASA has no obligation to evaluate ineligible proposals or those that do not meet all stated requirements of this NRA (see NASA Guidebook for Proposers Section 5.6. Proposal Rejected by NASA Without Review).

In all cases, only after the Selecting Official’s approval is obtained, any proposals recommended for funding will be forwarded to the NASA Grant Officer for final eligibility review of business, financial, and policy implications and the processing and issuance of a grant or cooperative agreement.

Proposers are cautioned that only a NASA Grant Officer may make commitments, obligations or awards on behalf of NASA or authorize the expenditure of funds. The Grant Officer is dually referred to as an Award Officer in the NASA Guidebook for Proposers. No commitment on the part of NASA should be inferred from technical or budgetary discussions with any NASA individual other than the Grant/Award Officer. A PI and/or institution that makes financial or personnel commitments in the absence of a written instrument signed by a NASA Grant Officer does so at their own risk. Grant or cooperative agreement awards are made to the proposing institution, not to the proposed PI or to any other individual.

Notification of both the selected and the non-selected proposals will be consistent with the policy stated in the NASA Guidebook for Proposers, Appendix D. For selected proposals, a NASA Grants Officer, who is the only official authorized to obligate the Government, will contact the offeror’s business office. The NASA Shared Services Center (NSSC) will handle the negotiation and award of any grants or cooperative agreements. Any costs that the Proposer incurs in anticipation of a grant or cooperative agreement award will be subject to the policies and regulations of 2 CFR 1800.209. Expenditures incurred within the 90-day period preceding the effective date of the award may be authorized by the recipient organization, but such expenditures are made at the recipient’s risk. Expenditures after the scheduled expiration date of the award may be made only to honor documented commitments made on or before the expiration date.

In order to announce selection decisions for grants and cooperative agreements as soon as is possible, even in the presence of budget uncertainties, the Selection Official may defer selection
decisions on some proposals while making selection decisions on others. If a Selection Official uses this option, then proposals will be either “selected”, “not selected at this time”, or “not selected.”

Proposals that are “not selected at this time” may be considered for a supplemental selection when circumstances allow. All Proposers that receive “not selected at this time” will eventually be notified whether their proposal is selected through a supplemental selection, or is no longer being considered for a supplemental selection.

Proposers that are not selected will be notified by electronic mail and offered a debriefing consistent with the policy in Appendix D of the NASA Guidebook for Proposers.

7.2 Process for Appeals Prior to Formal Requests for Reconsideration

This NRA is limited to the awarding of grants and cooperative agreements to MSIs. Accordingly, the appeals and reconsideration processes under this NRA do not include protest rights either at the U.S. Government Accountability Office (GAO) or with the Agency, as defined in FAR 33.101. The provisions at 48 FAR 52.233-2 (“Service of Protest”) and NFS 1852.233-70 (“Protests to NASA”) do not apply to this NRA.

A PI who is not satisfied with the explanation of the basis for the declination of its proposal may contact the Selecting Official, in writing (delivered via e-mail, fax or regular mail) stating the reasons for requesting reconsideration of the declination and requesting an oral debriefing (see Formal Request for Reconsideration, below).

Formal Requests for Reconsideration

(i) Debriefing by the Activity Manager. A PI whose proposal has been “not selected” may request a written or oral debriefing from the Activity Manager. The debriefing will be provided expeditiously, i.e., usually within two weeks.

(ii) Written Request for Reconsideration to Selecting Official. Following the debriefing, dissatisfied PIs must, within 30 calendar days of the debriefing, submit in writing a Request for Reconsideration to the Selecting Official. If no debriefing has been conducted, the Request for Reconsideration must be submitted within 60 calendar days of notification that the proposal had not been selected. The Selecting Official will respond in writing to the Request for Reconsideration within 30 calendar days of receipt of the request. If additional time is required to prepare a response, an explanation of the need for more time will be given to the PI within 30 calendar days.

Following a response from the Selecting Official, if the PI is still not satisfied with the Selecting Official’s decision, the PI may request a formal reconsideration within 30 days of the deselecting Official’s decision. Electronic or faxed requests for formal reconsiderations will not be accepted. Formal requests must: 1) detail the reasons for the reconsideration request; 2) be printed on institutional letterhead; 3) be co-signed by the PI and the AOR; and 4) be addressed to the Deputy Associate Administrator for Education:

Deputy Associate Administrator for Education
(iii) Appeals above the Deputy Associate Administrator for Education (DAAE). Appeals above the DAAE shall be made within 30 calendar days of receipt of that decision. The written appeal shall be submitted to the Associate Administrator for Education or the Assistant Administrator of the Mission Directorate or Office issuing the solicitation. A response to the appeal will be provided to the PI within 30 calendar days.

Finally, the NASA Procurement Ombudsman Program is available under this NRA as a procedure for addressing concerns and disagreements. The clause at NASA FAR Supplement (NFS) 1852.215-84, Ombudsman, is incorporated into this NRA. The cognizant ombudsman is:

Ms. Monica Manning  
Deputy Assistant Administrator for Procurement  
Office of Procurement  
NASA Headquarters  
300 E Street SW Room 5L14  
Washington, DC 20546-0001  
Telephone: (202) 358-1050  
Facsimile: (202) 358-3082  
Email: agency-procurementombudsman@nasa.gov

7.3 Administrative and National Policy Requirements

Grant and cooperative agreement awards are subject to the regulations at 2 CFR 200 and the NASA Grant and Cooperative Agreement Manual (GCAM), located at https://prod.nais.nasa.gov/pub/pub_library/srba/index.html. The GCAM consists of eight sections that prescribe the policies and procedures relating to the award and administration of NASA grants and cooperative agreements.

7.4 Award Reporting Requirements

The reporting requirements for awards made through this NRA will be consistent with any applicable NASA and Federal regulations. Any additional requirements are specified in the activity description.

Award recipients may 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 Notice of Award.

If the Federal share of any award issued under this NRA is more than $10,000,000 over the period of performance, additional reporting requirements will apply. See 2 CFR 200 Appendix XII—Award Term and Condition for Recipient Integrity and Performance Matters (http://www.ecfr.gov/cgi-bin/text-idx?SID=4b63b1740bdb186d3bf5d346f5ddf42c&mc=true&node=ap2.1.200_1521.xii&rgn=div9)
7.5 Additional Terms and Conditions

Personal Identity Verification (PIV) of Grant/Cooperative Agreement Personnel

If any proposal personnel are expected to work on site at a NASA Center, they shall comply with the NASA Guidebook for Proposers, Appendix E and the Grant and Cooperative Agreement Manual, Appendix C. These sections provide information about recipients needing access to a NASA Center, facility, or computer system, or to NASA Technical Information, which requires “Personal Identity Verification of Recipient Personnel.”

8. POINTS OF CONTACT FOR FURTHER INFORMATION

General questions and comments about the policies of this NRA may be directed to:

Ms. Joeletta O. Patrick, Manager
Minority University Research and Education Project
Office of Education
National Aeronautics and Space Administration
300 E Street SW
Washington, DC 20546-0001
Telephone: (202) 358-2370
Email: joeletta.o.patrick@nasa.gov

Note: Proposals shall not be submitted to this address. Proposals shall be submitted electronically as described in Section 5 of this NRA.

Specific questions about a given activity in this NRA shall be directed to the Project Manager(s) listed in the Summary of Key Information subsection that concludes each activity description.

Inquiries about accessing or using the NASA proposal system located at http://nspires.nasaprs.com should be directed by an email that includes a telephone number to nspires-help@nasaprs.com or by calling (202) 479-9376. This help center is staffed Monday through Friday, 8:00 a.m. – 6:00 p.m. Eastern Time, excluding federal holidays.

Inquiries about accessing or using Grants.gov located at http://www.grants.gov are available by email at support@grants.gov, or by calling 1-800-518-4726 and via the website at http://www.grants.gov.
9. ANCILLARY INFORMATION

9.1 Announcement of Updates/Amendments to Solicitation

Because this NRA is released in advance of many of the deadlines given in Table 2, additional major programmatic information for any of its elements may develop before proposal due dates. If so, such information will be added as a formal amendment to this NRA and posted at EONS homepage at http://nspires.nasaprs.com (select “Solicitations” then “Open Solicitations” then “NNH18XXXXXXX”). Prospective Proposers shall regularly check this NRA’s homepage for updates concerning the activity(s) of interest.

Any clarifications or questions and answers that are published will be posted on the relevant activity’s web page at http://nspires.nasaprs.com (select “Solicitations” then “Open Solicitations” then “NNH18XXXXXXX” then “List of Activities” then the relevant activity). FAQs may be updated until the proposal due date.
APPENDIX A

PIV Card Issuance Procedures in accordance with FAR Clause 52.204-9, Personal Identity Verification of Contractor Personnel (Jan. 2011)

The enrollment and processing of NASA identity data and the issuance of credentials to those identities is to be completed in the Identity Management and Account Exchange (IdMAX) system following the requirements found in NPR 1600.4. Figure 1 depicts the processes described in steps 2 through 5.

Figure 1. Review Process

Step 1

The grantee or recipient submits a formal letter that provides a list of the names of individuals (applicants) who require access to a NASA-controlled facility or access to a NASA information technology (IT) system to the cognizant NASA Technical Officer (TO). In the case of a foreign national applicant, approval through IdMAX shall be obtained for the visit or assignment before any processing for a PIV or alternate agency credential (collectively referred to as a credential).
can take place. Further, if the foreign national is not under a grant or cooperative agreement where a technical officer has been officially designated, the foreign national will provide the information directly to their visit/assignment host, and the host sponsor will fulfill the duties of the technical officer mentioned herein.

In each case, the letter shall include the subject grant or cooperative agreement number, the NASA Center organization code, the applicant’s full name (first, middle and last), countries of citizenship, email address, and phone number. If the applicant has a current satisfactorily completed Tier 1 or an equivalent or higher degree of background investigation, the letter shall indicate the type of investigation, the agency completing the investigation, and date the investigation was completed. Also, the letter shall specify the access requirements and the risk/sensitivity level associated with the position in which each applicant will be working (NPR 1600.3, §2.3 is germane). Further, the letter shall also acknowledge that applicants may be denied access to NASA facilities, information, and/or information systems based on an unsatisfactory background investigation/adjudication.

After reviewing the letter for completeness and concurring with the risk/sensitivity levels, the technical officer/host shall forward the letter to the Center Office of Protective Services (OPS).

**Step 2**

Upon acceptance of the letter/background information, the Center OPS shall create a remote identity invitation in IdMAX. The applicant shall utilize the invitation tool link and password in their email to review, correct, and submit additional personal data securely.

Upon receipt of the completed remote invite, the Center OPS shall ensure review of the OPM databases (e.g., DCII, PIPS, et al.) and validation of the applicant’s investigation status. Requirements for a Tier 1 or other investigation shall be initiated only if necessary. Applicants who do not currently possess the required level of background investigation shall be directed to the e-QIP web site to complete the necessary background investigation forms online. The Center OPS shall provide to the technical officer/host information and instructions on how to access the e-QIP for each grantee, recipient or foreign national employee requiring access.

Upon completion of the e-QIP, the Center OPS will advise the applicant that in order to complete the investigation process, he or she shall appear in-person before the authorized registrar and submit two forms of identity source documents in original form. The identity source documents shall come from the list of NASA-approved identity source documents, one of which shall be a Federal or State issued picture identification. The registrar will electronically scan the submitted documents; any document that appears invalid will be rejected by the registrar.
Fingerprints and a photograph will be taken at this time. The applicant shall appear no later than the entry on duty date. The information submitted by the applicant will be used to create or update the applicant identity record in IdMAX.

**Step 3**

Upon the applicant’s completion of the investigation forms, the Center OPS reviews the information, and resolves discrepancies with the applicant as necessary. When the applicant has appeared in person and completed fingerprints, the package is electronically submitted to initiate the background investigation. The Center OPS includes a request for feedback on the National Criminal History Check (NCHC) portion of the background investigation at the time the request is submitted.

**Step 4**

Prior to authorizing physical access of a grantee or recipient to a federally-controlled facility or access to a Federal information system, the Center OPS will ensure that required database checks have been performed. If this process yields negative information, the Center OPS will immediately notify the Center Chief of Security (CCS) and the technical officer/host.

**Step 5**

Upon receipt of the completed NCHC, the Center OPS will update IdMAX and indicate the result of the suitability determination. If an unsatisfactory suitability determination is rendered, the technical officer will advise the grantee or recipient that the applicant is being denied physical access to all federally-controlled facilities and Federal information systems.

Based on favorable results of the NCHC, National Crime Information Center (NCIC) Interstate Identification Index (III) check, and/or other required checks, the Center OPS will authorize the issuance of the appropriate credential in IdMAX. For foreign nationals the International Visit Coordinator (IVC), in consultation with other organizations, based on information provided in the access control plan, will determine what physical access the applicant should be granted once the appropriate credential is issued.
Step 6

Using the information provided by the applicant during his or her in-person appearance, the credential will be created and activated following necessary procedures for that credential.

Step 7

The applicant proceeds to the credential issuance facility to begin processing for receipt of his/her credential.

The applicant provides to the credential issuing operator the same identity source documents submitted for registration. The credential issuing operator will verify that the facial image, and optionally referenced fingerprint, matches the enrollment data used to produce the card. Upon verification of identity, the operator will locate the employee’s record and modify the record to indicate the credential has been issued. If required, the applicant will select a PIN for use with his or her new credential.

Note: A non-PIV government identification badge, including the NASA Photo Identification Badge, MAY NOT BE USED for the original issuance of a PIV-vetted credential.

ALTERNATIVE FOR APPLICANTS WHO DO NOT HAVE A COMPLETED AND ADJUDICATED NCHC AT THE TIME OF ENTRANCE ON DUTY (EOD)

Steps 1 through 4 shall be accomplished for all applicants in accordance with the process described above. If the applicant is unable to appear in person until the time of entry on duty, or does not, for any other reason, have a completed and adjudicated NCHC portion of the background investigation at the time of entrance on duty, the following interim procedures shall apply for US citizens and legal permanent residents. These procedures are not applicable to foreign nationals who must have a completed fingerprint check before EOD.

1. If the documents required to submit the background investigation have not been completed prior to EOD, the applicant will be instructed to complete all remaining requirements for submission of the investigation request. This includes presentation of identity source documents and completion of fingerprints, if not already accomplished. If the applicant fails to complete these activities as prescribed in NPR 1600.4 (Chapters 3 &
4), it may be considered as failure to meet the conditions required for access to a NASA-controlled facility or access to a NASA IT system, and result in denial of such access.

2. Based on favorable results of the NCIC III, the applicant shall be issued an appropriate alternate agency credential for a period not-to-exceed six months. If at the end of the six month period the NCHC results have not been returned, the agency will at that time make a determination as to whether an additional extension will be granted for the temporary alternate agency credential.

3. Upon return of the completed background investigation, the process will continue from Step 5.
APPENDIX B
Sample Proposal Format

| Cover Page for Proposal Submitted to the National Aeronautics and Space Administration |
| NASA Proposal Number |

**NASA Procedure for Handling Proposals**

This proposal shall be used and disclosed for evaluation purposes only, and a copy of this Government notice shall be applied to any reproduction or abstract thereof. Any authorized restrictive notices that the submitter places on this proposal shall also be strictly complied with. Disclosure of this proposal for any reason outside the Government evaluation purposes shall be made only to the extent authorized by the Government.

**SECTION I - Proposal Information**

<table>
<thead>
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<th>Principal Investigator</th>
<th>E-mail Address</th>
<th>Phone Number</th>
</tr>
</thead>
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<td></td>
<td></td>
</tr>
<tr>
<td>Street Address (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>City</td>
<td>State / Province</td>
<td>Postal Code</td>
</tr>
<tr>
<td>Proposal Title</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Start Date</td>
<td>Proposed End Date</td>
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**SECTION II - Application Information**

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<th>NASA Program Announcement Title</th>
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</thead>
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<td>Submission Method</td>
</tr>
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<td>Applicant Proposal Identifier</td>
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<td>Predecessor Award Number</td>
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<td>Other Federal Agencies to Which Proposal Has Been Submitted</td>
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<td>International Participation</td>
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**SECTION III - Submitting Organization Information**

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<th>Company Division</th>
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<tr>
<td>Organization DUNS Name</td>
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<td>Street Address (2)</td>
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<tr>
<td>City</td>
<td>State / Province</td>
<td>Postal Code</td>
<td>Country Code</td>
</tr>
</tbody>
</table>

**SECTION IV - Proposal Point of Contact Information**

<table>
<thead>
<tr>
<th>Name</th>
<th>Email Address</th>
<th>Phone Number</th>
</tr>
</thead>
</table>

**SECTION V - Certification and Authorization**

By submitting the proposal in response to the Research Announcement, the Authorizing Official of the proposing organization agrees to:

- certify that all statements made in this proposal are true and accurate to the best of his/her knowledge;
- agree to accept the obligations to comply with NASA award terms and conditions if an award is made as a result of this proposal; and
- confirm compliance with all regulations, rules, and stipulations set forth in the two certifications and one assurance contained in this NASA (rev. 01-21-95) the Authorization of Compliance with the NASA Regulations Relating to Non-Discrimination in Federally Assisted Programs, and in certifications, declarations, and assurances regarding lobbying and disqualification.

Authorized Organization Representative (AOR) Name | AOR Email Address | Phone Number
AOR Signature (Must have AOR's original signature. Do not sign "for" AOR.) |

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36
<table>
<thead>
<tr>
<th>Team Member Role</th>
<th>Team Member Name</th>
<th>Contact Phone</th>
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<td>U.S. Government Agency</td>
<td>Team Member Name</td>
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<td>Organization/Business Relationship</td>
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<td>Team Member Name</td>
<td>Contact Phone</td>
<td>E-mail Address</td>
<td>Cage Code</td>
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<td>Organization/Business Relationship</td>
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<td>International Participation</td>
<td>U.S. Government Agency</td>
<td>Total Funds Requested</td>
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### SECTION VIII - Other Project Information

#### Environmental Impact

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<tr>
<td>Does this project have an actual or potential impact on the environment?</td>
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</tr>
<tr>
<td>Has an exemption been authorized or an environmental assessment (EA) or an environmental impact statement (EIS) been performed?</td>
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</table>

**Environmental Impact Explanation:**

**Exemption/EA/EIS Explanation:**

---

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39
<table>
<thead>
<tr>
<th>Budget Cost Category</th>
<th>Cumulative Budget</th>
<th>Funds Requested ($)</th>
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<td>Year 2 ($)</td>
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<td>A. Direct Labor - Key Personnel</td>
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<td>B. Direct Labor - Other Personnel</td>
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<tr>
<td>Total Number Other Personnel</td>
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<td>0.00</td>
</tr>
<tr>
<td>C. Direct Costs - Equipment</td>
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<td>0.00</td>
</tr>
<tr>
<td>D. Direct Costs - Travel</td>
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<tr>
<td>Domestic Travel</td>
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<td>0.00</td>
</tr>
<tr>
<td>Foreign Travel</td>
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<td>0.00</td>
</tr>
<tr>
<td>E. Direct Costs - Participant/Trainee Support Costs</td>
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<td>0.00</td>
</tr>
<tr>
<td>Travel</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Subsistence</td>
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<tr>
<td>Other</td>
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<tr>
<td>Number of Participants/Trainees</td>
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<td>Materials and Supplies</td>
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<td>Publication Costs</td>
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<tr>
<td>Consultant Services</td>
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<tr>
<td>ADP/Computer Services</td>
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<td>Subsides/Consortium/Contractual Costs</td>
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<td>Equipment or Facility Rental/Use Fees</td>
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<td>Alterations and Renovations</td>
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<tr>
<td>Other</td>
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<tr>
<td>G. Total Direct Costs (A+B+C+D+...+F)</td>
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<tr>
<td>H. Indirect Costs</td>
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<tr>
<td>J. Total Direct and Indirect Costs (G+H)</td>
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<td>K. Total Cost (I+J)</td>
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<td>Total Cumulative Budget</td>
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### SECTION X: Budget

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<th>Start Date</th>
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#### F. Other Direct Costs

<table>
<thead>
<tr>
<th>Description</th>
<th>Funds Requested ($)</th>
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<td>1. Materials and Supplies</td>
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<tr>
<td>2. Publication Costs</td>
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<tr>
<td>3. Consultant Services</td>
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<td>4. AOR/Computer Services</td>
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<td>5. Subaward/Consortium/Contractual Costs</td>
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<td>6. Equipment or Facility Rental/User Fees</td>
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<td>7. Alterations and Renovations</td>
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Total Other Direct Costs: 0.00

#### G. Total Direct Costs

Total Direct Costs (A+B+C+D+E+F): 0.00

#### H. Indirect Costs

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<tr>
<th>Cognizant Federal Agency:</th>
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<th>Indirect Cost Base ($)</th>
<th>Funds Requested ($)</th>
<th>Total Indirect Costs</th>
</tr>
</thead>
</table>

Total Indirect Costs: 0.00

#### I. Direct and Indirect Costs

Total Direct and Indirect Costs (G+H): 0.00

#### J. Fee

Funds Requested ($) |

Fee: 0.00

#### K. Total Cost

Total Cost with Fee (I+J): 0.00

---

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42
### SECTION X: Budget

<table>
<thead>
<tr>
<th>Equipment Item Description</th>
<th>Funds Requested ($)</th>
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#### C. Direct Costs - Equipment

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<tr>
<td>1.</td>
<td>Domestic Travel (Including Canada, Mexico, and U.S. Possessions)</td>
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<td>2.</td>
<td>Foreign Travel</td>
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</table>

#### D. Direct Costs - Travel

<table>
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Total Travel Costs: 0.00

#### E. Direct Costs - Participant/Trainee Support Costs

<table>
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<th>Item Description</th>
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<tbody>
<tr>
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<tr>
<td>2. Stipends</td>
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<td>3. Travel</td>
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<td>4. Subsistence</td>
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Number of Participants/Trainees: 0.00

NASA Proposal Number

PI Name: [Redacted]

Organization Name: [Redacted]

Proposal Title: [Redacted]
SECTION X. Budget

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A. Direct Labor - Key Personnel

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<th>Summ. Months</th>
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<th>Fringe Benefits ($)</th>
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<tbody>
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Total Key Personnel Costs: 0.00

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Total Other Personnel Costs: 0.00

Total Direct Labor Costs (Salary, Wages, Fringe Benefits) (A+B): 0.00
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<td>1. Materials and Supplies</td>
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<td>2. Publication Costs</td>
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<tr>
<td>3. Consultant Services</td>
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<td>4. ADP/Computer Services</td>
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<td>5. Subcontract/Subconsortium/Contractual Costs</td>
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| Total Other Direct Costs | 0.00 |

<table>
<thead>
<tr>
<th>G. Total Direct Costs</th>
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<tbody>
<tr>
<td>Total Direct Costs (A+B+C+D+E+F)</td>
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</table>

<table>
<thead>
<tr>
<th>H. Indirect Costs</th>
<th>Indirect Cost Rate (%)</th>
<th>Indirect Cost Base ($)</th>
<th>Funds Requested ($)</th>
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<td>Cognizant Federal Agency:</td>
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<table>
<thead>
<tr>
<th>I. Direct and Indirect Costs</th>
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<td>Total Direct and Indirect Costs (G+H)</td>
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<table>
<thead>
<tr>
<th>J. Fee</th>
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<td>Fee</td>
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<thead>
<tr>
<th>K. Total Cost</th>
<th>Funds Requested ($)</th>
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<tbody>
<tr>
<td>Total Cost with Fee (I+J)</td>
<td>0.00</td>
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</tbody>
</table>
APPENDIX C

EONS Policy on Late Proposals

NASA does not pre-approve the submission of a late proposal. The decision to submit a late proposal is solely that of the Proposer, and it is then NASA’s decision whether to accept it. If NSPIRES is available for submissions, the site automatically captures the time that the system received the proposal. Proposals submitted later than 11:59 PM Eastern time on the due date of proposals are considered “LATE.” The NSPIRES system may prevent the submission of proposals after the deadline.

NSPIRES generates an automatic acknowledgement when proposals are submitted. The acknowledgement for on time and late proposals is the same and will resemble the following:

Sample Acknowledgement of Submission
-----Original Message-----
From: nspires@nasaprs.com
Sent: <Name of the day of the Week>, Name of Month, Date, Year <Message Time Hour:Minute>
To: <email address of submitter>
Cc: <email address of submitter>
Subject: NASA NSPIRES - Proposal has been submitted to NASA

The following proposal has been submitted for consideration of an award by NASA:
Proposal Number: xx-201?[EONS Appendix]-000X
Proposal Title: <Name as submitted by the AOR>
Submitting Organization: <Name that shows up in NSPIRES>
Authorized Organization Representative: First and then Last NAME
Principal Investigator: First then Last NAME
Date submitted: Numeric Month/ Numeric Day /Numeric Year Hour:Minute:Second
To log in to NSPIRES, click on this link: http://nspires.nasaprs.com/
If the above URL is not an active link, please cut and paste the entire URL into your web browser.

If you have questions or problems regarding this, or any other NSPIRES business, please contact the NSPIRES Help Desk:

E-mail: NSPIRES-HELP@nasaprs.com
Phone Support: (202) 479-9376
Hours: Monday through Friday, 8:00 AM to 6:00 PM EST/EDT

This message is being sent from an outbound-only mail server. Please do not reply to this message.

End of Excerpt

If a Proposer does not receive a notice similar to the sample above after proposal submission, first check spam filters and junk boxes. If unable to locate the e-mail acknowledgement, then Proposers shall contact the NSPIRES Help Desk or log in directly to NSPIRES to check a submission status.
Only the Selection Official or a designee may accept a late proposal for assignment to external review. Normally, late proposals are only considered for review if there is a practical way of reviewing the proposal along with the on-time proposals. If for some known or unknown reason an entity's proposal was not submitted by the proposal due date, the Proposer shall send a detailed explanatory note via e-mail to NASA’s Support Contractor for this NRA:

NASA Research & Education Support Services  
2345 Crystal Drive, Suite 500  
Arlington, VA 22202  
202-479-9030  
202-479-0511 (fax)  
Email: help@nasaprs.com

Decisions about each proposal submitted—either on time or late—will be communicated electronically (not by phone or personalized email) to each PI and AOR via NSPIRES. It is entirely possible that a late Proposer may not know whether it was accepted for review until all Proposers are notified approximately nine months from the NRA's proposal due date.

When decisions resulting from the evaluation process for proposals are made, a computer-generated e-mail goes out requesting the PI/AOR to log in. It will resemble the following:

**Sample Decision Notice E-mail**  
-----Original Message-----  
From: nspires@nasaprs.com [mailto:nspires@nasaprs.com]  
Sent: Name of Weekday, Month ??, 20?? H:Min PM/AM  
To: NSPIRES-admin@nasaprs.com  
Subject: NASA NSPIRES - Decision has been made.  
A decision has been made by NASA for:  
  Solicitation Number: NNH?????????  
  Solicitation Title: [EONS Appendix Reference]  
  Acronym: [EONS Appendix Reference]  
  Proposal Due Date: 0?/??/20??  
You may access information regarding this decision by logging in to NSPIRES:  
Decision information can be accessed in two ways:  
  After logging in, the Principal Investigator selects the "Proposals" link, the "Submitted Proposals/NOIs" link, and then clicks on the proposal submitted to the solicitation identified above. The document(s) provided by NASA will be displayed under the heading "PI Information Package" located at the bottom of the "View Proposal" page.  
  After logging in, the Authorized Organization Representative selects "Organization Mgmt" link and, from within the submitting organization, selects the "Organization Proposals" link, the "Submitted Proposals" link and then clicks on the proposal submitted to the solicitation identified above. The document(s) provided by NASA will be displayed under the heading "PI Information Package" located at the bottom of the "View Proposal" page.  
If the above URL is not an active link, please cut and paste the entire URL into your web browser.
If you have questions or problems regarding this, or any other NSPIRES business, please contact the NSPIRES Help Desk:
E-mail: nspires-help@nasaprs.com
Phone Support: (202) 479-9376
Hours: Monday through Friday, 8:00 AM to 6:00 PM EST/EDT
This message is being sent from an outbound-only mail server. Please do not reply to this message.
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From the NASA Guidebook for Proposers
(http://www.hq.nasa.gov/office/procurement/nraguidebook):
Proposers should be aware that neither NASA personnel nor the employees of the support contractor that receives and handles proposals for NASA are able to authorize the submission of a late proposal and, therefore, such permission should not be requested. The decision to submit a late proposal is solely that of the Proposer, and it is then NASA’s decision whether to accept it. Late proposals may be considered for review and possible selection only if they appear to offer a distinct benefit to NASA [Ref. Section 5]. In this regard it is important to note that, since almost every NRA receives many more high-quality proposals than can be supported with the available funds, a determination by NASA that a late proposal is of distinct benefit over its competitors is likely to be rare. Additionally, Proposers should note that Grants.gov does not accept late proposals. 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 to proposals previously received.


Allowances for Technical Problems
In every NASA solicitation, Proposers are advised that it is their responsibility to begin the proposal submission process early enough to account for ubiquitous technical problems with computer systems and with the internet. If an emergency or unanticipated event interrupts normal Government processes so that proposals cannot be received at the Government office designated for receipt of proposals by the exact time specified in the solicitation, and urgent Government requirements preclude amendment of the solicitation closing date, the time specified for receipt of proposals will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal Government processes resume. An example might be an act of nature (e.g., hurricane or blizzard affecting NASA or a Proposer’s region) or an act of man (e.g., NSPIRES is offline). The failure of the proposing team to complete its proposal prior to the deadline, for whatever reason, does not constitute a technical problem. The failure of the Proposer to meet a known delivery deadline does not constitute a technical problem. Other circumstances that may constitute a technical problem will be reviewed on a case-by-case basis. The NASA Selection Official may declare a proposal “on time” if a proposal would have been received by NASA before the proposal deadline in the absence of the technical problem, if the technical problem could not have been reasonably anticipated and was beyond the Proposer’s
reasonable control, and if the Proposer does not gain an unfair competitive advantage as a result of these circumstances.

**Any Changes or Revisions to a Proposal After the Due Date make the Proposal Late:**
It is not possible for a proposal to be updated, particularly the substance of a proposal, without NASA considering such revisions/updates as a late proposal. If a Proposer wants to provide new material, revise, clarify or change or expand a submitted proposal, such a substantial update is akin to submitting a new proposal after the proposal’s due date. Changes or updates to basic descriptive data (e.g., a PI has retired or the submitting organization has a new President) are not changes to the proposal’s substance under the NRA; however, such changes cannot be reflected in the proposal submission, nor can they be considered in the review of the proposal. If, during the time between the proposal due date and decision announcement, there have been changes to the AOR and PI, the Proposer shall immediately notify the above mentioned NSPIRES Support Contractor for this NRA to confirm that the proposing organization will still be able to access NSPIRES.
APPENDIX D

Glossary of Acronyms and Definitions

ACRONYMS

| AANAPSIs | Asian American and Native American Pacific Islanders Serving Institutions |
| AIANSIs  | American Indian and Alaskan Native Serving Institution |
| AOR      | Authorized Organization Representative |
| APG      | Annual Performance Goal |
| API      | Annual Performance Indicator |
| ARC      | Ames Research Center, Moffett Field, CA |
| AFRC     | Armstrong Flight Research Center, Edwards, CA |
| ARMD     | Aeronautics Research and Mission Directorate |
| CCE      | Climate Change Education |
| CCR      | Central Contractor Registry |
| CO       | Contracting Officer |
| CO-I     | Co-Investigator |
| CO-STEM  | Committee on STEM Education |
| DUNS     | Data Universal Numbering System; a unique nine-digit sequence recognized as the universal standard for identifying and keeping track of over 100 million businesses worldwide |
| EIN      | Employer Identification Number |
| EONS     | Education Opportunities in NASA STEM |
| EPD      | Educator Professional Development |
| ESTEEM   | Earth Systems, Technology and Energy Education for MUREP |
| FAQ      | Frequently Asked Questions |
| FY       | Fiscal Year (Federal) (October – September) |
| GO       | Grants Officer |
| GRC      | Glenn Research Center, Cleveland, OH |
| GSFC     | Goddard Space Flight Center, Greenbelt, MD |
| HBCUs    | Historically Black Colleges and Universities |
| HSIs     | Hispanic Serving Institutions |
| HEOMD    | Human Exploration and Operations Mission Directorate |
| IE       | Institutional Engagement |
| JPL      | Jet Propulsion Laboratory, Pasadena, CA |
| JSC      | Johnson Space Center, Houston, TX |
| KSC      | Kennedy Space Center, Cape Canaveral, FL |
| LOB      | Line of Business |
| LaRC     | Langley Research Center, Hampton, VA |
| MAA      | MUREP Aerospace Academy |
| MAIANSE  | MUREP for American Indian and Alaskan Native STEM Engagement |
| MC3I     | MUREP Community College Curriculum Improvement |
| MEI      | MUREP Educator Institutes |
| MSIs     | Minority Serving Institutions (refers collectively to HBCUs, HSIs, TCUs, and other minority serving institutions of higher education) |
| MIRO     | MUREP Institutional Research Opportunity |
| MOO      | MUREP Other Opportunities |
| MSFC     | Marshall Space Flight Center, Huntsville, AL |
DEFINITIONS

American Indian or Alaskan Native: A person having origins in any of the original peoples of North America, and who maintains cultural identification through tribal affiliation or community recognition.

Asian: A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

Black or African-American: A person having origins in any of the black racial groups of Africa.

EPD: Educator Professional Development uses NASA's missions, education resources, and unique facilities to provide high-quality STEM content and hands-on learning experiences to in-service, pre-service, and informal educators.

Executive Orders: Presidential Directives are considered a form of executive order issued by the President of the United States with the advice and consent of a major agency or department found within the executive branch of the government.
Five Priority Investment Areas: The CoSTEM Strategic Plan identifies five priority investment areas: improve STEM instruction, increase and sustain youth and public engagement in STEM, enhance STEM experience of undergraduate students, better serve groups historically underrepresented in STEM fields, and design graduate education for tomorrow's STEM workforce.

Hispanic or Latino: A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish Culture.

IE: Institutional Engagement increases the STEM capabilities at formal and informal educational institutions and organizations by incorporating content based on NASA's missions.

NASA Mission Directorates: There are four NASA Mission Directorates: Aeronautics Research Mission Directorate (ARMD), Human Exploration and Operations Mission Directorate (HEOMD), Science Mission Directorate (SMD), and Space Technology Mission Directorate (STMD).

NASA Strategic Objective 2.4: The 2014 NASA Strategic Plan set forth for Education, NASA Strategic Objective 2.4: Advance the Nation's STEM education and workforce pipeline by working collaboratively with other agencies to engage students, teachers, and faculty in NASA's missions and unique assets.

NASA’s Unique Facilities: There is an Education Office at each of the following NASA facilities: Ames Research Center (ARC), Armstrong Flight Research Center (AFRC), Glenn Research Center (GRC), Goddard Space Flight Center (GFRC), Jet Propulsion Laboratory (JPL), Johnson Space Center (JSC), Kennedy Space Center (KSC), Langley Research Center (LaRC), Marshall Space Flight Center (MSFC), Stennis Space Center (SSC).

NIFS: NASA Internships, Fellowships, and Scholarships leverage NASA's unique missions and programs to enhance and increase the capability, diversity, and size of the Nation's future STEM workforce.

OEPM: The Office of Education Performance Measurement system provides a centralized collection point for performance measurement and program monitoring data, a means to collect the same data consistently across all like projects, and quarterly reporting on all relevant education activities and investments.

OMB: The Office of Management and Budget is the largest office within the Executive Office of the President of the United States. The main function of the OMB is to assist the president in preparing the budget and policy development and execution.

OSSI: One Stop Shopping Initiative is a NASA-wide system for the recruitment, application, selection and career development of undergraduate and graduate students primarily in science, technology, engineering and mathematics disciplines. Opportunities for students in other disciplines are available.
**Pacific Islander:** A person having origins in any of the original peoples of Hawaii; the US Pacific Territories of Guam, American Samoa, and the North American Marianas; the U.W. Trust Territory of Palau; the islands of Micronesia and Melanesia; and the Philippines.

**SE:** STEM Engagement activities are designed to provide opportunities for participatory and experiential learning activities that connect learners to NASA-unique resources. The STEM Engagement line of business consists of Public Education Activities, Experiential Learning Opportunities and STEM Challenges.

**Targeted Disabled:** A person having a physical or mental impairment that substantially limits one or more major life activities; who has a record of such impairment or who is regarded as having such impairment. (See the LEAD (Leadership for the Employment of Americans with Disabilities) pages at the U.S. Equal Employment Opportunity Commission, [http://www.eeoc.gov/initiatives/lead/why.html](http://www.eeoc.gov/initiatives/lead/why.html).)

**White:** A person having origins in any of the original peoples of Europe, North Africa, or the Middle East.

**Underrepresented Minority:** Refers to persons from racial and ethnic groups whose enrollment in STEM education or participation in STEM professions is much smaller than that group's representation in the general population. African Americans, Hispanics/Latinos, and Native Americans and Pacific Islanders currently fit this definition.
1.0 SCOPE OF ACTIVITY

1.1 Overview of the Funding Opportunity

NASA’s Office of Education Minority University Research and Education Project (MUREP) solicits proposals from Minority Serving Institutions (MSIs) to establish a NASA MUREP Aerospace Academy (MAA) to increase participation and retention of historically underserved and underrepresented K-12 youth in the areas of Science, Technology, Engineering, and Mathematics (STEM).

NASA recognizes the need to increase the number of youth who have an effective, authentic STEM experience each year prior to completing high school and has thus created learning opportunities such as the MAA, to attract and retain underserved and underrepresented youth in grades K-12.

Utilizing curriculum enhancement activities, emerging technologies and family involvement, core components of the MAA, MSIs are afforded the opportunity to develop increased STEM awareness and understanding of STEM content and NASA missions by engaging students, family members, and educators in firsthand experiences in STEM at a similar or more advanced level.

Supported by evidence-based research, the MAA is generally conducted in an out of school setting, but may also be offered in a school setting. Through a portfolio of NASA-unique experiential learning opportunities and challenges related to NASA missions from development to launch, the MAA encourages innovation, critical thinking and problem-solving skills, which are characteristics required of our Nation’s future STEM workforce.

Proposers are encouraged to be innovative in their design and delivery of the MAA. Proposers are highly encouraged to identify and form partnerships with institutions interested in participating in the dissemination of activities, strategies, and materials. Successful Proposers shall have a clear plan for engaging partners to increase scalability and replication of the MAA. Proposers to this NRA that have also held NASA grants in the past, shall provide a description of how the project will improve and grow based upon past performance evaluation data and partnerships. Successful proposals for an MAA site will be funded as multi-year cooperative agreements not to exceed two (2) years.

1.1.1 Goals and Objectives

STEM engagement is a priority area for MUREP. STEM engagement establishes a mechanism for learners to be inspired, engaged and educated while progressively being challenged. Research indicates that instructional approaches or learning opportunities that engage students
actively increase skill acquisition and information retention; encourage more positive attitudes toward STEM disciplines; and strengthen student persistence to study STEM disciplines. Through coordinated and collaborative efforts as an Agency, utilizing STEM engagement, NASA is attracting and retaining students in STEM disciplines who will contribute to the economic growth and global competitiveness of the United States. NASA is investing in the youth of today in order to meet its STEM-related missions of tomorrow. Through activities such as the MAA, NASA is cultivating talent that will allow our Nation to explore space while improving life on Earth.

The goal of the NASA MAA is to utilize NASA’s unique resources to:

- Build the interest, skills and knowledge necessary for K-12 students to pursue STEM careers by engaging them in authentic STEM experiences built around NASA mission content.

The specific objectives of the MAA are to:

- Increase the number of historically underserved and underrepresented students interested in NASA-specific STEM careers.
- Provide skills to parents/caregivers to work with and encourage their children in STEM activities and programs.
- Involve community groups, business, industry, museums and educational and professional organizations through mentoring, field trips, guest speakers and other MAA activities.
- Engage students in firsthand experiences in STEM such as hands-on learning, research, use of advanced technology, peer support groups, and mentoring relationships with professionals working in the STEM fields.

To achieve these goals and objectives, NASA solicits proposals from MSIs to implement the NASA MAA; to engage youth particularly underserved and underrepresented in authentic STEM experiences related to NASA missions; and to inspire and captivate learners utilizing NASA’s unique assets to develop a keen interest in STEM.

1.1.2 Agency-wide Priorities

NASA's education programs work in collaboration with other Federal agencies to improve the quality of STEM education in the United States, which supports both NASA's current Strategic Plan and the measurement and performance goals. The MAA addresses NASA's Strategic Plan goals and objectives outlined to the Office of Education. The activity also addresses NASA's short term Multi-year Performance Goals and Annual Performance Indicators, which set quantifiable targets for NASA offices, programs and activities. NASA Strategic Goals and Objectives relevant to education are outlined in the 2014 NASA Strategic Plan: http://www.nasa.gov/sites/default/files/files/FY2014_NASA_SP_508c.pdf.

MAA proposals should focus on the following NASA Strategic Goal and Objective:

**Goal 2:** Advance understanding of Earth and develop technologies to improve the quality of life on our home planet.

*Objective 2.4: Advance the Nation’s STEM education and workforce pipeline by working collaboratively with other agencies to engage students, teachers and faculty in NASA’s missions and unique assets.*

The MAA supports the following NASA Office of Education Multi-year Performance Goal and Annual Performance Indicators.

Primary focus:

<table>
<thead>
<tr>
<th>Multi-Year Performance Goal</th>
<th>Annual Performance Indicator</th>
</tr>
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<tbody>
<tr>
<td>2.4.5: Continue to provide opportunities for learners to participate in STEM education engagement activities that capitalize on NASA-unique assets and content.</td>
<td>ED-17-5: Provide NASA STEM engagement to at least 50,000 elementary, secondary, and higher education students through authentic STEM experiences.</td>
</tr>
<tr>
<td>2.4.6: Ensure that grantees and cooperative agreement awardees conduct independent evaluations, providing evidence for the effectiveness of NASA STEM education investments.</td>
<td>ED-17.3: Ensure that at least 30 percent of grantees and cooperative agreement awardees conduct independent evaluations and report to NASA on their evaluation activities.</td>
</tr>
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</table>

Secondary focus:

<table>
<thead>
<tr>
<th>Multi-Year Performance Goal</th>
<th>Annual Performance Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4.2: Continue to support STEM educators through the delivery of NASA education content and engagement in educator professional development opportunities.</td>
<td>ED-17-2: Engage with at least 10,000 educators in NASA educator professional development through face-to-face, online, partner-delivered, and community-requested activities.</td>
</tr>
<tr>
<td>2.4.4: Continue to provide opportunities for learners to engage in STEM education through NASA-unique content provided to informal education institutions designed to inspire and educate the public.</td>
<td>ED-17-4: Support informal education institutions, including youth-serving organizations, to use NASA-unique content in no fewer than 40 states, U.S. Territories and/or the District of Columbia.</td>
</tr>
</tbody>
</table>

The MAA is intended to provide experiential learning opportunities (ELO) for students. ELOs are designed to increase learners’ involvement, knowledge, comprehension and application of learning in one or more STEM subjects/disciplines. They involve inquiry-based/activity-based
learning approaches designed to the level of the learner to inspire, engage, and educate them while progressively being challenged. ELO activities enable learners to acquire knowledge; understand what they have learned; and apply that knowledge through inquiry-based/activity-based activities.

1.1.3 NASA Relevance

The NASA MUREP Program is designed to capitalize on the unique facilities, capabilities and staff of Minority Serving Institutes to contribute to the priorities of NASA’s Mission Directorates. Through a network of MAA sites across the US, NASA seeks to engage tens of thousands of students in high quality design challenges, investigates and inquiry based STEM experiences built upon the Agencies unique mission of research and discover. NASA has organized its mission priorities into 6 communications themes that reflect major operations. The table on page 13, lists the themes and a sampling of current education products and experiences designed for K-12 audiences. The table is intended to serve as a useful resource for Proposers to build a program to engage local and regional students. Each Proposer shall identify the primary NASA area(s) with which the proposed curriculum will align. NASA-themed space exploration, aeronautics, space science, earth science, or microgravity, or combinations of these themes are samples, but not limited to eligible technical content areas. The following websites can also be used to access additional information about the NASA Mission Directorates:

- Aeronautics Research
  http://www.aeronautics.nasa.gov/
- Human Exploration Operations
  http://www.nasa.gov/directorates/heo/home/index.html
- Science
  http://science.nasa.gov/
- Space Technology
  http://www.nasa.gov/directorates/spacetech/home/index.html

The MAA Annual Performance Report can be found at:

1.1.4 MAA Evidence-Based Program Model

Selected proposals shall implement innovative teaching, learning, recruitment and retention strategies, and evaluation strategies based on evidence-based educational research and best practices. Proposed work shall be grounded in evidence-based education research and/or best practices, and incorporate formative, summative, and other evaluations, as appropriate.

The NASA MAA program model (see graphic on the next page) is built upon evidence-based research to effectively engage traditionally underserved and underrepresented students in high quality STEM programming. In partnership with MSIs, the MAA program achieves its goal and objectives by utilizing three core program components: Authentic STEM Experiences built around NASA’s mission; Technology-Rich Environments; and Family Involvement.
The MAA program opportunity is primarily targeted toward K-12, Out-of-School Time (OST) audiences in both summer and afterschool settings. NASA seeks proposals from either new or existing programs that support the following core attributes of the MAA program.

**Equitable Access to Underserved and Underrepresented Audiences (Afterschool Alliance, 2016; Graves, 2016)**

Proposed MAA programs should serve students who traditionally are underrepresented in STEM fields including females, African-Americans, Native Americans and Hispanics. NASA seeks programs that allow for equitable access for individuals from underserved groups and groups traditionally underrepresented in STEM fields and that do not inadvertently create barriers that may prevent participation. The 2014 cohort of MAA grantees had greater than 80% of the total student population coming from underrepresented populations based upon race and ethnicity. Proposals shall provide specific strategies for the recruitment and retention of target audiences in the MAA program.

**Engagement in Long-Duration Experiences with NASA Mission Focused STEM Content (Lauer, et al., 2006; McLaughlin and Pitcock, 2009; Milgram, 2011; National Research Council, 2015; Winship et al., 2005)**

A 2015 National Research Council (NRC) report on effective practices in out-of-school-time settings recommends that students engage in firsthand experiences with STEM. The NRC suggests that effective firsthand experiences with STEM go beyond simple hands-on activities to include a breadth of practices undertaken by real-world STEM practitioners: asking questions and defining problems; developing and using models; planning and carrying out investigations; analyzing and interpreting data; using mathematics and computational thinking; constructing
explanations and designing solutions; engaging in argument from evidence; and obtaining, evaluating, and communicating information. Firsthand experiences enable students to engage with relevant STEM questions, environments, and data in authentic forms. Engagement with STEM practices like these gives students an appreciation of the practices used to investigate, model, and explain the world, as well as an understanding of how scientists and engineers move iteratively between these practices. NASA seeks to provide each participating student with a minimum of 36 hours of high quality STEM content through the MAA program. NASA seeks proposals that identify and specifically document the education needs of a community. Submitted proposals shall address how NASA STEM resources and supports will be used to address local needs. NASA prioritizes proposals that maximize the engagement of students in long duration experiences. The average 2014 MAA grantee served over 1,400 students annually in sustained multi-day STEM experiences. Most members of the 2014 cohort of grantees offered sessions during the spring, summer, fall and winter to maximize student reach.

Engagement of Students in Technology Rich-Settings (Honey & Siegel, 2011; Lai, Khaddage, & Knezek, 2013; Niederhauser, & Schrum, 2016; Vossoughi and Bevan, 2014) NASA seeks proposals that provide a plan for engaging students in the ongoing use of technology throughout their participation in the MAA program. The plan shall address how technology shall be integrated in the delivery of sustained authentic STEM experiences and in the engagement of families and communities. Emerging technologies such as 3-D Printing, Coding and Robotics are important skill sets for NASA’s future workforce. A new way of thinking about education within the concept of a learning environment, is the belief that “While students learn differently in school and out-of-school settings, learning can take place across boundaries, and what has been learned out of school can help shape what is learned in school.” Hands-on learning engages students in hands-on, interactive and applied learning that promotes STEM. Making and tinkering is a growing movement to engage youth in creative investigations. The philosophy is that technology now becomes a very useful tool to create, to solve problems or to investigate. Interest in making education activities has increased with the increased emphasis on design, design-thinking, and technology. Students learn about using 21st-century tools such as computer-controlled table saws, laser cutters, and 3-D printers to create prototypes and fabricate physical objects.

Partnerships and Coordination with the Larger STEM Ecosystem (Afterschool Alliance, 2015; Bell, et al., 2009; Falk et al., 2016; Milgram, 2011; Tran, 2011) MAA programs that make connections should build on children’s past learning experiences and promote connections between in-school and out-of-school learning. Students’ abilities to make connections between formal and informal science experiences has been associated with achievement, science interest, science careers, science self-efficacy, perseverance, and science learning effort. A lack of coordination and cooperation between formal and informal institutions has been shown to contribute to fragmented STEM learning. The capacity of MAA program providers to deliver high-quality programs can be enhanced through partnerships with STEM-rich institutions. Building partnerships between science institutions and local communities is a promising practice for inclusive informal learning. Developing partnerships among OST STEM programs and community organizations could provide a sustainable revenue source to support program implementation.

NASA seeks to engage important members of a child's social context, such as parents or caregivers in MAA program with the child has been associated with positive outcomes such as increased STEM identity development and STEM career interest. Past research has indicated that parental encouragement and involvement in a children’s academic life is one of the most reliable predictors of sustaining motivation, academic achievement, and whether or not a child will attend college. 2014 MAA Awardees hosted Family Café’s that included workshops, guest speakers, discussions, family nights or take home STEM activities. A noteworthy practice among the 2014 cohort was to offer a variety of short duration outreach experiences such as STEM Days, one day educator workshops, speakers and special STEM events to create awareness for program opportunities and engage with the broader community.

Ongoing Professional Development and Support for Instructional Staff (Cooper, 2013; Fenichel & Schweingruber, 2010; Garet, et al., 2001; Guskey, 2014; Guskey & Yoon, 2009; Hill, 2012; Junge & Manglallan, 2011; NRC, 2015; and Peter, 2007)

MAA programs should provide instructional staff with an opportunity for participants to engage with STEM content and use STEM skills in the same manner as their students. Additionally, MAA programs should provide access to ongoing support and follow-up activities that support implementation. During professional development, learning goals should be explicitly stated and STEM content and practices should be presented with a clear rationale for their importance. Trainers should also lead discussions about possible student solutions or products and offer guidance and questioning prompts that instructors could use to support student learning. Professional development prepares instructional participants to respond to the diverse needs of their students and community. The MAA program seeks to maximize the use of licensed STEM educators as facilitators of experiences for students.

1.1.5 Roles and Responsibilities of MAA Program Key Personnel

Personnel Responsibilities

NASA currently considers the MAA Principal Investigator (PI) and Independent Evaluator (IE) as key personnel.

Principal Investigator

- Responsible for the overall leadership, administration and evaluation of educational programs and products involved with NASA MAA programming.
- Provides visionary and contemporary leadership for the delivery of high-impact educational programs, products and applied research as designed and provided by NASA.
- Assists MAA personnel in identifying the most effective and efficient means to deliver priority research-based information and programs to our diverse clientele and stakeholders.
- Responsible for the overall direction, coordination, and evaluation of the MAA office,
and carries out supervisory responsibilities for MAA staff in accordance with the organization’s policies and applicable state and federal laws.

- Responsible for day-to-day management of the MAA budgets and ensuring that all applicable institutional and NASA rules, as well as state and federal guidelines, are followed in the utilization of such funding.
- Promotes and markets the program and assists in the preparation of grant applications to fund planned programs.
- Participates in MAA program teleconferences and meetings.

**Independent Evaluator**

- Develops comprehensive evaluation plan for proposed program in collaboration with PI.
- Coordinates and administers data collection, analysis and reporting of proposed program evaluation data.
- Provides status updates to the PI on evaluation activities, progress, and challenges.
- Commit to participate in annual kick-off meeting, virtual site visits, and evaluation technical assistance meetings with NASA and the NASA contract evaluator to review proposed program’s progress in achieving MAA goal and objectives in support of NASA’s Metaevaluation of the MAA program.
- Develops annual evaluation report and final evaluation report.

### 2.0 AWARD INFORMATION

#### 2.1 Award Value

Subject to Congressional appropriation of sufficient funds, and NASA’s receipt of proposals of adequate merit, NASA expects to select up to seven (7) proposals for award. Each award shall not exceed two (2) years and will have a maximum value up to $325,000 for this two (2) year award period.

NASA may elect to offer selection of only a portion of a proposed project, usually at a level of support that is reduced from that requested in the original proposal. NASA may also offer tentative selections in which NASA requests Proposers to team on a joint project. Additionally, NASA may award an effort for less than the full duration of the proposal. In these instances, the Proposer will have the opportunity to accept or decline such a selection. If the Proposer accepts such an offer, a revised budget and statement of work may be required before NASA can initiate funding action on the proposal. If the Proposer declines the offer of a partial selection or participation in a joint proposal, NASA may withdraw the offer of selection in its entirety.

#### 2.2 Period of Performance
Proposals shall cover the full two (2) years of duration. NASA funding is based on a satisfactory annual evaluation of documented progress; compliance with data reporting, applicable regulations and laws, and other program requirements; fulfillment of fiduciary responsibilities; and the availability of appropriated funds.

2.3 Partnerships and Collaboration

National interest in the vital importance of STEM education has stimulated numerous state and regionally based organizations that are driving critical connections between industry, universities, non-profits and government in formal K–12 and out-of-school-time learning environments. In support of the national focus on improving the STEM Ecosystem, NASA requires Proposers to engage in a formal collaboration with regional or state-based organizations like Afterschool Networks, Afterschool Alliances or STEM Learning Networks. Collaborations can include but are not limited to: supporting MAA sites in meeting the identified local needs of students, recruiting and retaining target populations, recruitment and professional development of instructional staff, support for scaling or sustaining operations, coordination of efforts to ensure high quality student experiences in alignment with proposal goals or high quality evaluation.

When teaming is considered, the lead MSI shall receive not less than 60 percent of the proposed budget. If teaming with NASA partners is considered, NASA resources can be received as in-kind support in the proposal: however, funding shall not be allocated for NASA field Centers in the proposed budget.

2.4 Sustainability

Education investments leverage and achieve sustainability through their intrinsic design and the involvement of appropriate local, regional, and or national partners in their design, development, or dissemination. As appropriate, key aspects of the activity shall be replicable, scalable, and demonstrate potential for continuation beyond the period of direct NASA funding.

Proposers shall develop a Sustainability Plan to enhance local activity operations beyond NASA funding. The Sustainability Plan shall be included and submitted as part of the original proposal.

2.5 Evaluation

NASA identifies evidence of effective practices in STEM education through program evaluation. Evidence is a key criterion in NASA’s competitive processes for allocating resources, ensuring that the most effective STEM education activities are supported. Program evaluations are planned studies using research methods to collect and analyze data to assess to what extent activities/programs are being implemented and what, if any, impact can be measured. Evaluations answer specific questions about performance and may focus on assessing activity/program process and outcomes.

Proposed MAA program evaluation shall follow generally-accepted professional standards for evaluative research. Evaluations are evidence-based, meaning that they are based on verifiable
data and information that have been gathered using the standards of professional research and evaluation organizations. Such data can be both qualitative and quantitative. A wide variety of evaluation designs may be utilized, such as case studies, quasi-experimental designs or experimental designs, as well as data collection methods, such as key informant interviews, surveys, direct observation, or focus group discussions. Regardless, such data shall pass the tests of reliability and validity, which are different for qualitative and quantitative data.

NASA sets concrete performance goals and is accountable to those goals through a framework that measures progress. Objective and verifiable performance metrics, internal and external review processes, valid and reliable data collection instruments, and evaluation studies are used to assess progress and performance across the portfolio, including lines of business, programs, projects, and activities. Through performance monitoring, assessment, and a metaevaluation of the MAA program, NASA will demonstrate its results-driven management approach that is focused on optimizing value to the American public.

The following describes key evaluation milestones associated with the MAA program:

- **Evaluation Plan** *(Submit a comprehensive evaluation plan 60 days after award)*
  - Describes an appropriate evaluation plan/process to document outcomes and demonstrate progress toward achieving the objectives of proposed education activities.
  - Evaluation methods shall be based upon reputable models and techniques.
  - Measure effectiveness and/or impact of the proposed project via evaluation questions, data collection and results to assess performance
  - “Evaluate with fidelity” – evaluations shall be conducted in the manner in which it was written. If there is a change, submit a revised plan.

- **Quarterly Reports** *(January 15th, April 15th, July 15th and October 15th)*
  - Update NASA on activity progress, including the number of educators, students and parents served, the timing and frequency of class sessions, achievement highlights, outside funding and other items such as OEPM (i.e. generic questions about evaluation, status update about activity evaluation).

- **Annual Report** *(60 days prior to Anniversary Date)*
  - Provide an annual review of program progress, including the number of students and parents served, the timing and frequency of class sessions, and achievements
  - **NOTE:** At the end of the performance period (2 years), the Annual Report will be considered a Final Report, which will be due within 90 days of the expiration date of the grant or cooperative agreement.

- **Evaluation Report** *(30 days after Anniversary Date, due annually)*
  - Provide an annual assessment of the evaluation questions identified in site evaluation plans using the methods and instruments previously identified.
  - **NOTE:** At the end of the performance period (2 years), the Evaluation Report shall provide the annual assessment of the evaluation questions along with a summary of the evaluation studies from both implementation years.

### 3.0 ELIGIBILITY INFORMATION
3.1 Proposing Institutions

Institutions
All proposals shall originate from a minority-serving U.S. college or university, designated and listed by the U.S. Department of Education as a Minority Serving Institution, or MSI (see http://www.ed.gov/about/offices/list/ocr/edlite-minorityinst.html). Any arrangement or agreement to have the fiscal management and/or administration of the award performed by a third party is between the awardee and the third party, e.g., an affiliated Board of Regents, University System or Foundation. Institutions not meeting these criteria are encouraged to partner with colleges or universities that satisfy the requirements.

Limit on Number of Proposals per DUNS
Eligible organizations shall submit only ONE (1) lead proposal per DUNS number. Eligible organizations that have multiple and/or different DUNS numbers shall submit no more than ONE (1) lead proposal from each different DUNS number.

Principal Investigator
Every institution submitting a proposal in response to this opportunity shall designate a single individual, Principal Investigator (PI), who will be responsible for the quality and direction of the entire proposed effort and for the use of all awarded funds.

Independent Evaluator
Every institution shall propose, identify and designate a single individual, Independent Evaluator (IE), who will be responsible for analyzing qualitative and quantitative data for the sites evaluation activities and assisting the PI in development and implementation of the site’s comprehensive Evaluation Plan. Within two (2) months after award, every institution submitting a proposal in response to this opportunity, shall submit a comprehensive Evaluation Plan, for which both the PI and IE have concurred on in writing to NASA. NOTE: The MAA Program Management Office will provide feedback/input on the proposed Evaluation Plan Approach, which should be addressed in the submitted Comprehensive Evaluation Plan.

4.0 PROPOSAL AND SUBMISSION INFORMATION

4.1 Proposal Submission
All information needed to respond to this announcement is contained in this Appendix, the EONS announcement, the NASA Grant and Cooperative Agreement Manual (https://prod.nais.nasa.gov/pub/pub_library/srba), and the Guidebook for Proposers Responding to a NASA Funding Announcement (NFA) (the 2017 NASA Guidebook for Proposers) that is located at https://www.hq.nasa.gov/office/procurement/nraguidebook/Proposer2017.pdf. Note: If the information contained in this Appendix conflicts with any other documents, the information in this Appendix takes precedence.

4.2 Request for ‘Notice of Intent’
Institutions planning to prepare a proposal package for the MAA are required to submit a Notice
of Intent (NOI) to propose. NOIs assist NASA in assessing the response to this CAN and to determine the expertise required for the proposal review panel. NOIs should be submitted by the Principal Investigator (PI) to the NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES) website http://nspires.nasaprs.com/ by January 18, 2018, 11:59 p.m. Eastern Time. Interested Proposers shall register with NSPIRES before it can be accessed for use.

Since NOIs submitted after the deadline may still be useful to NASA, NASA will accept late NOIs. However, NASA strongly encourages Proposers to submit NOIs by the deadline.

See Section 5.5 of the EONS NRA for requirements and instructions on submitting a NOI.

If submitted, the NOI shall include:

1. Name of the lead institution
2. College/University Minority Designation
3. Experience in hosting K-12 STEM Engagement activities
4. Name, title, regular mail or e-mail address, telephone, and fax number of proposed Principal Investigator and other designated key personnel

4.3 Technical Assistance Workshop and/or Pre-proposal Teleconference

A technical assistance workshop and/or pre-proposal teleconference will be held before the due date for proposals. Prospective Proposers are requested to submit any written questions not later than seven (7) business days before the technical assistance workshop and/or pre-proposal teleconference so that NASA will be able to cover as much information as possible during the meeting. An opportunity to ask questions and solicit clarification will be provided at the session.

NASA plans to post written questions and answers and technical assistance workshop and/or pre-proposal teleconference charts to the NSPIRES website. An opportunity to ask questions and solicit clarification will be provided during the meeting.

Interested Proposers should register in NSPIRES and sign up for notification emails in order to receive advance notice of the technical assistance workshop and/or pre-proposal teleconference. Proposers shall refer to the MAA solicitation page on NSPIRES for schedule information and additional details.

5.0 PROPOSAL EVALUATION AND SELECTION

5.1 Proposal Review Criteria

The principle elements for proposal evaluation are the following: Intrinsic Merit, Relevance to NASA Objectives, Budget/Cost and Evaluation Plan. Please review the following specific criteria for MAA ELO awards.
5.1.1 Intrinsic Merit (25 percent)

Evaluation of Intrinsic Merit considers the following sub-elements. Proposers shall address these criteria to demonstrate the capability of the institution, staff, faculty, collaborators, and targeted students to achieve successful outcomes for the proposed activity.

a. Management Plan

- Demonstrates clear goals and objectives that are aligned with NASA, the Office of Education, and the institution where the MAA is awarded.
- Presents a clearly organized and workable management plan for achieving educational goals and objectives, and includes clear lines of communication with NASA.
- Presents a realistic schedule/timeline or other description of how activity goals, objectives and major milestones will be met. Includes a feasible timeline per proposed activity years and milestones or benchmarks for success.
- Provides details of the organizational structure. Clearly identifies key personnel, such as the Principal Investigator, Independent Evaluator and the appropriate office at the lead institution, that is ultimately responsible for the overall performance of the MAA.
- Clearly describes and defines how the site will interact with NASA and its identified customers (internal and external). Provides a clear overview that sites have worked within their local and regional STEM Ecosystems to leverage Formal/ Informal Partnerships and Collaborations. Includes financial or in-kind letters of support from partners and collaborators.
- Identifies and proposes target audience (grade level, demographic targets) based upon documented local need.
- Identifies and describes the emerging technologies, content and the types of family engagement activities sites will offer.
- Documents that sites shall offer 36 hours of engagement for students in Authentic STEM experiences during each session.
- Includes sites annuals local evaluation plan and signed letter of agreement that documents sites shall participate in MAA Program Metaevaluation and Synthesis.
- Addresses and describes Past Performance relevant to the MAA activity. MAA Past Awards shall include and provide a description of how the project will improve and grow based upon evaluation data and partnerships.
- Aligns with NASA’s FY17 Annual Performance Indicators, see Section 1.1.2, Agency-wide Priorities.
b. Recruitment and Retention Plan

- Demonstrates an understanding of the unique challenges faced by the target population(s) in the STEM areas.
- Provides evidence of the ability to attract and retain students from target populations, give selection criteria and procedures, and provide a demographic profile of the community being served.
- Provides the expected number of student participants. Historically, MAA sites reached on average 1,450 students per year.

c. Partnership and Sustainability Plan

- Identifies resources or funding capabilities that are in place or will be pursued via the following entities: institutional support, federal or state agencies, contracting opportunities, etc.
- Provides financial or in-kind support in proposal with letters of support from partners (Afterschool Network, etc.).
- Provides a clear plan for the establishment of partner and/or collaborator relationships within their local and regional STEM Ecosystems with local schools, school districts, local businesses, industries, corporations, non-profit organizations, government, state and local vicinities, providers of informal education, youth serving organizations, etc.
- Provides a multi-year plan demonstrating the process to acquire resources to sustain MAA activities beyond NASA funding. Also indicates the likelihood that these resources will be in place.
- Identifies all long-term relationships that have been established, or will be established to ensure that the MAA will sustain educational programming.

d. Past Performance:

- Sites that received previous MAA awards shall provide and describe examples of how the newly proposed MAA project will improve and grow based upon evaluation data and partnerships.

5.1.2. Relevance to NASA (35 percent)

Evaluation of Relevance to NASA considers the following educational relevance and scientific relevance.
Proposers shall adequately and clearly define how the activity proposes to address the following criteria:

**a. Scientific Relevance:**

- Provides evidence that the activity utilizes NASA’s unique contributions to science, engineering, technology, and exploration. Identifies current NASA content which the site has selected and will be utilizing for their activities. These activities shall align with NASA’s Mission Directorates and Community Campaigns.

- Offers innovative methods, approaches, and concepts to engage students in other NASA activities. Provides evidence that proposed effort cultivates diversity and extends access to existing NASA content. Addresses how the selected NASA content will help meet the documented local needs.

**b. Educational Relevance:**

- Provides clear and feasible activity goals and objectives that are aligned with NASA’s Education goals and objectives as described in the 2014 NASA Strategic Plan, and the multi-year performance goal and annual performance indicator. Describes and provides examples as to how the site is and/or will meet their educational goals and objectives.

- Proposed effort offers innovative methods, approaches, and concepts to deliver the MAA by meeting the following objectives:
  
  o Increases the number of historically underserved and underrepresented students interested in NASA specific STEM careers.
  
  o Provides skills to parents/caregivers to work with and encourage their children in STEM activities and programs.
  
  o Involves community groups, business, industry, museums and educational and professional organizations through mentoring, field trips and guest speakers and other MAA activities.
  
  o Engages students in firsthand experiences in STEM such as hands-on learning, research, use of advanced technology, peer support groups, and mentoring relationships with professionals working in the STEM fields.

- Technology Plan. The Proposer shall provide a Technology Plan, which describes and provides examples as to how the site plans to support and update the identified emerging technologies.

- Describes how sites will provide professional development training and support for their educators and facilitators.

- The proposed effort builds on lessons learned and/or best practices of past education and/or research and learning activities. Specific examples are provided as to how the sites’ program design is aligned to evidence.
5.1.3. Budget/Cost (15 percent)

Proposers shall clearly describe how the proposed budget is appropriate. Proposals shall include a detailed implementation/costing plan with a clear narrative that demonstrates how funds requested will be fully utilized for the duration of the two (2) year grant award period.

The following sub-elements will be considered in the evaluation of the Budget/Cost:

- Clarity of alignment between the proposal narrative and budget.
- Budget is adequate, appropriate, reasonable and realistic for education, NASA, and evaluation expertise.
- Budget demonstrates effective use of funds in which outcomes justify total costs.
- All budget line items are fully explained and justified.
- Budget addresses the distribution of funds among the following items: Personnel, Staff Benefits, Consultants, Equipment, Emerging Technologies, Advertising, Printing, Business, Meeting Expenses, Material and Supplies, Postage, Travel, Training, and In-Kind Support.

5.1.4 Evaluation Plan Approach (25 percent)

Proposers shall adequately describe the planned approach that will be used to evaluate the proposed program. More emphasis and additional credit will be given to proposals with more rigorous evaluation plans that are supported by evidence-based research. To assist in development of their proposals, Principal Investigators and Independent Evaluators are encouraged to read the following resources:

- “Effective Practices for Evaluation STEM Out-of-School Time Programs”
- “Identifying and Implementing Educational Practices Supported by Rigorous Evidence: A User Friendly Guide”
- “User-Friendly Handbook for Project Evaluation”
- “Common Guidelines for Education Research and Development”
- “Designing Evaluations”

The proposed evaluation plan approach shall adequately describe the process to obtain qualitative and quantitative data and identify clearly defined indicators that can be utilized to track student progress and quality of MAA infrastructure and programming by addressing the following:

- **Proposed MAA Program Logic Model.** Logic models illustrate a sequence of cause-and-effect relationships—“a systematic and visual way to present and share your understanding of the relationships among the resources you have to operate your
Program, the activities you plan, and the changes or results you hope to achieve” (W. K. Kellogg Foundation).

- **Proposed Evaluation Design and Methodology.** Describe an appropriate evaluation plan approach/process to document outcomes and demonstrate progress toward achieving objectives of proposed education activities. The forms of evaluation shall be based upon reputable models and techniques that are appropriate to the content and scale of the MAA. Identify the Independent Evaluator that will develop the comprehensive evaluation plan, develop or identify tools or processes for data collection; carry out evaluation tasks; conduct analysis; and provide formative and summative feedback to the project leadership throughout the life cycle of the award. Describe proposed evaluation questions, program measurable goals, objectives, outcomes, and data collection tools that describe progress towards meeting MAA goal, objectives and outcomes.

- **Evidence-Based Research and/or Best Practice Supporting MAA Proposed Program and Evaluation Plan Approach.** Evaluation methods shall also provide useful information on the effectiveness and/or impact of the proposed cooperative agreement, and how improvements will be implemented based on evaluation evidence.

5.2. Review and Selection Process

Proposals will be evaluated by a merit review process composed of the applicants’ peers (government and non-government), including technical, education and evaluation experts, who have been screened for conflicts of interest. Strengths and weaknesses for each of the four criteria (Intrinsic Merit, Relevance to NASA, Budget/Cost, and Evaluation Plan) and their sub-elements will be used to evaluate the proposals.

Awards will be made to those proposals determined to be the most advantageous to the Government, all factors considered, including the potential contributions of the proposed work to the overall research program and the availability of funding for the effort. NASA may consider geographic location and student reach and awards may be made to proposals determined to be selectable regardless of the proposal’s overall rating. At the end of the selection process, each proposing organization will be notified of its status (selection or non-selection). NASA will provide debriefings to Proposers that request one.

Proposals will be evaluated through a combined online and panel review process. Proposers are expected to provide sufficient detail to enable evaluation by persons who are knowledgeable of, but not necessarily specialists in the proposed subject area. The reviewers may include personnel from NASA, other government agencies, industry, and universities. Award decisions will be made following a panel review of all the proposals. The panel will make final recommendations to the NASA selection official. The Selection Official for the MAA awards is Ms. Joeletta Patrick, MUREP Manager, NASA Headquarters, or her designee.

In evaluating the proposals, NASA will assign the following ratings:

<table>
<thead>
<tr>
<th>Adjectival Rating</th>
<th>Definition</th>
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</table>
Excellent | A comprehensive and thorough proposal of exceptional merit with one or more significant strengths. No deficiency or significant weakness exists.

Very Good | A proposal having no deficiency and which demonstrates over-all competence. One or more significant strengths have been found, and strengths outbalance any weaknesses that exist.

Good | A proposal having no deficiency and which shows a reasonably sound response. There may be strengths or weaknesses, or both. As a whole, weaknesses not offset by strengths do not significantly detract from the Proposer’s response.

Fair | A proposal having no deficiency and which has one or more weaknesses. Weaknesses outbalance strengths.

Poor | A proposal that has one or more deficiencies or significant weaknesses that demonstrate a lack of overall competence or would require a major proposal revision to correct.

6.0 AWARD ADMINISTRATION INFORMATION

6.1. Cooperative Agreement Award Reporting Requirements

The reporting requirements for award recipients under the MAA will be consistent with Exhibit E, NASA Grant and Cooperative Agreement Manual. (https://prod.nais.nasa.gov/pub/pub_library/srba/), see Appendix F in the Guidebook for Proposers and include the following:

Within one month (30 days) after award receipts shall:

- Submit a descriptive MAA abstract for the NASA.gov website.
- Submit a management plan with associated timeline and milestones.

Within two months (60 days) after award recipients shall:

- Submit a final Comprehensive Evaluation Plan developed by the Independent Evaluator with concurrence by the Principal Investigator to the NASA MAA Program Manager.
- NOTE: The MAA Program Management Office will provide feedback/input on the proposed Evaluation Plan Approach which should be addressed in the submitted Comprehensive Evaluation Plan.

Recipients shall submit an annual progress report each year no later than 60 days prior to the anniversary date of the project start date. The report, at a minimum, shall document the following:

1. Project activities over the period of performance of the award;
2. Project accomplishments measured against the proposed goals and objectives;
3. Evidence of how project activities have furthered stakeholder priorities;
4. Extent to which collaborations and/or partnerships have evolved; and
5. Plan of activities for the next year.

Recipients shall submit a final report with summary information within 90 days of the expiration date of the grant or the cooperative agreement.

6.2 Summary of MAA Grantee Responsibilities

1. Recipients of the MAA award will assume primary responsibility for implementing, operating, and managing the activity as described in their original proposal.

2. The MAA recipient shall appoint a Principal Investigator (PI) and an Independent Evaluator (IE) supported by this Agreement. If the PI or IE named is different from the individual identified in the proposal, the NASA MAA Manager shall be notified in writing. The Grant Officer will issue a formal modification to the Agreement to reflect the change.

3. The recipient shall submit monthly progress reports by the 10th day following the end of the prior month. For example, the progress report for September will be due by October 10th. If the 10th falls on a weekend or a federal holiday, the recipient shall submit the report by the close of the next business day. These reports shall be submitted by e-mailing the POC listed in the summary of key information at the end of this Appendix.

4. The MAA recipient shall submit quarterly reports on the 15th following the end of the fiscal year quarter (January 15th, April 15th, July 15th and October 15th). If the 15th falls on a weekend or a federal holiday, then the report is due by the close of the next business day. The quarterly report updates NASA on activity progress including the number of educators, students and parents served, the timing and frequency of class sessions, achievement highlights, outside funding and other items such as OEPM (i.e. generic questions about evaluation, status update about activity evaluation)

5. The lead institution, in concert with the MAA PI, is responsible for the financial management of the MAA as specified in the basic award notice under the terms and conditions issued by NASA and in 14 Code of Federal Regulations (CFR) Sections 1260.26 and 1260.160. Failure of the recipient to comply with the terms and conditions of an award may result in NASA terminating the award.

6. Annual Report/Final Report: An annual report providing an annual review of program progress including the number of students and parents served, the timing and frequency of class sessions, and achievements will be due within 60 days of the Anniversary date. The final report, in lieu of an annual report, shall be due within 90 days of the expiration date of this grant or cooperative agreement.
7. Evaluation Report: An annual evaluation report will be due within 30 days of the Anniversary date. This report shall provide an annual assessment of the evaluation questions identified in site evaluation plans using the methods and instruments previously identified. At the end of the performance period (2 years), the Evaluation Report shall provide the annual assessment of the evaluation questions along with a summary of the evaluation studies from both implementation years.

8. Performance Outcomes: All institutional PIs with NASA Office of Education grants and cooperative agreements shall provide and verify performance data for the awarded project and submit to NASA for review, prior to entry in the Office of Education Performance Measurement (OEPM) system.

9. The MAA PI shall submit one copy of the project’s annual report via email to the NASA Shared Service Center (NSSC) with a cc to the MAA Activity Manager. All project reports and plans shall also be submitted to the following entities via email or an alternative electronic format:

- NASA MAA Activity Manager
- Other individuals identified by the MSI

10. NASA may add additional requirements during the grant’s or cooperative agreement’s period of performance to achieve broader MAA or NASA Education objectives.

6.3 Office of Education Metrics

Recipients shall utilize all data collection tools and complete all assigned data entry tasks for the NASA OEPM system. NASA’s Office of Education and/or the MAA Management will communicate training and provide data collection tasks.

Recipients may also be required to respond to data calls at NASA’s Office of Education’s request. It is critical for all recipients to develop tracking methods or databases on project activities in order to respond to potential data calls in a timely manner. MAA management will provide additional communications and guidance regarding data calls and activity tracking. Recipients shall ensure that the project has the appropriate staff and resources to be able to facilitate data collection activities and complete tasks required for OEPM reporting by required due dates.

6.4 Summary of Key Information
<table>
<thead>
<tr>
<th>Total available annual budget for the MAA</th>
<th>$2.0 M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual awards will be made up to a maximum of $325,000 for the two (2) year award period.</td>
<td></td>
</tr>
<tr>
<td>Number of new awards pending adequate proposals of merit</td>
<td>Up to seven (7)</td>
</tr>
<tr>
<td>Start date</td>
<td>two (2) to four (4) months from selection announcement</td>
</tr>
<tr>
<td>Duration of awards</td>
<td>Two (2) years</td>
</tr>
<tr>
<td>Award Type</td>
<td>Cooperative Agreement</td>
</tr>
<tr>
<td>MAA Pre-proposal Teleconference and/or Technical Assistance Workshop (Optional)</td>
<td>Check the NSPIRES website for date and connection details.</td>
</tr>
<tr>
<td>Due date for Notice of Intent to propose (NOI)</td>
<td>January 18, 2018, 11:59 pm Eastern Time</td>
</tr>
<tr>
<td>Due date for proposals</td>
<td>March 22, 2018, 11:59 pm Eastern Time</td>
</tr>
<tr>
<td>Page limit for the central Scientific-Educational-Management section of proposal</td>
<td>15 pp; see also Chapter 3 of the 2017 NASA Guidebook for Proposers</td>
</tr>
<tr>
<td>Detailed instructions for the preparation and submission of proposals</td>
<td>See the 2017 NASA Guidebook for Proposers that is located at <a href="https://www.hq.nasa.gov/office/procurement/nraguidebook/Proposer2017.pdf">https://www.hq.nasa.gov/office/procurement/nraguidebook/Proposer2017.pdf</a>.</td>
</tr>
</tbody>
</table>
Electronic proposal submission is required via NSPIRES or grants.gov; no hard copy will be accepted. See Section 4 of the NASA Guidebook for Proposers.

Web site for submission of proposal via NSPIRES: http://nspires.nasaprs.com/ (help desk available at nspires-help@nasaprs.com or (202) 479-9376 from 8am to 6pm Eastern Time on weekdays, excluding Federal holidays.)

Web site for submission of proposal via grants.gov: http://grants.gov (Contact Center is available by email at support@grants.gov, or by calling 1-800-518-4726 and via website at https://grants-portal.psc.gov.)

Selection Official: Ms. Joeletta Patrick, MUREP Manager
NASA Headquarters
Washington, DC 20546

NASA point of contact concerning this activity: Ms. Priscilla Mobley, NASA MAA Activity Manager
NASA Glenn Research Center, MS 7-4
Cleveland, OH 44135
Email: NASAMAA@nasaprs.com

6.5 Glossary of Terms

**Experiential Learning Opportunities (ELO):** Increase learners’ involvement, knowledge, comprehension and application of learning in one or more STEM subjects/disciplines. They involve inquiry-based/project-based learning approaches designed to the level of the learner to inspire, engage, and educate them while progressively being challenged. ELO activities enable learners to acquire knowledge; understand what they have learned; and apply that knowledge through inquiry-based/project-based activities.

**Principal Investigator (PI):** The individual(s) a research organization designates as having an appropriate level of authority and responsibility for the proper conduct of the research, including the appropriate use of funds and administrative requirements such as the submission of scientific progress reports to the agency.

**STEM Engagement (SE):** Activities designed to engage learners' from the K-12, Higher Education, and Informal Education communities to increase their involvement and interest in STEM, educate them on the value of STEM in their lives, and positively influence the perception of their ability to participate in STEM.

**Underrepresented:** Populations that are not present in the STEM professions relative to the size of the population at large. Refers to racial and ethnic populations as well as women and persons with disabilities.

**Underserved:** Often used interchangeably with “underrepresented,” particularly as it relates to the sciences and engineering. Specifically, it is used to promote access and opportunity to
persons of diverse backgrounds—racial, ethnic, gender, religious, age, sexual orientation, disabled, and other populations with limited access—to decent and affordable housing, gainful employment, and other services. In the STEM arena, “underserved” has typically referred to women and persons with disabilities.

**Independent Evaluator:** The Independent Evaluator is a third party or a current employee of the awardee organization who is independent from the policy, operations, and management functions of the project activity requiring evaluation. It is expected that the Independent Evaluator both works collaboratively with the Principal Investigator and retains independent objectivity in collecting and presenting evidence of effectiveness, impact on participants, proposed program outcomes, and progress toward achieving MAA’s goal and objectives.
**Table 1.0: Current NASA Education Products Aligned to Agency Communications Campaigns**

<table>
<thead>
<tr>
<th>Name</th>
<th>Link</th>
<th>Grade Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aeronautics: NASA Is With You When You Fly</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Let It Glide</td>
<td><a href="https://www.nasa.gov/content/let-it-glide-overview/">https://www.nasa.gov/content/let-it-glide-overview/</a></td>
<td>5-8</td>
<td>Using the Engineering Design Process, students will develop and build a shoebox glider and improve it in terms of aircraft and wing materials, shapes, and structure, to produce the greatest glide slope possible.</td>
</tr>
<tr>
<td>Aeronautics Module</td>
<td><a href="https://www.nasa.gov/sites/default/files/atoms/files/nosl-ps-01985-aeronautics-module.pdf">https://www.nasa.gov/sites/default/files/atoms/files/nosl-ps-01985-aeronautics-module.pdf</a></td>
<td>4-8</td>
<td>Provide students with an understanding of, Newton’s Third Law of Motion, the engineering design process and interactions between the atmosphere and geosphere Investigation</td>
</tr>
<tr>
<td>Flight Testing Newton’s Laws</td>
<td><a href="https://www.nasa.gov/audience/foreducators/topnav/mat">https://www.nasa.gov/audience/foreducators/topnav/mat</a></td>
<td>9-12</td>
<td>Investigate Newton’s three Laws of Motion and the four forces of flight apply to flight testing an aircraft.</td>
</tr>
<tr>
<td>Name</td>
<td>Link</td>
<td>Grade Level</td>
<td>Description</td>
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<tr>
<td>History of Flight - If These Airplanes Could Talk</td>
<td><a href="https://www.nasa.gov/sites/default/files/atoms/files/if-these-planes-could-talk-5-12.pdf">https://www.nasa.gov/sites/default/files/atoms/files/if-these-planes-could-talk-5-12.pdf</a></td>
<td>5-12</td>
<td>Students will learn the proper way to read and interpret artifacts or museum exhibits to obtain the information needed to fully understand what they are viewing.</td>
</tr>
<tr>
<td>Four Forces of Flight</td>
<td><a href="https://www.nasa.gov/sites/default/files/atoms/files/four_forces_k-4.pdf">https://www.nasa.gov/sites/default/files/atoms/files/four_forces_k-4.pdf</a></td>
<td>K-4</td>
<td>Students learn about the position and motion of objects and the properties of objects and materials as they explore the basics behind the four forces of flight.</td>
</tr>
<tr>
<td>Pushing the Envelope: A NASA Guide to Engines</td>
<td><a href="https://er.jsc.nasa.gov/SEH/A_NASAGUIDETOENGINES%5B1%5D.pdf">https://er.jsc.nasa.gov/SEH/A_NASAGUIDETOENGINES[1].pdf</a></td>
<td>8-12</td>
<td>Guide aids in teaching math, physics, and chemistry concepts from the viewpoint of propulsion and aeronautics. Problems using real world applications are included in each section to provide practice on the concepts.</td>
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</table>

### Mars: Join Us on The Journey

<table>
<thead>
<tr>
<th>Name</th>
<th>Link</th>
<th>Grade Level</th>
<th>Description</th>
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<tbody>
<tr>
<td>NASA Imagine Mars - Mars Survival Kit</td>
<td><a href="https://mars.nasa.gov/participate/marsforeducators/soi/">https://mars.nasa.gov/participate/marsforeducators/soi/</a></td>
<td>K-12</td>
<td>Students design a sustainable community, considering criteria and constraints in an engineering and design</td>
</tr>
<tr>
<td>NASA’s BEST: Mars Science Laboratory Entry, Descent, &amp; Landing Instrument</td>
<td><a href="https://www.nasa.gov/sites/default/files/best_medli_workbook.pdf">https://www.nasa.gov/sites/default/files/best_medli_workbook.pdf</a></td>
<td>5-8</td>
<td>Mars Science Laboratory Entry, Descent and Landing Instrumentation, or MEDLI -- Students design a small heat shield to protect fragile instruments during a Mars entry simulation.</td>
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<tr>
<td>NASA’s BEST: Design a Crew Exploration Vehicle</td>
<td><a href="https://www.nasa.gov/audience/foreducators/best/activities.html#.V9luGfkrJhE">https://www.nasa.gov/audience/foreducators/best/activities.html#.V9luGfkrJhE</a></td>
<td>K-2, 3-5, 6-8</td>
<td>Student’s focus on the engineering design process to build a vehicle.</td>
</tr>
<tr>
<td>Parachuting Onto Mars</td>
<td><a href="https://y4y.ed.gov/stemchallenges/nasa2015/ms/parachuting-onto-mars/1483/1">https://y4y.ed.gov/stemchallenges/nasa2015/ms/parachuting-onto-mars/1483/1</a></td>
<td>6-8</td>
<td>Student work in a team to design, build, and test a drag device.</td>
</tr>
<tr>
<td>Mars Student Imaging Project</td>
<td><a href="https://mars.nasa.gov/msip/teachers/overview/">https://mars.nasa.gov/msip/teachers/overview/</a></td>
<td>5-12</td>
<td>Students work with NASA scientists, mission planners, and educators to take their own picture of Mars and make discoveries.</td>
</tr>
<tr>
<td>Exploring Mars</td>
<td><a href="https://mars.nasa.gov/education/modules/webpages/module1.htm">https://mars.nasa.gov/education/modules/webpages/module1.htm</a></td>
<td>4-10</td>
<td>Five distinct lessons within a module provide students a powerful introduction to Mars, planets, astronomy, and space exploration.</td>
</tr>
<tr>
<td>The Mars Education Lesson Plans</td>
<td><a href="https://marsed.asu.edu/stem-lesson-plans">https://marsed.asu.edu/stem-lesson-plans</a></td>
<td>K-12</td>
<td>Lesson plans include elements of inquiry-based learning that are aligned to Common Core and Next Generation Science Standards (NGSS) as well as problem-based learning and the Biological Sciences Curriculum Study (BSCS) 5-E instructional model.</td>
</tr>
<tr>
<td>Destination: Mars</td>
<td><a href="https://er.jsc.nasa.gov/seh/destmars.pdf">https://er.jsc.nasa.gov/seh/destmars.pdf</a></td>
<td>6-8</td>
<td>Guide allows students to explore Mars as scientists.</td>
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<tr>
<td>Astrobiology Science Learning Activities for Afterschool</td>
<td><a href="https://www.nasa.gov/pdf/145916main_Astrobiology.Guide.pdf">https://www.nasa.gov/pdf/145916main_Astrobiology.Guide.pdf</a></td>
<td>K-6</td>
<td>Students explore topics related to the search for life beyond their own planet using some of the same strategies that astrobiologists use.</td>
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<tr>
<td>Planetary Geology</td>
<td><a href="https://www.nasa.gov/pdf/58263main_Planetary.Geology.pdf">https://www.nasa.gov/pdf/58263main_Planetary.Geology.pdf</a></td>
<td>6-12</td>
<td>Students explore earth science to understand the natural processes that shape not only our planet, Earth, but all objects in the solar system.</td>
</tr>
<tr>
<td>Meteorology: An Educator's Resource for Inquiry-Based Learning</td>
<td><a href="https://www.nasa.gov/pdf/288978main_Meteorology_Guide.pdf">https://www.nasa.gov/pdf/288978main_Meteorology_Guide.pdf</a></td>
<td>5-9</td>
<td>Inquiry-Based Learning for Grades 5-9 is written as a supplement to existing Earth and space science lessons.</td>
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<tr>
<td>Activity</td>
<td>Link</td>
<td>Grade Level</td>
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<td>Investigating the Climate System - Winds at Work</td>
<td><a href="https://www.nasa.gov/pdf/62325main_ICS_Winds.pdf">https://www.nasa.gov/pdf/62325main_ICS_Winds.pdf</a></td>
<td>5-8</td>
<td>Students will conduct investigations to gain knowledge on the role wind plays in Earth’s climate. Interpretation of TRMM images and other data are used by students to find answers.</td>
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<tr>
<td>Investigating the Climate System - Precipitation</td>
<td><a href="https://www.nasa.gov/pdf/62321main_ICS_Precipitation.pdf">https://www.nasa.gov/pdf/62321main_ICS_Precipitation.pdf</a></td>
<td>5-8</td>
<td>Students conduct investigations to gain knowledge on how precipitation affects Earth. Interpretation of TRMM images and other satellite data are used by students to find answers.</td>
</tr>
<tr>
<td>Investigating the Climate System - Energy</td>
<td><a href="https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/ICS_Energy.html">https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/ICS_Energy.html</a></td>
<td>5-8</td>
<td>Students conduct investigation to gain knowledge of Earth’s energy budget. Interpretation of TRMM images and other satellite data are used by students to find answers.</td>
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### International Space Station: We’re Working Off the Earth, for the Earth

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<tr>
<th>Name</th>
<th>Link</th>
<th>Grade Level</th>
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<tbody>
<tr>
<td>Why Do We Really Need Pressure Suits</td>
<td><a href="https://www.nasa.gov/sites/default/files/atoms/files/dressing_for_altitude.pdf">https://www.nasa.gov/sites/default/files/atoms/files/dressing_for_altitude.pdf</a></td>
<td>5-12</td>
<td>Guide is focused on student investigating human survival within temperature, pressure, and density parameters.</td>
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<tr>
<td>Topic</td>
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<tr>
<td>The Brain in Space</td>
<td><a href="https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/The.Brain.in.Space.html">https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/The.Brain.in.Space.html</a></td>
<td>5-12</td>
<td>The study of the ways in which the body's brain, spinal cord and network of nerves control the activities of animals and humans is called neuroscience.</td>
</tr>
<tr>
<td>Life Support Systems</td>
<td><a href="https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Life_Support.html">https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Life_Support.html</a></td>
<td>4-12</td>
<td>Students will design and build models of nine life support systems that are crucial to successful human settlement of the moon.</td>
</tr>
<tr>
<td>Waste Limitation Management and Recycling Design Challenge</td>
<td><a href="https://www.nasa.gov/pdf/396791main_WLMR_Educator_Guide.pdf">https://www.nasa.gov/pdf/396791main_WLMR_Educator_Guide.pdf</a></td>
<td>6-8</td>
<td>A design challenge where students create a practical and vital system for complete water recycling system for future use on an outpost off the Earth.</td>
</tr>
<tr>
<td>A Breath of Fresh Air Lab Activity</td>
<td><a href="www.nasa.gov/audience/foreducators/mathandscience/research/Prob_BreathFreshAir_detail.html">www.nasa.gov/audience/foreducators/mathandscience/research/Prob_BreathFreshAir_detail.html</a></td>
<td>9-12</td>
<td>A chemistry lab activity using electrolysis to simulate the Oxygen Generator System used on the International Space Station.</td>
</tr>
<tr>
<td>Mass vs. Weight Educator Guide</td>
<td><a href="https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Mass_vs_Weight.html">https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Mass_vs_Weight.html</a></td>
<td>5-8</td>
<td>Students study the difference between mass and weight by comparing students' results with the results of astronauts aboard the space station. The activities focus on Newton's second law of motion.</td>
</tr>
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<td>Name</td>
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<td>Grade Level</td>
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<tr>
<td>NASA's BEST Solar Sail</td>
<td><a href="https://www.nasa.gov/audience/foreducators/best/activities-technology.html">https://www.nasa.gov/audience/foreducators/best/activities-technology.html</a></td>
<td>5-8</td>
<td>Students design a solar sail, pack the sail for launch to space, and unfurl the sail without damaging it. Students also maintain a budget.</td>
</tr>
<tr>
<td>NASA's BEST: CPST (Cryogenic Propellant Storage and Transfer)</td>
<td><a href="https://www.nasa.gov/audience/foreducators/best/activities-technology.html">https://www.nasa.gov/audience/foreducators/best/activities-technology.html</a></td>
<td>5-8</td>
<td>Students design a storage container to keep a propellant cold. They also design a transfer system to move the propellant safely from one container to another. Students measure the evaporation that takes place during the experiment.</td>
</tr>
<tr>
<td>NASA's BEST: GPIM (Green Propellant Infusion Mission)</td>
<td><a href="https://www.nasa.gov/audience/foreducators/best/activities-technology.html">https://www.nasa.gov/audience/foreducators/best/activities-technology.html</a></td>
<td>5-8</td>
<td>Green Propellant Infusion Mission, or GPIM -- Students design a spacecraft and an effective green propellant. They also keep a budget for material and testing facility rental costs.</td>
</tr>
<tr>
<td>Suited for Spacewalking</td>
<td><a href="https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Suited_for_Spacewalking_Educator_Guide.html">https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Suited_for_Spacewalking_Educator_Guide.html</a></td>
<td>5-12</td>
<td>Guide focuses on the technology behind spacesuits. Briefly discussed are the space environment, the history of spacewalking, NASA's current spacesuits and the work that astronauts do during spacewalks.</td>
</tr>
<tr>
<td>Reflection of Light with Two Plane Mirror</td>
<td><a href="https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Reflection_Light_Number_Angles.html">https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Reflection_Light_Number_Angles.html</a></td>
<td>K-8</td>
<td>Students experiment to find that as the angle between two mirrors is increased or decreased, the number of reflected images increases or decreases.</td>
</tr>
<tr>
<td>BEST: Build a Satellite to Orbit the Moon</td>
<td><a href="https://www.nasa.gov/pdf/630753main_NASAsBESTActivityGuide3-5.pdf">https://www.nasa.gov/pdf/630753main_NASAsBESTActivityGuide3-5.pdf</a></td>
<td>3-5, 6-8</td>
<td>Design and build a satellite that meets specific size and mass constraints. It must carry a combination of cameras, gravity probes, and heat sensors to investigate the Moon's surface.</td>
</tr>
<tr>
<td>Name</td>
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<tr>
<td>Rover Races</td>
<td><a href="https://www.nasa.gov/pdf/392975main_Rover_Races_Activity.pdf">https://www.nasa.gov/pdf/392975main_Rover_Races_Activity.pdf</a></td>
<td>5-9</td>
<td>Students experience the processes involved in engineering a communication protocol. To reach their goal, students must create a calibrated solution within constraints and parameters of communication with a rover on Mars.</td>
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</table>

**Solar System and Beyond: Our Journey of Discovery**

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<thead>
<tr>
<th>Name</th>
<th>Link</th>
<th>Grade Level</th>
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<tbody>
<tr>
<td>Using Light to Study Planets</td>
<td><a href="https://www.jpl.nasa.gov/edu/teach/activity/using-light-to-study-planets/">https://www.jpl.nasa.gov/edu/teach/activity/using-light-to-study-planets/</a></td>
<td>6-11</td>
<td>Students build a spectrometer using basic materials to observe the light emitted and absorbed by several sources. This will be used as a model for how NASA uses spectroscopy to determine the nature of elements found on Earth and other planets.</td>
</tr>
<tr>
<td>Space-Based Astronomy Guide</td>
<td><a href="https://www.nasa.gov/pdf/582777main_Space.Based.Astronomy.pdf">https://www.nasa.gov/pdf/582777main_Space.Based.Astronomy.pdf</a></td>
<td>5-8</td>
<td>Students build simple spectrosopes and telescopes to learn about Earth's atmosphere, the electromagnetic spectrum and telescopes.</td>
</tr>
<tr>
<td>All About Ice</td>
<td><a href="https://solarsystem.jpl.nasa.gov/educ/lessons&amp;Grade=35&amp;LessonLength=More%20Than%20an%20Hour">https://solarsystem.jpl.nasa.gov/educ/lessons&amp;Grade=35&amp;LessonLength=More%20Than%20an%20Hour</a></td>
<td>3-8</td>
<td>Students investigate ice, learn about its properties and explore how it can change states to a liquid or a gas.</td>
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<tr>
<td>Exploring Meteorite Mysteries</td>
<td><a href="https://solarsystem.nasa.gov/docs/Building_Planets_508FC.pdf">https://solarsystem.nasa.gov/docs/Building_Planets_508FC.pdf</a></td>
<td>3-8</td>
<td>Students will observe and explore meteorites.</td>
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<td>Champion: Jupiter</td>
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<td>and the Pull of the</td>
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<td>Planets Unit</td>
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<td>**Mars Robotic</td>
<td><a href="https://solarsystem.jpl.nasa.gov/educ/lessons/1793">https://solarsystem.jpl.nasa.gov/educ/lessons/1793</a></td>
<td>4-9</td>
<td>Students learn the different elements necessary to design,</td>
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<td>Activities</td>
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<td>build and support robotic missions to the Red Planet.</td>
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**Evaluation Plan Approach**

- **Proposed Evaluation Design and Methodology Narrative**
  Describe an appropriate evaluation plan approach/process to document outcomes and demonstrate progress toward achieving objectives of proposed education activities. The forms of evaluation should be based upon reputable models and techniques that are appropriate to the content and scale of the MAA. Identify the Independent Evaluator that will develop the comprehensive evaluation plan, develop or identify tools or processes for data collection; carry out evaluation tasks; conduct analysis; and provide formative and summative feedback to the project leadership throughout the life cycle of the award.

  - Proposed activity theory of change/logic model
  - Proposed program evaluation questions
  - Proposed program measurable goals, objectives, and outcomes
  - Proposed program data collection tools

- **Evidence-Based Research and/or Best Practice Supporting Evaluation Plan Approach Narrative**
  Describe evidence-base for MAA proposed program, evaluation plan approach. Include citations.
References:

- Junge, S., & Manglallan, S. (2011). Professional development increases afterschool staff's confidence and competence in delivering science, engineering and technology. In Advances in youth development programming: Research and evaluation from the
University of California cooperative extension 2001-2010 (pp. 70-78). Regents of the University of California.


APPENDIX G

GAO-11-646SP Performance Measurement and Evaluation: Definitions and Relationships


Program Performance Assessment

Both the executive branch and congressional committees need extensive information to help them make decisions about the programs they oversee—information that tells them whether and why a program is working well or not. In enacting the Government Performance and Results Act of 1993 (GPRA), Congress recognized that executive and congressional decisionmaking was often hampered by the lack of good information on the results of federal programs. To promote improved federal management and greater efficiency and effectiveness, GPRA instituted a governmentwide requirement that agencies set goals and report regularly on performance.

Many analytic approaches have been employed over the years by the agencies and others to assess the operations and results of federal programs, policies, activities, and organizations. Most federal agencies have used performance information to track program outputs goals, but few seek to regularly conduct in-depth program evaluations to assess their programs’ impact on meeting their performance goals.

Individual evaluation studies are designed to answer specific questions about how well a program is working, and GPRA explicitly encourages a multiagency role for these types of program assessment. The GPRA Amendments Act of 2010 aims to improve program performance by requiring agencies to identify priority goals, assign officials responsibility for achieving them, and evaluate program quarterly. Complete and accurate information on how well programs are working and why will be key to its success.

This appendix describes and explains the relationships between two common types of systematic program assessments: performance measures, and program evaluations. Based on GAO publications and program evaluation literature, it was first proposed in 1998. More recently, see Kathleen Shipman and Joseph Wholey. Please address any questions to Kathleen Shipman at (202) 512-4591 or shipmank@gao.gov.

Nancy S. Kissinger, Managing Director
Applied Research and Methods

May 2011

PERFORMANCE MEASUREMENT AND EVALUATION

Definitions and Relationships

United States Government Accountability Office
Chesapeake

GAO 11-646SP
Types of Program Performance Assessment

Performance Measurement

Performance measurement is the ongoing monitoring and reporting of program accomplishments, particularly progress toward preestablished goals. It is typically conducted by program or agency management.

Performance measures may address the type or level of program activities conducted, the direct products and services delivered by a program (outputs), or the results of those products and services (outcomes).

A “program” may be any activity, project, function, or policy that has an identifiable purpose or set of objectives.

Program Evaluation

Program evaluations are individual systematic studies conducted periodically on an ad hoc basis to assess how well a program is working. They are often conducted by experts external to the program, either inside or outside the agency, as well as by program managers.

A program evaluation typically examines achievements or program objectives in the context in which it occurs. Four main types can be identified, all of which test measures of program performance, along with other information, to learn the benefits of a program or how to improve it.

Types of Program Evaluation

Process for Implementation Evaluation

This form of evaluation assesses the extent to which a program is operating as it was intended, typically assessing program activities’ effectiveness in meeting and exceeding requirements, program design, and professional standards or customer expectations.

Outcome Evaluation

This form of evaluation assesses the extent to which a program achieves its programmed objectives. It focuses on outputs and outcomes (including unintended effects) to judge program effectiveness.

Impact Evaluation

Impact evaluation is a form of outcome evaluation that examines the net effect of a program by computing program outcomes with and without the program. The results are factors that contribute to the program’s success, in order to isolate the program’s contribution to achievement of its objectives.

Cost-Benefit and Cost-Effectiveness Analyses

These analyses compare a program’s costs or outcomes with those of other policies or interventions. Cost-effectiveness analysis measures the cost of meeting a single output or objective and can be used to identify the least costly alternative for achieving that goal. Cost-benefit analysis aims to identify all relevant costs and benefits, usually expressed in dollar terms.

Relationship between Performance Measurement and Program Evaluation

Different Focus

Performance measurement focuses on whether a program has achieved its objectives, expressed in measurable performance standards. Program evaluations typically assess a broader range of information on program performance and its context than is feasible to monitor on an ongoing basis.

Depending on their focus, evaluations may examine parts of program operations (such as in a process evaluation) or focus on the program environment that may impede or contribute to its success, to help explain the linkages between program inputs, outputs, outcomes, and success. Alternatively, evaluations may assess the program’s effects beyond its intended objective, or estimate what would have occurred in the absence of the program, in order to assess the program’s impact. Additionally, program evaluations may systematically compare the effectiveness of alternative programs aimed at the same objective.

Different Use

Both forms of assessment aim to support resource allocation and other policy decisions to improve service delivery and program effectiveness. Both performance measurement, because of its ongoing nature, can serve as an early warning system to management and as a valuable tool for improving accountability to the public.

A program evaluation typically uses an in-depth examination of program performance and content allows for an overall assessment of whether the program works and identification of adjustments that may improve its results.