

Second Community Announcement: Advance Notice Regarding New Frontiers 5 (NF5)
Announcement of Opportunity

Estimated Release of draft AO October 2021 (target)
Estimated Release of final AO..... October 2022 (target)
Estimated Proposal due date 90 days after AO release

This community announcement is an advance notice of NASA’s Science Mission Directorate (SMD) plan to ultimately release an Announcement of Opportunity (AO) to solicit New Frontiers Program mission investigations. The New Frontiers Program conducts Principal Investigator (PI)-led space science investigations in SMD’s planetary programs under a not-to-exceed cost cap for the PI-Managed Mission Cost (PMMC). The target release date for the final AO is fall 2022. This announcement shares some policies under consideration for the AO in order to provide the opportunity for public comment to NASA. The policies described in this announcement are not final. Public feedback to this announcement will be considered by NASA as part of the ongoing AO preparation process to revise these and other policies. The policies in this announcement are judged as among those having the most significant impact on proposers’ responses to the AO.

The draft policies offered for public comment are the following:

Mission Themes: Mission investigations will be limited to the following mission themes (listed without priority), with the science objectives specified in either the Decadal Survey or the previously issued New Frontiers 4 AO:

- Comet Surface Sample Return
- Lunar South Pole-Aitken Basin Sample Return (pending Artemis landing site selection(s) and science objectives)
- Ocean Worlds (only Enceladus)
- Saturn Probe
- Venus In Situ Explorer
- Io Observer (pending flight selection(s) for the Discovery program)
- Lunar Geophysical Network

Cost Cap: PI-Managed Mission Cost (PMMC) for investigations is capped at a Phase A-D cost of \$900M (FY22\$) with exclusions as noted in this announcement. The now-standard 25% minimum reserve on Phases A-D will be required within the PMMC. Operations costs (Phase E and F) are not included in the PMMC cost cap but will be evaluated for reasonableness. This exclusion for operation costs will not apply to the development of flight or ground software, ground hardware, or testbed development or refurbishment that occurs after launch. These activities will be considered deferred Phase C/D work and their costs will be included under the PMMC cost cap. Only costs related to spacecraft and science operations will be excluded from the PMMC cost cap. Lower-cost investigations and cost-efficient operations are encouraged.

NASA is concerned that excluding operations costs from the cap on the PMMC may encourage unbounded costs, complexity, and/or duration of the operational portion the missions (Phase E).

NASA is considering options to encourage the optimization of these parameters during mission formulation and development and therefore limit the cost, complexity, and duration of operations. Options under consideration include but are not limited to more explicit and penetrating evaluation criteria for Phase E, limiting the costs incurred during Phase E, and/or including Phase E costs within a higher cost cap for the PMMC. NASA welcomes feedback and additional ideas from the community that address this concern.

Step 2 Selections: NASA intends to select up to three proposals to proceed to Step 2 to conduct a mission concept study followed by down selection of up to one mission investigation to proceed into development. NASA will provide \$5M (RY\$) to each selectee(s) for this mission concept study.

Government Furnished Equipment (GFE)/Tech Incentives: NASA is considering providing an incentive to infuse the Heat Shield for Extreme Entry Environment Technology (HEEET), a woven thermal protection system developed by NASA, into New Frontiers mission investigations.

Launch Readiness Date: Mission investigations must be ready to launch no earlier than fall 2031 and no later than fall 2033.

Launch Vehicle: Launch Vehicle costs and procurement will be the responsibility of NASA. A standard launch performance capability will be defined and provided as GFE and its cost will not be included in the PMMC. The cost of mission specific and special launch services, such as for a higher performance launch vehicle or the use of nuclear materials, will be included within the PMMC. Details of these costs are still under discussion.

Contributions: The value of foreign contributions remains constrained as was done for recent New Frontiers and Discovery Program AOs. The total value of foreign contributions may not exceed one-third of the PMMC for phases A-D, and the value of foreign contributions to the science payload may not exceed one-third of the total payload cost.

Nuclear Power Sources: Mission investigations may utilize radioisotope power systems (RPS) provided by NASA. Radioisotope Heater Units (RHUs) are also available for use. The cost for these RPS and/or RHUs and associate specialized launch services will be included within the PMMC. Information on these costs, the performance characteristics of the units, and the number of units available for use will be made available at a later date.

Additional Opportunities: As has been done for recent New Frontiers and Discovery Program AOs, requests for including Student Collaborations, Science Enhancement Options, and Technology Demonstrations are deferred to the Step-2 mission concept study. Though deferred, information on these opportunities will be provided no later than the AO release date.

NASA has not approved the issuance of the New Frontiers AO and this notification does not obligate NASA to issue the AO and solicit proposals. Any costs incurred by prospective investigators in preparing submissions in response to this notification or the planned Draft New Frontiers AO are incurred completely at the submitter's own risk.

Further information will be posted on the New Frontiers Program Acquisition Page at <https://newfrontiers.larc.nasa.gov/NF5/> as it becomes available. Questions and feedback on the draft policies in this notice are due by February 19, 2021, and may be addressed to Dr. Curt Niebur, New Frontiers Program Lead Scientist, Planetary Science Division, Science Mission Directorate, NASA, Washington, DC 20546; Tel.: (202) 358-0390; Email: curt.niebur@nasa.gov.