

PROGRAM ELEMENT APPENDIX (PEA) M
2018 HELIOPHYSICS SCIENCE MISSION OF OPPORTUNITY (HPSMO)

Summary of Significant Changes from DRAFT PEA tbd to FINAL PEA M

Note: Major changes are in ***bold italics***, but there are other changes in the document. Proposers should read the FINAL PEA carefully, as not all differences are presented in this document.

1: DRAFT Section 5.3.6 Access to Space renamed Section 5.3.6 Access to Space, or Near Space. Section 5.3.6 updated to reflect requirements imposed on deployments from other spacecraft, clarification of requirement on minimum funded schedule reserve, revised SMD policy on purchased non-U.S. secondary alternative access to space, and modifications to DRAFT Requirement tbd-22 to only exempt hosted payloads and investigations deployed from non-PEA provided launch services from the \$2M charge for NASA launch vehicle monitoring functions and advisory services. The exemption for non-NASA-PEA-provided NASA and DOD launch services from the \$2M charge for NASA launch vehicle monitoring functions and advisory services has been removed.

Draft PEA:

For non-NASA launch services, the following requirements are in addition to those given in Section 5.3.8 Access to Space of the SALMON-3 AO.

The stability and reliability of the proposed relationship with the host organization will be assessed as a programmatic risk element in the proposal.

Requirement tbd-21. For proposed secondary or co-manifested missions, or for missions proposed as hosted payloads, the PI assumes all risk for any delays in the implementation of the parent mission and shall, therefore, propose appropriate reserves for such schedule contingencies. Proposals shall include at least nine months of fully funded schedule reserve for this risk; the expected cost when weighted by likelihood shall also be provided. Proposals shall provide justification for the schedule risk.

Requirement tbd-22. Proposals that include non-PEA-provided launch services (purchased or contributed) obtained from a U.S. or non-U.S. partner shall meet the following requirements: The proposal must describe the arrangement between the PI and the non-PEA-provided launch service provider to enable the PI's insight for launch services, consistent with NASA Procedural Documents (NPD) 8610.7D and 8610.23C, both available through the Program Library. Note that these NPDs allow unique arrangements for payloads able to tolerate more risk. NASA will develop an advisory approach based on the insight the PI is provided from the ***non-PEA-provided launch service provider that is not NASA, DoD***, associated with a hosted payload, or associated with deployment from another spacecraft; ***the proposal budget shall include \$2.0M for the NASA launch vehicle monitoring functions and advisory services*** that would enable NASA to review and advise the PI on launch vehicle information from the non-PEA-provided launch service provider.

Final PEA:

For alternative (non-NASA-PEA-provided) access to space, the following requirements are in addition to those given in Section 5.3.8 *Access to Space* of the SALMON-3 AO. ***Note that investigations deploying from another spacecraft not associated with this PEA (e.g., geosynchronous communications satellites)—ISS excepted—are to be proposed as utilizing non-NASA-PEA-provided secondary launch services.***

Requirement M-21. For proposed ***non-NASA-PEA-provided secondary or co-manifested launch services, or investigations proposed as hosted payloads***, the PI assumes all risk for any delays in the implementation ***of the launch services and/or parent mission*** and shall, therefore, propose appropriate reserves for such schedule contingencies. The expected cost of the reserves when weighted by likelihood may be provided, but proposals shall include at least nine months of fully funded schedule reserve for this risk. The funded schedule reserve may be applied after the applicable launch readiness date. Proposals shall provide justification for the schedule risk.

Requirement M-22. Proposals may include purchased or contributed non-NASA-PEA-provided primary, secondary, or co-manifested launch services obtained from a U.S. partner. ***Proposals may only include contributed non-NASA-PEA-provided primary, secondary, or co-manifested launch services obtained from a non-U.S. partner.*** Proposals utilizing non-NASA-PEA-provided launch services shall meet the following requirements:

- The proposal shall describe the arrangement between the PI and the non-NASA-PEA-provided launch service provider to enable the PI's insight for launch services, consistent with NASA Procedural Documents (NPDs) 8610.7D and 8610.23C, both available through the Program Library; these NPDs allow unique arrangements for payloads able to tolerate more risk. NASA will develop an advisory approach based on the insight the PI is provided by the launch service provider.
- ***Proposal budgets shall include \$2.0M for NASA launch vehicle monitoring functions and advisory services*** that will enable NASA to review and advise the PI on launch vehicle information from the launch service provider. ***Note that investigations deployed from another spacecraft are not subject to this sub-requirement.***

2: Section 5.6.1 was modified to lower the applicable PEA Cost Cap for SCMs and PMOs on the IMAP ESPA Grande from \$80M (FY19) to \$75M (FY19); the \$4M reduction to the applicable PEA Cost Cap for the use of a port was eliminated in Section 5.6.2.

Draft PEA:

Section 5.6.1:

The PIMMC, Total Mission Cost, and Enhanced PIMMC are defined in Section 4.3 of the SALMON-3 AO. Each selected investigation is PI-managed, and the PI will be responsible for defining and controlling the costs within the proposed budget for each phase of the investigation.

Requirement tbd-25. The proposed PIMMC, including all mission phases, reserves, and the cost of accommodation on and/or delivery to the host mission shall not exceed the applicable PEA tbd Cost Cap, specified as follows:

- ***\$80M (FY19) for SCMs and PMOs on the IMAP ESPA.***
- ***\$55M (FY19) for SCMs and PMOs not on the IMAP ESPA.***
- ***\$35M (FY19) for suborbital-class SCMs.***

Section 5.6.2:

- For missions utilizing one port on the Interstellar Mapping and Acceleration Probe (IMAP) Evolved Expendable Launch Vehicle (EELV) Secondary Payload Adapter (ESPA), ***the charge to the PEA cost cap will be \$4M.***

Final PEA:

Section 5.6.1:

The PIMMC, Total Mission Cost, and Enhanced PIMMC are defined in Section 4.3 of the SALMON-3 AO. Each down-selected investigation is PI-managed, and the PI will be responsible for defining and controlling the costs within the proposed budget for each phase of the investigation.

Requirement M-25. The proposed PIMMC for the 2018 Heliophysics Science MO, including all mission phases, reserves, and the cost of accommodation on and/or delivery to the host mission shall not exceed the applicable PEA M Cost Cap, specified as follows, ***less any reductions due to PEA-specified charges (see Section 5.6.2):***

- ***\$75M (FY19) for SCMs utilizing PEA-provided IMAP ESPA Grande access to space.***
- ***\$55M (FY19) for SCMs and PMOs not utilizing PEA-provided IMAP ESPA Grande access to space.***
- ***\$35M (FY19) for suborbital-class SCMs.***

Section 5.6.2:

- ***Costs associated with utilization of one or two ESPA Grande ports utilizing NASA-PEA-provided IMAP ESPA Grande access to space will be outside the PIMMC.***

3: Section 5.6.2 Cost of Access to Space contains updated costs for NASA-PEA-provided access to space for a single 6U or 12U CubeSat and constellation configurations of CubeSats or a SmallSat not specified in the LSP Small Payload Access to Space Catalog.

Draft PEA:

The 2018 Heliophysics Science MO LSP Small Payload Access to Space Catalog, available through the Program Library lists the options and costs for PEA-provided access to space. A second document containing NASA Launch Service Program (LSP) launch opportunities is also available through the Program Library. The costs for PEA-provided access to space options listed below will be subtracted from the PEA tbd Cost Cap and held in the Heliophysics Division at NASA, who will also manage any and all launch contingencies. The following costs are associated with access to space provided under this PEA:

- Costs associated with access to the ISS for SCMs will be outside the PIMMC.
- Costs associated with high-altitude scientific balloons and launch services will be outside of the PIMMC.

- Costs for platforms to host payloads on sRLVs will be outside the PIMMC.
- Costs associated with access to space for a single 1U, 1.5U, 2U, or 3U CubeSat that uses the CubeSat Launch Initiative (CSLI) will be provided outside the PIMMC. ***For a single 6U or 12U, there will be a charge to the PEA cost cap ranging from \$200,000 to \$2M based on size and destination (see LSP Small Payload Access to Space Catalog in the Program Library).***
- ***For a constellation of CubeSats up to a total of 24U or a SmallSat, the charge to the PEA cost cap will be \$4.5M.***
- For missions utilizing one port on the Interstellar Mapping and Acceleration Probe (IMAP) Evolved Expendable Launch Vehicle (EELV) Secondary Payload Adapter (ESPA), the charge to the PEA cost cap will be \$4M.
- For missions utilizing a small launcher, the charge to the PEA cost cap will be \$10M or \$15M (see *LSP Small Payload Access to Space Catalog* in the Program Library).

Final PEA:

The 2018 Heliophysics Science MO *LSP Small Payload Access to Space Catalog*, available through the Program Library lists the options and costs for NASA-PEA-provided access to space. The costs for NASA-PEA-provided access to space options listed below will be subtracted from the PEA M Cost Cap and held in the Heliophysics Division at NASA, who will also manage any and all launch contingencies. The following costs are associated with access to space provided under this PEA:

- Costs associated with access to the ISS for SCMs will be outside the PIMMC.
- Costs associated with high-altitude scientific balloons and launch services will be outside of the PIMMC.
- Costs for platforms to host payloads on sRLVs will be outside the PIMMC.
- Costs associated with access to space for a single 1U, 1.5U, 2U, or 3U CubeSat that uses the CubeSat Launch Initiative (CSLI) will be provided outside the PIMMC. ***For a single 6U or 12U, there will be a charge to the PEA cost cap ranging up to \$1.95M based on size and destination (see LSP Small Payload Access to Space Catalog in the Program Library).***
- ***For constellation configurations of CubeSats or a SmallSat not specified in the Catalog, the charge to the PEA cost cap will provided by one of the CubeSats POCs.***
- Costs associated with utilization of one or two ESPA Grande ports utilizing NASA-PEA-provided IMAP ESPA Grande access to space will be outside the PIMMC.
- For missions utilizing a small launcher, the charge to the PEA cost cap will be \$10M or \$15M (see *LSP Small Payload Access to Space Catalog* in the Program Library).

4: DRAFT Section 5.1.2.1 Investigations on IMAP ESPA updated to allow the use of one or two ESPA Grande ports as part of the PEA-provided access to space options. (FINAL PEA Section 5.1.3.1 Investigations Utilizing IMAP ESPA Grande Access to Space)

Draft PEA:

SCMs may be proposed for flight on the Interstellar Mapping and Acceleration Probe (IMAP)

Evolved Expendable Launch Vehicle (EELV) Secondary Payload Adapter (ESPA). Access to ESPA platforms are managed by the Launch Services Program within the Human Exploration and Operations Mission Directorate (HEOMD). Information on ESPA rideshare, including general vehicle capabilities, is available in the Program Library. The Launch Services Program may advise proposers on the use of ESPA platforms, including the potential integration, safety and mission assurance, and operational costs. The IMAP ESPA will be an ESPA Grande.

Requirement tbd-9. Proposals for investigations using the IMAP ESPA as a platform must specify the technical requirements that their investigation places on the vehicle.

Questions concerning potential ESPA investigations may be addressed to:

Garrett L. Skrobot
Launch and Flight Operations
NASA Kennedy Space Center
KSC, Florida 32899
Telephone: 321-867-5365
E-mail: garrett.1.skrobot@nasa.gov

Final PEA:

SCMs may utilize the NASA-PEA-provided IMAP ESPA Grande access to space, which for this option is in the form of a secondary payload, termed Rideshare Payload (RPL). RPL accommodations are described in the *Evolved Expendable Launch Vehicle Rideshare User's Guide* (May 2016), which can be found in the Program Library. Rideshare Mission Assurance (RMA) is a process to control and mitigate the risks to the primary mission and other RPLs. Guidelines for this process are discussed in the *NASA's Mission Specific Evolved Expendable Launch Vehicle Secondary Payload Adapter (ESPA) System Interface Specifications (SIS) For Heliophysics Missions of Opportunity* document (hereafter referred to as the *ESPA SIS*) found in the Program Library.

Requirement M-6. For investigations utilizing PEA-provided IMAP ESPA Grande access to space, proposals shall clearly demonstrate compliance to the ESPA Grande requirements and enveloping characteristics, as given in the ESPA SIS document found in the Program Library.

Requirement M-7. ***For investigations utilizing NASA-PEA-provided IMAP ESPA Grande access to space, proposals shall utilize one or two ESPA Grande ports.*** Investigations requiring two ports shall comply with the ESPA SIS for *each* port.

Requirement M-8. Proposals shall define applicable Rideshare Mission assurance processes and describe implementation.

The IMAP ESPA Grande provides a standard interface for the investigations. This ESPA Grande will not provide propulsion, power, or other spacecraft support beyond the standard ESPA Grande deployment process, which will not occur until the IMAP mission has been deployed. Specific details of the ESPA Grande interface can be found in the ESPA SIS, found in the Program Library.

Questions concerning potential ESPA investigations may be addressed to:

Garrett L. Skrobot
Launch and Flight Operations
NASA Kennedy Space Center
KSC, Florida 32899
Telephone: 321-867-5365
E-mail: garrett.1.skrobot@nasa.gov

5: Section 5.3.6 Access to Space updated to allow the use of one or two ESPA Grande ports as part of the PEA-provided access to space options.

Draft PEA:

Cost requirements related to Access to Space are addressed in Section 5.6.2.

The following classes of platforms are provided by NASA for access to space, or near space.

- SCMs on International Space Station (ISS).
- Balloon vehicles and balloon launch services for missions on high-altitude scientific balloons.
- Platforms to host payloads on sRLVs.
- Launch and deployment services for a single 1U, 1.5U, 2U, 3U, 6U, or 12U CubeSat.
- Constellations of CubeSats or a SmallSat.
- ***One port on the Interstellar Mapping and Acceleration Probe (IMAP) Evolved Expendable Launch Vehicle (EELV) Secondary Payload Adapter (ESPA).*** Any Science MO SCM that is launched on the IMAP EELV must be deployed from the ESPA.

Final PEA:

Cost requirements related to PEA-provided access to space, or near space are addressed in Section 5.6.2 of this PEA.

The following classes of platforms represent PEA-provided access to space, or near space.

- SCMs on International Space Station (ISS).
- Balloon vehicles and balloon launch services for missions on high-altitude scientific balloons.
- Platforms to host payloads on sRLVs.
- Launch and deployment services for a single 1U, 1.5U, 2U, 3U, 6U, or 12U CubeSat.
- Constellations of CubeSats or a SmallSat.
- ***One or two ESPA Grande ports utilizing NASA-PEA-provided IMAP ESPA Grande access to space.*** Any Science MO SCM that is launched on the IMAP EELV must be deployed from the ESPA Grande.

6: Section 5.4.1 Schedule now specifies the launch readiness date for the IMAP mission to be October 1, 2024.

Draft PEA:

For Small Complete Mission (SCM) MOs, proposers must specify the launch readiness date in the proposal. For this Heliophysics Science MO, investigations with an anticipated launch readiness date later than December 2024 should consider proposing in response to a subsequent opportunity.

Requirement tbd-24. Proposals shall include a detailed development schedule (including integration plans) and an associated cost, that for an SCM has a launch readiness date no later than December 2024, or for PMOs is consistent with the documented launch and operations schedule of the primary host mission.

Final PEA:

For Small Complete Mission (SCM) MOs, proposers must specify the launch readiness date in the proposal. For this Heliophysics Science MO, investigations with an anticipated launch readiness date later than December 2024, or **October 1, 2024 for the IMAP ESPA Grande**, should consider proposing in response to a subsequent opportunity.

Requirement M-24. Proposals shall include a detailed development schedule (including integration plans) and an associated cost, that for an SCM has a launch readiness date no later than December 2024, or **October 1, 2024 for the IMAP ESPA Grande**; or for PMOs is consistent with the documented launch and operations schedule of the primary host mission.

7: Section 5.3.3 Mission Category and Risk Classification and Section 7.1 Scientific/Technical Evaluation Factors clarified regarding tailoring of NPR 7120.5E requirements, for all risk classes. Added Requirement M-20 requiring proposers to identify any tailorable NASA requirement.

Draft PEA:

5.3.3 Mission Category and Risk Classification

This Section provides Risk Classification requirements that supersede those in Section 5.3.4 of the SALMON-3 AO.

This opportunity solicits proposals for science investigations requiring the development and operation of space-based investigations. The projects are designated as Category 3 as defined in NPR 7120.5E, *NASA Space Flight Program and Project Management Requirements*. The payloads are designated as Class D as defined in NPR 8705.4, *Risk Classification for NASA Payloads*, except for PMOs, which depend on host mission's risk classification requirements, which must be specified in the proposal.

NASA's Science Mission Directorate has defined a new approach to managing Class-D science missions. This new approach, effective 1-January-2018, described in *NASA Science Mission*

(SMD) *Class-D Tailoring/Streamlining Decision Memorandum*, was approved by SMD leadership to guide the implementation of Class-D missions. This document, along with other Class-D policy and guideline documents can all be found in the Program Library.

7.1 Scientific/Technical Evaluation Factors

The evaluation process will be as described in Section 7.1.1 of the SALMON-3 AO. As part of that process, NASA will request clarifications on potential major weaknesses on both the *Intrinsic Science Merit of the Proposed Investigation* and the *Experiment Science Implementation and Feasibility Merit of the Proposed Investigation*; these will be in addition to those for the *TMC Feasibility of the Proposed Investigation Implementation* specified in Section 7.1.1 of the SALMON-3 AO.

Proposals will be evaluated according to the evaluation criteria set forth in Section 7.2 of the SALMON-3 AO. The panel may provide comments to the Selection Official on PI qualifications and relevant experience. Any such comments will not contribute to the TMC feasibility risk rating.

Final PEA:

5.3.3 *Mission Category and Risk Classification*

The following requirement is in addition to those given in Section 5.3.4 of the SALMON-3 AO.

This PEA solicits proposals for science investigations requiring the development and operation of space-based or suborbital investigations. The projects are designated as Category 3 as defined in NPR 7120.5E, *NASA Space Flight Program and Project Management Requirements*. The payloads are designated as Class D as defined in NPR 8705.4, *Risk Classification for NASA Payloads*, with the possible exception of PMOs, hosted payloads, and investigations deployed from another spacecraft, where the designation may be driven by the host mission's risk classification requirements that must be specified in the proposal.

NASA's Science Mission Directorate has defined a new approach to managing Class-D investigations that are less than \$150M, not including launch services. The *NASA Science Mission Directorate (SMD) Class-D Tailoring/Streamlining Decision Memorandum* describes the approach that has been approved by SMD leadership to guide the implementation of Streamlined Class D investigations. This Memorandum, along with other Class-D policy and guideline documents are in the Program Library. All Class-D investigations solicited by this PEA will be considered to be Streamlined Class-D Investigations and thus must use the principles, guidelines, and approaches described in the documents.

Streamlined Class-D Investigations must identify those requirements not specifically identified as already being tailored in the *NASA Science Mission Directorate (SMD) Class-D Tailoring/Streamlining Decision Memorandum* and described in NPR 7120.5E that are proposed for adjustment, provide a rationale for each adjustment, and describe any cost, schedule, and/or other benefits that would be realized should one or more of the adjustments be accepted by

NASA. Note that these adjustments reflect potential modifications to the baseline investigation, to be addressed after down-selection.

Investigations in other risk classes (i.e., A, B, or C) may also contain proposed adjustments to NASA requirements. Proposers must identify the tailorable requirements described in NPR 7120.5E that are being adjusted, provide a rationale for each adjustment, and describe any cost, schedule, and/or other benefits that would be realized should one or more of the adjustments be accepted by NASA. Note that these adjustments reflect potential modification to the baseline investigation, to be addressed after down-selection.

The panel evaluating the third evaluation criterion, TMC Feasibility of the Proposed Investigation Implementation, will provide comments to the Selection Official on the proposed adjustments and their justifications. These comments will not be considered for the TMC Feasibility of the Proposed Investigation Implementation risk rating but may be considered in the selection decision.

Requirement M-20. *Proposals shall identify any tailorable NASA requirements that are proposed to be adjusted, include the rationale for the adjustment, and describe the cost, schedule, and/or other benefits that would be realized should one or more of the adjustments be accepted by NASA.*

7.1 Scientific/Technical Evaluation Factors

The evaluation process will be as described in Section 7.1.1 of the SALMON-3 AO. As part of that process, NASA will request clarifications on potential major weaknesses on both the *Intrinsic Science Merit of the Proposed Investigation* and the *Experiment Science Implementation and Feasibility Merit of the Proposed Investigation*; these will be in addition to those for the *TMC Feasibility of the Proposed Investigation Implementation* specified in Section 7.1.1 of the SALMON-3 AO.

Proposals will be evaluated according to the evaluation criteria set forth in Section 7.2 of the SALMON-3 AO, *with the exception of Factors B-5 and C-4 for Streamlined Class D missions, which are amended to delete evaluation of the PI's spaceflight experience. In Factor B-5, "Probability of investigation team success," the scientific expertise of the PI will be evaluated but not his/her experience with NASA missions. In Factor C-4, "Adequacy and robustness of the management approach and schedule, including the capability of the management team," the capability of the management team will be evaluated as a whole, as opposed to assessing the capabilities of each of the Key Team Members independently. Comments about the managerial experience of the PI, and whether appropriate mentoring and support tools are in place, will be made to the Selecting Official but these comments shall not impact the "Science Implementation Merit" or the "Technical, Management, and Cost Feasibility" ratings.*

Half-step ratings will not be used for the Criteria A and B adjectival ratings.

8: Section 5.5.2 Student Collaboration now states that student collaboration is mandatory for this PEA, although no information is required in Step-1 proposals.

Draft PEA:

A Student Collaboration (SC) is optional. No information on SC is needed for the Step-1 proposal. Instead, plans and costs for proposed SC activities must be defined in the Step-2 Concept Study Report.

Final PEA:

No information on a Student Collaboration (SC) is required for the Step-1 proposal. ***An SC will be mandatory for the Step-2 Concept Study Report,*** and plans and costs for proposed SC activities must be defined in the Concept Study Report.

Student Collaborations are discussed in further detail in Section 5.6.2 of the SALMON-3 AO; however, the following supersedes the fourth paragraph of the section:

The objective of an SC is enhancement of student research experience through collaborative work associated with a specific NASA spaceflight mission. This is not to be confused with a Scholarship or Fellowship, where the sole objective is the training/development of a particular student. This flight mission SC is not one of the specific opportunities for NASA Scholarships and Fellowships, which are always awarded to an individual student. OMB Uniform Guidance, 2 CFR Part 200.466: Scholarships and student aid, clarifies the difference between a Scholarship or Fellowship and the allowable compensation of a student research assistant employed under an SC.

9: Added the New Mission using Existing Spacecraft (NMES) Mission of Opportunity type to types of missions that may be proposed to this PEA.

Draft PEA:

Section 1.1:

Two Mission of Opportunity types may be proposed in response to this PEA: (1) Partner Missions of Opportunity (PMOs), which may include CubeSats and International Space Station (ISS) payloads, and (2) Small Complete Missions (SCMs). SCMs include International Space Station (ISS) payloads, commercial hosted payloads, CubeSats or suborbital class investigations (high-altitude scientific balloon missions (Super Pressure Balloon (SPB), Long-Duration Balloon (LDB)), or Suborbital Reusable Launch Vehicle (sRLV) – see Section 5.6.1 and Requirement tbd-25).

Section 5.1:

Two Mission of Opportunity (MO) types may be proposed in response to this solicitation: (1) Partner Missions of Opportunity (PMOs), which may include CubeSats and ISS payloads, and (2) Small Complete Missions (SCMs). SCMs are ISS payloads, commercial hosted payloads, CubeSats or suborbital class (Super Pressure Balloon (SPB), Long Duration Balloon (LDB) or Suborbital Reusable Launch Vehicle (sRLV)) investigations.

Final PEA:

Section 1.1:

Three Mission of Opportunity types may be proposed in response to this PEA: (1) Partner Missions of Opportunity (PMOs), which may include CubeSats, International Space Station (ISS) payloads, and instruments hosted by a non-NASA spacecraft (e.g., DoD, NOAA, commercial) with goals in addition to those of the proposed investigation, and instruments hosted by the limited category of NASA spacecraft for which a PMO is allowed (Section 5.1.1), (2) ***New Missions using Existing Spacecraft (NMESs)***, and (3) Small Complete Missions (SCMs). SCMs include investigations on the International Space Station (ISS), commercial hosted payloads, CubeSats, SmallSats or suborbital-class missions (an investigation requiring flight on a high-altitude scientific balloon platform (e.g. Super Pressure Balloon (SPB), Long-Duration Balloon (LDB)), or on a suborbital Reusable Launch Vehicle (sRLV) – see Section 5.6.1 and Requirement M-25.

Section 5.1:

Three Mission of Opportunity types may be proposed in response to this solicitation: (1) Partner Missions of Opportunity (PMOs), which may include CubeSats, payloads on the International Space Station (ISS), and instruments hosted by a non-NASA spacecraft (e.g., DoD, NOAA, commercial) with goals in addition to those of the proposed investigation, and instruments hosted by the limited category of NASA spacecraft for which a PMO is allowed (Section 5.1.1), (2) New Missions using Existing Spacecraft (NMESs), and (3) Small Complete Missions (SCMs). SCMs are ISS payloads, commercial hosted payloads, CubeSats, SmallSats or suborbital class (Super Pressure Balloon (SPB), Long Duration Balloon (LDB) or Suborbital Reusable Launch Vehicle (sRLV)) investigations.

Section 5.1.2:

This PEA has no additional requirements to those given in Section 5.1.2 of the SALMON-3 AO.

10: DRAFT Requirement tbd-31 modified to allow extra pages for additional separate, non-identical science instruments and flight elements, as well as science enhancement options, and sets a maximum page limit. Proposal Structure and Page Limits Table added.

Draft PEA:

Requirement tbd-31. Proposals shall conform to the page limits specified in the *Proposal Structure and Page Limits* table in Appendix B of the SALMON-3 AO. Every page upon which printing appears will count against the page limits and, unless specifically exempted (e.g., Requirement B-30 and Requirement B-53 of the SALMON-3 AO), each foldout page will count as two pages against the page limits as appropriate for its area (e.g., a fold-out with the total area of two standard pages counts as two pages, etc.).

Final PEA:

Proposal Structure and Page Limits		
Section	Contents	Page Limits
A	Graphic Cover Page	1
	Export Controlled Material statement (Section 5.9.3)	0.5
	Optional Restriction on Use statement (see Appendix A, Section V)	0.5
	PI Commitment (Section 5.3.1)	1
B	Fact Sheet	2
C	Table of Contents	None
D	Science, Exploration, or Technology Investigation	20 + 2 pages for SEO (if applicable) + 3 pages for TDO (if applicable) + 2 pages / additional non-identical science instrument (see Requirement M-39)
E	Experiment Implementation, including optional SEO and/or TDO	
F	Investigation or Mission Implementation Schedule Foldout (s)	15 + 3 pages for alternate access to space (if applicable) + 2 pages / additional non-identical flight element (3 Schedule Foldouts do not count against limit) (see Requirement M-39)
G	Management	
H	Cost and Cost Estimating Methodology Cost Table B3	8 (Cost Table Foldout(s) do(es) not count against limit)
I	Optional Student Collaboration Plan	2 None
J	Proposal Appendices (no others permitted):	
J.1	Table of Proposal Participants	None
J.2	Letters of Commitment	None
J.3	Resumes	None
J.4	Summary of Proposed Program Cooperative Contributions	None
J.5	Draft International Participation Plan Discussion on Compliance with U.S. Export Laws and Regulations	None
J.6	Compliance with Procurement Regulations by NASA PI Proposals	None
J.7	Discussion of End of Mission Spacecraft Disposal Requirements	None
J.8	Master Equipment List (MEL)	None
J.9	Heritage	30
J.10	List of Abbreviations and Acronyms	None
J.11	List of References (optional)	None
J.12	Infusion Plan for TIO (if applicable)	5 None

Requirement M-39. Proposals shall conform to the page limits specified in the *Proposal Structure and Page Limits* table in Appendix B of the SALMON-3 AO. ***Two extra pages each are allotted for each additional separate, non-identical science instrument in the Science Sections (Sections D and E). Two extra pages each are allotted for each additional separate, non-identical flight element (e.g., additional spacecraft are allotted two extra pages, but only non-identical spacecraft) in the Mission Implementation and Management Sections (Sections F and G). Three extra pages are allocated to proposals utilizing alternative access to space in the Mission Implementation and Management Sections (Sections F and G). The two extra pages allocated in the Proposal Structure and Page Limits table for proposed Science Enhancement Options (SEOs) in the Technology Sections (D and E) are for all SEOs combined. Different instruments on identical spacecraft buses will only be allotted extra pages for additional non-identical science instruments; no extra pages will be allotted for additional non-identical flight elements. The total number of such extra pages in the Science and Mission Implementation sections (Sections D-G) combined shall not exceed a maximum of ten extra pages regardless of the number of science instruments and unique flight elements.*** Every page upon which printing appears will count against the page limits and, unless specifically exempted (e.g., Requirement B-34 or Requirement B-49, and Requirement B-58 of the SALMON-3 AO), each foldout page will count as two pages against the page limits as appropriate for its area (e.g., a fold-out with the total area of two standard pages counts as two pages, etc.).

11: Section 4.3 Data Policies and Intellectual Property split into two sections (4.3 Data Policies and Requirements and 4.4 Intellectual Property Rights) to reflect policy updates since the release of the SALMON-3 AO: a restructuring of sections, the Data Plans requirements, reference to FAR 52.227-14 Rights in Data—General, language on sensitive Government information, and section on trademark.

Draft PEA:

4.3 Data Policies and Intellectual Property

4.3.1 *Increasing Access to the Results of Federally Funded Research*

The PI will be responsible for implementing the guidance in Section 4.4.1 Increasing Access to the Results of Federally Funded Research in the SALMON-3 AO.

4.3.2 *Data Analysis*

The PI will be responsible for production and analysis of the investigation data necessary to achieve the proposed science objectives, for archiving the data in the relevant NASA heliophysics data archive for public use, and for timely publication of initial scientific results in refereed scientific journals, as part of their mission operations (Phase E) or post-mission (Phase F) activities. Proposals must allocate sufficient resources for this data analysis and archiving. Science studies with the archived data sets beyond the PI-led team's proposed science investigation will be solicited and selected by NASA in subsequent NASA solicitations through ROSES NRAs.

Requirement tbd-1. Proposals shall clearly identify the standard products from the investigation and describe the complete data processing flow leading to archived data products, including the time required to complete the initial and final on-orbit calibration and validation of the measurements. In accordance with the SMD requirement for open data and related software, any specialized software and algorithms required for basic data analysis and processing will be made available by the PI to the science community and public.

Requirement tbd-2. Proposals shall clearly present a plan for analysis of the mission data leading to completion of the proposed science investigation and achieving the identified investigation goals and objectives. Proposals shall show that adequate resources, including funding, schedule, and personnel, are identified to complete the proposed science investigation.

4.3.3 Delivery of Data to Archive

The investigation team will make the mission data fully available to the public through a NASA-approved archive in usable form, in the minimum time necessary, but barring exceptional circumstances, within six months following collection. The PI will be responsible for collecting the scientific, engineering, and ancillary information necessary to validate and calibrate the data prior to delivery to the archive.

Archival data products will include low-level (raw) data, high-level (processed) data, and derived data products such as maps, ancillary data, calibration data (ground and in flight), documentation, and related software and/or other tools necessary to interpret the data. The PI will be responsible for generating data products that are documented, validated, and calibrated in physical units that are usable by the scientific community at large.

NASA data archives have budgets to support core activities, including the basic ingestion and review of new data. Proposed mission data archiving plans and budgets must be consistent with the policies and practices of the appropriate NASA data archive.

Requirement tbd-3. Proposals may include funding for up to one year after end-of-operations for the generation and archiving of derived data products. This funding shall be included in the PI-Managed Mission Cost (PIMMC).

4.3.4 Data Rights

All science data returned from investigations led by a NASA-funded PIs will be made available to the public as rapidly as possible. Following a short latency period, all data will be made available to the user community, to the extent consistent with the approved data management plan and the data rights clause incorporated into the award instrument. There is no period of exclusive access permitted. The Principal Investigator proposes and justifies any data product latency period for standard products listed in the proposal, based primarily on the time required to produce, quality check, and validate the products. Barring exceptional circumstances, data product latency may not exceed six months.

Requirement tbd-4. Proposals shall include a clear commitment to minimizing the latency for data products. Proposals shall specify the minimum necessary data latency period and shall provide a justification for that data latency period.

4.3.5 *Sharing of Data from Partner Mission of Opportunity Investigations*

The data that are returned from Partner Mission of Opportunity (PMO) investigations, at least from those aspects of the mission in which NASA is involved, shall be made available to the U.S. scientific community in a timely manner.

Requirement tbd-5. In addition to the requirements given in Section 5.3 of the SALMON-3 AO, all proposed PMO investigations must also provide: (1) a detailed description for sharing of science data and plans for retrieving the scientific data, will be addressed in the proposal; this affects only the NASA-funded data. It will be made available to the U.S. scientific community in a timely manner; (2) the status of the proposer's sponsoring agency commitment to enter into an appropriate agreement with NASA for data sharing will be addressed; and (3) a detailed explanation of how the U.S. heliophysics science community benefits from the proposed investigation will be included.

Final PEA:

4.3 Data Policies and Requirements

Sections 4.3 and 4.4 of this PEA supersede Section 4.4 of the SALMON-3 AO.

4.3.1 *Data Analysis*

The PI will be responsible for analysis of the investigation data necessary to complete the proposed science objectives and for timely publication of initial scientific results in refereed scientific journals, as part of their mission operations (Phase E) and/or post-mission (Phase F) activities. Data analysis may be continued during Phase F.

Requirement M-1. A Data Analysis Plan including approaches for data retrieval, validation, and preliminary analysis shall be described. The technology and any science products (e.g., flight data, ancillary or calibration data, theoretical calculations, higher order analytical or data products, laboratory data, etc.) shall be identified, including a list of the specific data products and the individual team members responsible for the data products. This requirement, in conjunction with Requirement M-2 of this PEA, supersedes Requirement B-23 in Appendix B of the SALMON-3 AO.

4.3.2 *Increasing Access to the Results of Federally Funded Research*

As a Federal agency, NASA requires prompt public disclosure of the results of its sponsored research to generate knowledge that benefits the Nation. To this end, contracts arising from this PEA will include the clause FAR 52.227-14, Rights in Data—General, and accordingly, Alternate IV to this clause, permitting the automatic assertion of copyright in any data produced under the contract by a contractor, will not be applicable. Thus, it is NASA's intent that all

knowledge developed under awards resulting from this solicitation be shared broadly. In keeping with the *NASA Plan for Increasing Access to the Results of Scientific Research* (available in the Program Library), new terms and conditions about making manuscripts and data publicly accessible may be attached to awards that derive from this PEA. Proposals are required to include a Data Management Plan (DMP) in accordance with the requirements and guidelines in the *NASA Plan for Increasing Access to the Results of Scientific Research* or to justify that one is not necessary given the nature of the work proposed (see Requirement M-2). The kind of data that requires a DMP is described in the *NASA Plan for Increasing Access to the Results of Scientific Research*.

SMD anticipates that awards deriving from this PEA will include terms and conditions requiring that as accepted manuscript versions of peer-reviewed publications (hereinafter "manuscripts") resulting from PEA awards be uploaded into NASA's part of the PubMed Central (PMC) repository called NASA PubSpace at <https://www.ncbi.nlm.nih.gov/pmc/funder/nasa/>. This applies only to peer reviewed publications. Patents and publications that contain material governed by personal privacy, export control, proprietary restrictions, or national security law or regulations will not be covered by this requirement. The manuscript will appear in PMC for free public access following a maximum 12-month embargo period after the publication date. PMC will release the manuscript when the embargo has ended. For more details on public access to scientific publications and digital scientific data resulting from NASA-funded research, please see: <https://www.nasa.gov/open/researchaccess>. DMPs must describe how data sharing and preservation will enable validation of published results or how such results could be validated if data are not shared or preserved. Furthermore, DMPs must provide a plan for making science data that underlie the results and findings in peer-reviewed publications digitally accessible *at the time of publication or within a reasonable time period after publication*.

4.3.3 Delivery of Data to Archive

The investigation team will make mission data fully available to the public through a NASA-approved data archive ([Solar Data Analysis Center](#) and [Space Physics Data Facility](#)), in readily usable form, in the minimum time necessary, but barring exceptional circumstances, within six months following its collection. The PI will be responsible for collecting the scientific, engineering, and ancillary information necessary to validate and calibrate the data prior to delivery to the archive.

Archival data products will include low-level (raw) data, high-level (processed) data, and derived data products including, but not limited to, maps, ancillary data, calibration data (ground and in flight, and intercalibration as needed), documentation, and related software and/or other tools or parameters that are necessary to interpret the data. The PI will be responsible for generating data products that are documented, validated, and calibrated in physical units that are usable by the scientific community at large. For information about metadata, the relevant heliophysics data standard is the SPASE Data Model (see <http://www.spase-group.org>) which is used to populate a 'git' registry whose main public face is the Heliophysics Data Portal (<https://heliophysicsdata.gsfc.nasa.gov>). The required elements of the Data Model are the 'header' information that includes the Resource Type, Measurement Type, people, access URL(s), duration information and the like.

NASA data archives have budgets to support core activities, including the basic ingestion and review of new data. Proposed mission data archiving plans and budgets must be consistent with the policies and practices of the appropriate NASA data archive. Proposers should contact the archive directly to obtain information regarding the appropriate policies and practices. Proposals may include funding for up to one year after end-of-operations for the generation and archiving of derived data products. This funding will be included in the PI-Managed Mission Cost (PIMMC).

Requirement M-2. A Data Management and Archive Plan, including approaches for the release of peer-reviewed publications, the release of the research data that underlie the results and findings in peer-reviewed publications, and the archiving of all technology and any science products shall be described. The technology and any science products (e.g., flight data, ancillary or calibration data, theoretical calculations, higher order analytical or data products, laboratory data, etc.) shall be identified, including a list of the specific data products and the individual team members responsible for the data products. The Data Management and Archive Plan shall be in compliance with requirements and the guidelines in the NASA Plan for Increasing Access to the Results of Scientific Research (available through the Program Library) or a justification shall be provided that this is not necessary given the nature of the work proposed (see Section 4.4.1 of the SALMON-3 AO). The Data Management and Archive Plan shall identify the appropriate NASA data archive and the formats and standards to be used. It shall include an estimate of the raw data volume and the data latency by product for submission of raw and reduced data, to the data archive, in physical units accessible to the science community. This requirement, in conjunction with Requirement M-1 of this PEA, supersedes Requirement B-23 in Appendix B of the SALMON-3 AO.

4.4 Intellectual Property Rights

Sections 4.3 and 4.4 of this PEA supersede Section 4.4 of the SALMON-3 AO.

4.4.1 Invention Rights

Recipients that are Small Businesses or nonprofit organizations may elect to retain title to any inventions made under a funding agreement pursuant to the Bayh-Dole Act (35 U.S.C. § 202). Large business recipients are subject to section 20135 of the National Aeronautics and Space Act (51 U.S.C. § 20135) relating to property rights in inventions. Title to inventions made under an agreement by a large business recipient initially vests with NASA. However, these recipients may request a waiver to obtain title to inventions made under the agreement. Such a request may be made in advance of the agreement or within 30 days thereafter. Even if a waiver request is not made, or denied, a large business recipient may request a waiver on individual inventions made during the course of the agreement.

4.4.2 Data Rights

All technology and science data returned from investigations led by NASA-funded PIs will be made available to the public as rapidly as possible. Following a short latency period, all data will be made available to the user community, to the extent consistent with the approved Data Management Plan and the data rights clause incorporated into the award instrument. No period

of exclusive access is permitted. The PI proposes and justifies any data product latency period for standard data products listed in the proposal, based primarily on the time required to produce, quality check, and validate the products. Barring exceptional circumstances, data product latency may not exceed six months.

In addition, sensitive Government information is defined as information the Government has generated that qualifies for an exception to the Freedom of Information Act, which is not currently in the public domain, may embody trade secrets or commercial or financial information, and may be sensitive or privileged. If performing any contract resulting from this opportunity entails access to such sensitive Government information then the Contractor must limit utilization of the information to performing the services specified in said contract; must not utilize the information to improve its own competitive position in another procurement; must safeguard the information from unauthorized use and disclosure, allowing access only to those employees that need it to perform services under the contract; and must preclude access and disclosure of the information to persons and entities outside of the Contractor's organization. A Contractor's Organizational Conflicts of Interest Avoidance Plan is a procedures and obligations compliance document that will be required for contract award.

4.4.3 Trademark

The National Aeronautics and Space Act directs NASA to "provide for the widest practicable dissemination of the information concerning its activities and the results thereof." 51 USC 20 112(a) (3). NASA's mission supports broad public engagement, enhanced educational opportunities, and open scientific inquiry. Accordingly, selected or down-selected missions may not assert trademark or other ownership rights in the mission name, mission logos, mission graphics, or any other program identifier.

12: Section 5.8 Additional Requirements updated to reflect two additional options for submitting Classified Materials.

Draft PEA:

5.8 Additional Requirements

5.8.1 Institutional Letters of Commitment

For this PEA, no exemptions are made to the SALMON-3 Requirement 97 that Letters of Commitment from each major partner, regardless of funding, be included.

5.8.2 Classified Materials

The requirements for submitting a classified heritage appendix are covered in Section 5.9.4 of the SALMON-3 AO. For this PEA, the address for delivery of the package containing the classified appendix is: Mr. Paul Raudenbush, Chief, NASA Headquarters Security Office, Suite 1M40, 300 E Street SW, Washington, DC 20546.

Final PEA:

5.8 Classified Materials

This section supersedes Section 5.9.4 of the SALMON-3 AO.

Requirement M-28. *Proposals submitted in response to this solicitation, as well as the proposed investigations and all proposed technologies, shall be unclassified. The proposal shall be complete including an unclassified appendix regarding heritage (see Appendix B, Section J.9, of the SALMON-3 AO, for further details).*

In order to increase the capabilities of investigations proposed in response to this solicitation, while minimizing the development and operations risks within the PIMMC, proposers may choose to leverage technology with classified heritage that was developed by other institutions and agencies, as well as by NASA and NASA-funded partners.

If a proposer chooses to submit a classified appendix regarding heritage, the requirements on content, format, and length are the same as, but independent from, those for the unclassified appendix regarding heritage included in the proposal (see Appendix B, Section J.9, of the SALMON-3 AO, for further details) with the exceptions that Letters of Validation and cost bases of estimate may be included in the classified appendix regarding heritage.

The entire proposal including the unclassified appendix regarding heritage will be read and evaluated by the entire evaluation panel. The evaluation panel will *not* have access to the classified appendix regarding heritage, however. Proposers are strongly encouraged to provide as much information and detail as possible on their technology heritage in the unclassified appendix regarding heritage.

NASA allows three options for proposers to support heritage claims from classified programs: 1) delivery to NASA of a classified appendix regarding heritage, 2) “delivery in place” of a classified appendix regarding heritage, and subject to possible restriction 3) sponsor verification of the heritage claims derived from classified programs. Each option is explained in a sub-section below.

5.8.1 Delivery to NASA

Proposers may provide NASA access to a classified proposal appendix for validation of classified heritage claims. The classified appendix regarding heritage may include Letters of Validation for classified heritage claims from technology development sponsors and classified cost bases of estimate. The proposer is responsible for determining what information is classified and what information is unclassified; any classified information provided to NASA must be handled appropriately to include marking and declassification information and must comply with the applicable Security Classification Guide (SCG) or similar document. The proposer is responsible for obtaining any “need to know” permission for at least one reviewer with appropriate clearance and relevant expertise to evaluate the classified appendix regarding heritage.

The delivery to NASA option of a classified appendix regarding heritage requires delivery to NASA Headquarters (HQ) separately from the proposal. A single copy of the classified appendix regarding heritage must be submitted along with a cover letter referencing the submitted proposal by name, PI, and proposing organization. The “need to know” permission for the reviewer should be discussed in a cover letter. The proposer assumes all responsibility for determining the appropriate security clearance and method of delivery to NASA HQ of the classified appendix regarding heritage. The classified appendix regarding heritage must be handled and delivered to NASA HQ in compliance with NPR 1600.1A, *NASA Security Program Procedural Requirements*.

Requirement M-29. Proposers that choose to deliver to NASA a classified appendix regarding heritage shall submit the appendix and a cover letter to NASA HQ no later than the deadline for receipt for the CD-ROM in Section 9 of this PEA. The proposer shall determine the appropriate security classification for the classified appendix, the proposer shall obtain any permission required for a reviewer to read the classified appendix, and the proposer shall ensure that all appropriate security requirements are followed in delivering the classified appendix to NASA HQ.

Requirement M-30. The point-of-contact (POC) for the solicitation (Section 9 of this PEA) shall be notified of the intent to submit a classified appendix regarding heritage and its level of classification to ensure sufficient evaluator clearance. The PEA POC notification shall include whether the sender is considering delivery to NASA via a classified email system in lieu of physical delivery. The unclassified appendix regarding heritage shall also indicate that a classified appendix is being submitted.

The address for delivery of the package containing the classified appendix regarding heritage is: Mr. Paul Raudenbush, Chief, NASA Headquarters Security Office, Suite 1M40, 300 E Street SW, Washington, DC 20546. The package containing the classified appendix regarding heritage should be sent to NASA HQ by an appropriate means (e.g., courier, U.S. Registered Mail, etc.) with coordination in advance with the receiving facility.

Should a proposer choose to deliver a classified appendix regarding heritage to NASA in addition to a complete proposal, the evaluation process (see Section 7.1.1 **Error! Reference source not found.** of the SALMON-3 AO) will be supplemented. At least one NASA-selected evaluator with appropriate clearance and relevant expertise will review the classified appendix regarding heritage; this evaluator may be a member of the evaluation panel or this evaluator may be a specialist reviewer. All findings generated during the review of the classified appendix regarding heritage will be unclassified, and these findings will be provided as input for assessing the Technical, Management, and Cost (TMC) Feasibility of the Proposed Mission Implementation. Clarifications may be requested concerning findings from evaluation of the classified appendix regarding heritage.

5.8.2 “Delivery in Place”

Proposers may choose to utilize the option for “delivery in place” of the classified appendix regarding heritage, where the classified material is not delivered to NASA but is kept at the point of origin. The complete, unclassified proposal must state that a classified appendix regarding

heritage has been delivered in place and provide the classification level of the material, the location of the material, and the POC to be contacted to access the material.

Should a proposer choose to submit a classified appendix regarding heritage to NASA in addition to a complete proposal using the “delivery in place” mechanism, the evaluation process (see Section 7.1.1 of the SALMON-3 AO) will be supplemented. At least one NASA-selected evaluator with appropriate clearance and relevant expertise will travel to the delivery location and review the classified appendix regarding heritage; this evaluator may be a member of the evaluation panel or this evaluator may be a specialist reviewer. All findings generated during the review of the classified appendix regarding heritage will be unclassified, and these findings will be provided as input for assessing the Technical, Management, and Cost (TMC) Feasibility of the Proposed Mission Implementation. Clarifications may be requested concerning findings from evaluation of the classified appendix regarding heritage.

Requirement M-31. *Proposers that choose the option of “delivery in place” of a classified appendix regarding heritage shall develop—and deliver to a designated POC/custodian—the appendix by the deadline for electronic proposal submission in Section 9 of this PEA, with a cover page record of the last date that the document was edited. The POC/custodian of the classified appendix shall certify the date of receipt of the document and its unchanged status, each time the classified appendix is viewed by a reviewer. The proposer shall determine the appropriate security classification for the classified appendix, the proposer shall obtain any permission required for a reviewer to read the classified appendix at the proposer’s designated facilities, and the proposer shall ensure that all appropriate security requirements are followed in the handling of the classified appendix.*

Requirement M-32. *The POC for the solicitation (Section 9 of this PEA) shall be notified of the intent to utilize the delivery in place option for a classified appendix regarding heritage, the level of classification to ensure sufficient evaluator clearance, and the POC/custodian contact information.*

5.8.3 Sponsor Verification

Proposals that include technologies with classified heritage may utilize sponsor verification. This option is only available if the sponsor organization is not a proposed partner. Such proposals would only *reference* classified materials, including associated cost bases of estimate; the materials would not be provided to NASA in any format. In lieu of a direct review of the classified materials, the evaluation panel will compile a list of questions regarding claims made in the proposal that need substantiation by the classified material. The list would be sent to the sponsor of the classified programs who must verify that the claims are supported.

Requirement M-33. *Proposers that choose the option of sponsor verification of classified materials shall provide an enumeration of claims related to the classified materials in the body of the proposal.*

Requirement M-34. *The POC for the solicitation (Section 9 of this PEA) shall be notified of the intent to utilize the sponsor verification option and the POC to whom associated questions would be sent.*

13: Section 6.1.2 Required Notification Proposal added a specific requirement for Notification Proposals and clarified that Notification Proposals will not be evaluated.

Draft PEA:

To facilitate planning of the proposal evaluation, in particular to avoid conflicts in the peer review process, and to inform prospective proposers of any changes to this AO, NASA *requires* all prospective proposers to submit a Notification Proposal through the Authorized Organizational Representative (AOR) of the PI institution. Notification proposals are due no later than 11:59 p.m. Eastern Time on the date given in Section 9 of this PEA.

The Notification Proposal submission requires the confirmation in NSPIRES of all identified team members. The Notification Proposal replaces the Notice of Intent for this AO.

A Notification Proposal is submitted electronically at <http://nspires.nasaprs.com/>. Registration on the NSPIRES website is required for all identified team members, and the proposing organization, to submit the Notification Proposal. Proposers who experience difficulty in using the NSPIRES site should contact the Help Desk by e-mail at nspires-help@nasaprs.com for assistance.

Material in a Notification Proposal is deemed confidential and will be used for NASA planning purposes only. The following information is required content for the Notification Proposal:

- (a) Name, address, telephone number, e-mail address, and institutional association(s) of the PI, Project Manager and Project System Engineer.
- (b) Full names and institutional associations of each additional Proposal Team member, and their role such as Co-Investigator, Collaborator or Consultant. If any Proposal Team members are from non-U.S. institutions, the vehicle by which these people expect to be funded should be identified in the Notification Proposal.
- (c) Answers to PEA-specific questions, such as Type of MO. For this PEA, each Notification Proposal and Full Proposal can only be submitted as a single Type of MO.
- (d) A brief statement (4000 characters or less) covering the following:
 1. science objectives of the proposed mission;
 2. general design or architecture of the mission;
 3. instruments that may be included in the payload;
 4. identification of new technologies that may be included in the proposed payload.
- (e) The name of the organizational lead from each organization (industrial, academic, nonprofit, and/or Federal) included in the proposing team, and the organization's role in the proposed investigation.

Budget data will not be requested as part of the Notification Proposal.

The science objectives of the proposed mission, and investigators, cannot be changed between submissions of the Notification Proposal and the Full Proposal. The Notification Proposal is a prerequisite for submission of a Full Proposal, but it does not commit the offerors to submit a Full Proposal later.

Final PEA:

To facilitate planning of the proposal evaluation, in particular to avoid conflicts in the peer review process, and to inform prospective proposers of any changes to this AO, NASA *requires* all prospective proposers to submit a Notification Proposal through the Authorized Organizational Representative (AOR) of the PI institution. The Notification Proposal replaces the Notice of Intent for this AO.

A Notification Proposal is submitted electronically at <http://nspires.nasaprs.com/>. The Notification Proposal submission requires the confirmation in NSPIRES of all identified team members. All identified team members and the proposing organization must register on the NSPIRES website in order for the proposer to submit the Notification Proposal. Proposers who experience difficulty in using the NSPIRES site should contact the Help Desk by e-mail at nspires-help@nasaprs.com for assistance.

Full (Step-1) Proposals will not be accepted without prior submission of a Notification Proposal. Invitations will be provided to those satisfying NSPIRES requirements. This is not the outcome of an evaluation. Submission of a Notification Proposal does not commit the team to submitting a Full Proposal. Notification Proposals are due no later than 11:59 p.m. Eastern Time on the date given in Section 9 of this PEA.

Material in a Notification Proposal is deemed confidential and will be used for NASA planning purposes only. ***The Notification Proposal will not be evaluated for merit or responsiveness to this PEA's goals and objectives***; all submitters of a Notification Proposal will be invited to submit a Full Proposal.

The following information is required content for the Notification Proposal:

- (f) Name, address, telephone number, e-mail address, and institutional association(s) of the PI, Project Manager and Project System Engineer (if named).
- (g) Full names and institutional associations of each additional Proposal Team member, and their role such as Co-Investigator or Collaborator. If any Proposal Team members are from non-U.S. institutions, the vehicle by which they will be funded should be identified in the Notification Proposal.
- (h) Answers to PEA-specific questions, such as Type of MO. For this PEA, each Notification Proposal and Full Proposal can only be submitted as a single Type of MO.
- (i) A brief statement (4000 characters or less) covering the following:
 - 5. science objectives of the proposed mission;
 - 6. general design or architecture of the mission;
 - 7. instruments that may be included in the payload; and
 - 8. identification of new technologies that may be included in the proposed payload.
- (j) The name of the organizational lead from each organization (industrial, academic, nonprofit, and/or Federal) included in the proposing team, and the organization's role in the proposed investigation.

Budget data will not be requested as part of the Notification Proposal.

The science objectives of the proposed mission and the PI, Co-I, and institutions cannot be changed between submissions of the Notification Proposal and the Full Proposal.

Requirement M-35. *Proposers shall submit electronically through NSPIRES a Notification Proposal that names the organizational lead from each organization and the organization's role; identifies all investigators, the proposed science objectives, general mission architecture, a list of instruments, and identification of new technologies that may be employed as part of the mission; and answers PEA-specific questions. The science objectives of the proposed investigation and the PI, Co-I, and institutions cannot be changed between submissions of the Notification Proposal and the Full (Step-1) Proposal.*