



Space Administration

EXPLORE SOLAR SYSTEM&BEYOND

Planning for New Frontiers 5

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New Frontiers 5 Engagement

- No final decisions have been made about NF5.
- "This NF5 announcement shares some policies under consideration for the AO and invites public comment to NASA...The policies described in this announcement are not final."



New Frontiers 5 Schedule – simple version

| Event | Date |
|---|-----------------------|
| Community announcement of draft major parameters | Sept. 1, 2022 |
| Draft AO Released | Nov. 2022 |
| Final AO Released | Nov. 2023 (target) |
| Proposals Due | Mar. 2024 (target) |
| Step 1 Downselect | Dec. 2024 |
| Step 2 Downselect | Oct. 2026 |
| Launch Readiness Date | Fall 2031 – Fall 2034 |

• This is the current planned schedule pending budget availability

New Frontiers 5 Schedule – not so simple version

| July 2020 | CAPS report on Options for NF5 released |
|------------------------------|--|
| Oct. 1, 2020 | NASA announced NF5 is scheduled for release Fall 2022 (Community Announcement #1) |
| Nov. 5, 2020 | Draft major policies released for comment (Community Announcement #2) |
| Nov. 2020- Mar. 2021 | NF rep attends AG meetings to present and discuss draft policies |
| May 12, 2021 | AO delayed to NLT Fall 2024 (Community Announcement #3) |
| June 2021 | Discovery 2019 selections announced |
| One year gap due to AO delay | |
| June 21, 2022 | AO accelerated to Nov. 2023 based on recently released FY23 budget request (Community Announcement #4) |
| Sept. 1, 2022 | Draft major policies updated (Community Announcement #5) |

List of Mission Themes

- New Frontiers restricts proposals to a specified list of mission themes with associated science objectives
 - NASA does not dictate the mission architecture, just the science objectives
- CAPS provided a letter report that recommended removing the Trojan Tour theme due to scientific overlap with Lucy
- NASA is considering removing the Venus In Situ Explorer theme to ensure greater programmatic balance among its flight missions
- The resulting draft list of mission themes is:
 - Comet Surface Sample Return
 - Lunar South Pole-Aitken
 Basin Sample Return

- Ocean Worlds (only Enceladus)
- Saturn Probe
- Io Observer
- Lunar Geophysical Network



Cost Cap

- PI-Managed Mission Cost (PMMC) for investigations is capped at a Phase A-D cost of \$900M and \$300M for Phase E (FY22\$).
- These cost caps reflect concern over growing total mission cost due to cost cap increases and exclusion of Phase E from recent caps



- The Phase A-D cost cap reflects a decrease from NF4 and 2012 Decadal Survey recommendation
- The Phase E cost cap forces earlier attention be given to ops planning and complexity to address trend in Phase E cost growth

Incentivized Tech Infusion

- Incentivized technology infusion is intended to encourage the use of lower TRL technologies under development by NASA that significantly enhance (and in many cases enable) the proposed mission and are expected to be matured by NASA in time for mission PDR.
- NASA currently does not plan to offer an incentive to infuse particular NASA-developed technologies under the New Frontiers 5 AO.
- Upon request, PSD will consider adding a technology to the list by assessing its readiness, risk, accommodation, financial support, and value to the mission and Agency

Other Draft Policies (1 of 2)

- Contributions
 - The value of foreign contributions remains constrained as was done for recent New Frontiers and Discovery AOs (1/3 PMMC and 1/3 payload cost).
 - NASA and ESA are working to formalize a partnership for ESA-procured HQ hardware/services (excluding science instruments)
- Nuclear Materials
 - A moderate number of Radioisotope Heater Units (RHUs) are available for use as localized heat sources.
 - Up to one Next Generation Radioisotope Thermoelectric Generator (RTG) will be offered for electrical power.
 - TBD costs for each are in the PMMC cap for Phases A-D.

Other Draft Policies (2 of 2)

- Step 2 Selections
 - NASA intends to select <u>up to three proposals</u> 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 <u>\$5M (RY\$)</u> to each step 2 selectee(s) for this mission concept study.
- Launch Readiness Date***
 - Mission investigations must be ready to launch between <u>fall</u> <u>2031 and fall 2034</u>.
- Launch Vehicle
 - NASA intends to offer all launch vehicle performance capabilities (defined in previous AOs from Low through High) as GFE (not included in the PMMC). The cost of mission specific and special launch services (i.e., larger fairing or the flight of nuclear materials) will be included within the PMMC.



Other Topics to Share



Descopes

- Baseline/Threshold concept was originally intended to empower PIs to avoid breaking the cost cap by implementing descopes.
- Work by Claire Beucher shows that 1) the value of those descopes has always been small relative to the cost growth seen on missions and 2) fewer proposals have descopes.



New Frontiers

11



Discovery

\$50

\$45

\$40

\$35

\$30

\$15

\$10

(RY

Millions

Team Size and Funding

- Science team composition and funding is critical to achieving the science objectives of our very expensive missions
- The data is spotty and unreliable. Best estimate provides an upper limit of ~\$1M FY22\$ per Co-I for all of Phase E

- Three interns have studied this; none have succeeded

