

# Biological and Physical Sciences

National Aeronautics and  
Space Administration



## Commercial Lunar Payload Services Update

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1. Commercial Lunar Payload Services
  2. Payloads and Research Investigations on the Surface of the Moon (PRISM)
  3. Artemis Update



# Commercial Lunar Payload Services (CLPS)

- CLPS is an innovative, service-based, competitive acquisition approach that enables rapid, affordable, and frequent access to the Lunar surface via a growing market of American commercial providers
- The CLPS contract is an indefinite duration indefinite quantity (IDIQ) contract awarded to 14 domestic teams who are all eligible to bid for Task Orders
- Service task orders are firm fixed price (FFP) for the full scope of delivery: from payload hand-over to delivery (and often operation) on the lunar surface
  - All payload requirements must be captured in the originating Request for Task Order Proposal (RFTOP)
- NASA wants to be one of many customers for CLPS services
- CLPS deliveries are CLPS Provider missions (not NASA missions)
- CLPS systems/facilities are owned or contracted by the CLPS Provider (not NASA)
- CLPS launches are commercial launches provided via the CLSP provider (not LSP) and approved/licensed by the FAA and other agencies (not NASA)

# CLPS: Rapid Affordable Frequent Access to the Lunar Surface



# CLPS Current Portfolio

- Competition open to U.S. commercial providers of space transportation services, consistent with National Space Transportation Policy and Commercial Space Act
- Structured for NASA as one of many customers of commercial service
- On ramps to the CLPS contracts will be used to provide additional capabilities as made available
- 14 domestic companies eligible to compete for Lunar surface delivery task orders
- 6 awarded lunar surface deliveries actively in work with initial deliveries as soon as 2022.

TO2 2021  
Astrobotic  
Peregrine



TO2/20C 2021  
Intuitive  
Machines  
NOVA-C



TO19C 2022  
Masten  
XL-1



TO Prime-1 2022  
Intuitive  
Machines  
NOVA-C



TO20A 2023  
Astrobotic  
Griffin



TO19D 2023  
Firefly Aerospace  
Blue Ghost





# CLPS Deliveries

## 2022-2025



**Delivery Site:** Oceanus Procellarum  
**Provider:** Intuitive Machines (IM)  
*Task Order (TO)2-IM | Q1 2022*



**Delivery Site:** Lacus Mortis  
**Provider:** Astrobotic  
*TO2-AB | 2022*

**Delivery Site:** Gruithuisen Domes  
**Provider:** TBD  
*PRISM-2a | 2025*

**Delivery Site:** Reiner Gamma  
**Provider:** TBD  
*PRISM-1a | 2024*



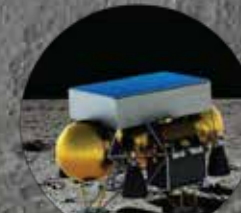
**Delivery Site:** Mare Crisium  
**Provider:** Firefly  
*TO19D | Q3 2023*



**Delivery Site:** South Pole  
**Provider:** IM  
*TO PRIME-1 | Nov 2022*



**Delivery Site:** South Pole: Nobile Crater  
**Provider:** Astrobotic  
*VIPER | Nov 2023*



**Delivery Site:** South Pole  
**Provider:** Masten  
*TO-19C | Nov 2023*

**Delivery Site:** South Pole  
**Provider:** TBD  
*PRISM-2b | 2025*

**Delivery Site:** Schrödinger Basin  
**Provider:** TBD  
*PRISM-1b | 2025*



Reiner Gamma

PRISM 1a Science  
Lunar Vertex

Joint lander and rover payload suite to  
measure local lunar magnetic field  
(Dr. David Blewett, APL)



## Schrödinger Basin

### PRISM 1b Science

**Farside Seismic Suite**  
Dual seismometers to measure  
seismic activity on the lunar  
farside  
(Dr. Mark Panning, JPL)

**Lunar Interior Temperature and  
Materials Suite**  
Investigate heat flow and electrical  
conductivity of the lunar interior  
(Dr. Robert Grimm, SWRI)



# Payloads and Research Investigations on the Surface of the Moon (PRISM) Overview

Early CLPS delivery manifests consist of a combination of  
NPLP (NASA internal) and LSITP (external) calls

Now we are operating under a science-driven model:  
PRISM (Payloads and Research Investigations for the Surface of the Moon)

- PRISM calls occur at a regular cadence
  - 1 solicitation per year, with two deliveries per solicitation.
  - Selected PRISM instruments feed manifests for deliveries from late 2023 onwards.
  - PRISM solicitations to date request science investigations utilizing multi-instrument suites to maximize the science for named locations.
- Payloads from other mission directorates, directed payloads, and/or international payloads may be co-manifested with PRISM awards on CLPS deliveries.
  - Standalone instruments, campaign science, and destination agnostic investigations may be solicited in future PRISM calls.
- Landing sites are high science-value targets where significant progress can be made utilizing CLPS platforms; PRISM solicitations will state the location and timeline for each delivery, allowing PIs to propose science optimized for those locations.

# PRISM 2

## Research and Funding Opportunity

- The second PRISM draft solicitation was released in May 2021 for community comment for 30 days.
- Final announcement was released on Sept. 2, 2021
  - Step-1 due Oct. 22, 2021
  - Step-2 due Dec. 20, 2021

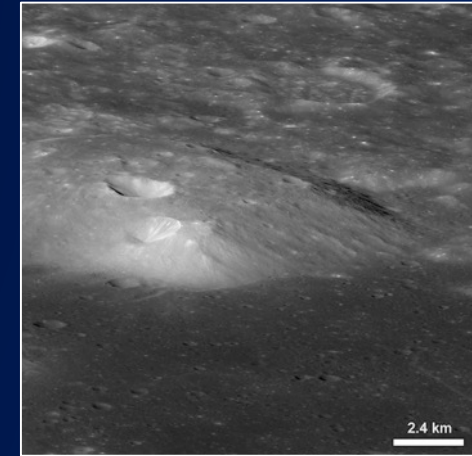
The locations for the second PRISM delivery were announced as:

### 1. Gruithuisen Domes (a silicic volcanic construct on the lunar near side)

- Launch: Q1-Q2 2025\*
- Mobility is being offered as a service, rover specs dependent on selected payload requirements
- Suites are limited to a hard cap of 15 kg on the rover and 30 kg on the lander, or 50 kg on the lander if mobility is not utilized

### 2. South Polar (84-90 °S) location

- Launch: Q4 2025 – Q1 2026\*
- Investigations must focus on environmental monitoring or biological sciences, as outlined in the Artemis III SDT, Objective 7 (<https://www.nasa.gov/sites/default/files/atoms/files/artemis-iii-science-definition-report-12042020c.pdf>)
- Suites are limited to a hard mass cap of 30 kg



LRO/GSFC/ASU

\*indicates a change from the draft solicitation



# Cost and Budget Reserves

## Gruithuisen Domes delivery:

NTE \$40M in real year dollars, inclusive of 20% reserves

## South Polar delivery:

NTE \$20M in real year dollars, inclusive of 20% reserves

- Proposals should be capped at a budget level that allows for 20% cost reserves
  - E.g., a \$16M proposal would have a known 20% held at the Planetary Missions Program Office (PMPO) level and would include a statement in the budget summary acknowledging that up to \$4M (20%) reserves will be held at the PMPO level.
  - A South Polar delivery suite that costs ~\$16.9M would require at least \$3.4M in reserves, thus exceeding the \$20M cost cap for that delivery and would be deemed **noncompliant**.
- The solicitation provides guidance on a notional budget profile for funding each year.

*Lower cost investigations and cost-efficient operations are encouraged*

## F.10 Payloads and Research Investigations on the Surface of the Moon

Number: **NNH21ZDA001N-PRISM** Directorate: **Science Mission Directorate** Type: **NASA Research Announcement**

### Dates

Label	Date	Option
Release	Feb 12, 2021	
PRISM21 Step-1 Proposals Due	Oct 22, 2021	Create

### Notices

- September 2, 2021: An FAQ document has been posted above. Please check back for updates.
- NOTICE: Amended September 2, 2021. This amendment releases the final text and due dates for this program element, which was previously released as draft for community comment. Proposals to this program will be submitted by a two-step process in which the Notice of Intent is replaced by a mandatory Step-1 proposal that must be submitted by an organization Authorized Organizational Representative. See Section 3 of this program element. Step-1 proposals are due October 22, 2021, and Step-2 proposals are due December 20, 2021. A Pre-proposal Conference is scheduled for September 28, 2021, see the schedule at the end of Section 3.1. Changes from the previous draft version of this program element are summarized at the beginning of the F.10 document posted on this page.
- The description of the specific proposal opportunity on this page is contained in the document 'F.10 Payloads and Research Investigations on the Surface of the Moon'. The document 'F.1 Cross-Division Research Overview' describes research activities within the NASA science division that is managing the specific proposal opportunity on this page and may impose requirements upon proposals submitted to this program element. The document 'Summary of Solicitation' describes the common requirements for all ROSES-2021 proposal opportunities. The document 'Table 1' contains the proposal check list from the Summary of Solicitation. The documents 'Table 2' and 'Table 3' contain the list of all proposal opportunities and their due dates, sorted by (Step-2) proposal due date or appendix number, respectively. All of these documents are kept up to date and incorporate amendments, clarifications, and corrections in a clearly identifiable manner.

### Documents

- > [Table 1: ROSES-21 Checklist for Proposers \(also part of the Summary of Solicitation and Full ROSES documents\) \(.PDF\)](#)
- > [ROSES 2021 Summary of Solicitation \(.PDF\)](#)
- > [FULL ROSES 2021 - the complete solicitation as amended September 14, 2021 \(.PDF\)](#)

> [F.1 Cross Division Research Overview \(.PDF\)](#)

> [C.1 Planetary Science Research Program Overview \(.PDF\)](#)

> [F.10 Payloads and Research Investigations on the Surface of the Moon final text released September 2, 2021 \(.pdf\)](#)

### Other Documents

Title

> [STMD Strategic Framework for PRISM](#)

> [CLPS Appendix A Example \(.pdf\)](#)

> [PROSPECT Summary Information \(.pdf\)](#)

> [Executive Summary Template in MS Word \(.docx\)](#)

> [Executive Summary Template PDF](#)

> [PRISM Frequently Asked Questions and Answers as of September 2, 2021](#)

> [Step-1 Proposal Submission Instructions \(.PDF\)](#)

### Omnibus Information

> [Research Opportunities in Space and Earth Sciences 2021 \(ROSES-2021\)](#)



# Timeline

Pre-proposal Conference

Step 1 proposals due

Step 2 proposals due

Selection

Suite/Lander Integration: Gruithuisen Domes

Suite/Lander Integration: South Polar

Launch for Gruithuisen Domes

Launch for South Polar

September 28, 2021

October 22, 2021

December 20, 2021

~4 months post Step-2 due date

April – September 2024

January – May 2025

January – June 2025

September 2025 – Feb. 2026

# Point of Contact for PRISM

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# Artemis Update

- Artemis mission planning is ongoing with updates that may be announced this month
- Artemis III strategic research planning is now beginning and will continue through 2022
  - Each Mission Directorate will be considering its research complement per goals, objectives, and requirements in HEOMD-006 Utilization Plan document
- Artemis I is schedule for launch in November 2021
  - Per recent NASA Administrator comments, it may move to early 2022
  - Two NASA life science payloads – Biosentinel (HEOMD AES) and BioExpt-1 (BPS Space Biology Program)
- Artemis II is scheduled for no earlier than December, 2022
- Activities are on going that will lead to later selection of the lunar landing sites and traverses
  - Opportunities for community input
- SpaceX awarded a contract for the first two missions – demo landing mission and Artemis III mission



# Thank You