COMMERCIAL LUNAR PAYLOAD SERVICES (CLPS): CONTRACTED DELIVERIES OF NASA PAYLOADS TO THE MOON. Commercial Lunar Payload Services (CLPS) Project Office[1] and Exploration Science Strategy and Integration Office (ESSIO)[1] [1]National Aeronautics and Space Administration (corresponding author: susan.m.lederer@nasa.gov)

Introduction: NASA's Commercial Lunar Payload Services (CLPS) initiative allows rapid acquisition of lunar delivery services from US companies for payloads that advance capabilities for scientific, technological, or commercial development of the Moon. In conjunction with instrument development efforts within NASA, academia, industry and international partners, a considerable variety of payloads have been delivered to CLPS vendors or are in the process of development. A total of 11 primary task order (TO) payload manifests have been selected with 8 awarded via a competitive process. They will land at widely distributed sites across the surface of the Moon, including the south polar region and the far side.

Individual task order awards cover end-to-end commercial payload delivery services, including payload integration, launch from Earth, landing on the surface of the Moon and mission operations. Many CLPS landers will carry a laser retroreflector array payload (some passive (**LRA**), others active) to create a suite of fiducial markers on the lunar surface. In addition to delivering the NASA payloads, the CLPS vendors are carrying commercial payloads operated independently from NASA payloads. A successful landing of the first CLPS lander will help prove out the CLPS model for commercial payload deliveries to the lunar surface.

TO 2-IM: *Intuitive Machines, IM1 mission, Nova-C lander; Malapert A, South Pole region, 2023.* Payloads include Lunar Node 1 (**LN-1**), Navigation Doppler Lidar (**NDL**), Radio Observations at the Lunar Surface of the photoElectron Sheath (**ROLSES**), Stereo Cameras for Lunar Plume-Surface Studies (**SCALPSS**), Radio Frequency Mass Gauge (**RFMG**), and **LRA**.

TO 2-AB: *Astrobotic, Peregrine 1 lander; Sinus Viscositatis mare that embays the Gruithuisen Domes, 2023.* Payloads include Peregrine Ion-Trap Mass Spectrometer (**PITMS**), the Near-Infrared Volatile Spectrometer System (**NIRVSS**), the Neutron Spectrometer System (**NSS**). and the Linear Energy Transfer Spectrometer (**LETS**), and **LRA**.

TO PRIME-1: *Intuitive Machines, IM2 mission, Nova-C lander; Shackleton Connecting Ridge, South Pole region, 2023.* The Polar Resources Ice Mining Experiment-1 (**PRIME-1**), a **µ-hopper,** the **Nokia LTE rover**, and **LRA**.

TO 19D: *Firefly Aerospace, Blue Ghost Mission 1(BGM1), Blue Ghost lunar lander, Mare Crisium, 2024.* Payloads include Lunar Instrumentation for Subsurface Thermal Exploration with Rapidity (**LISTER**), **SCALPSS**, Lunar PlanetVac (**LPV**), Lunar Environment heliospheric X-ray Imager (**LEXI**), Lunar Magnetotelluric Sounder (**LMS**), Regolith Adherence Characterization (**RAC**), Lunar GNSS Receiver Experiment (**LuGRE**), Radiation Tolerant Computer (**RadPC**) system, Electrodynamic Dust Shield (**EDS**), and Next Generation Lunar Retroreflector (**NGLR**).

TO 20A (VIPER): *Astrobotic, Griffin Mission 1, Griffin lunar lander South Pole, 2024.* The Volatiles Investigating Polar Exploration Rover (**VIPER**) instrument suite and **LRA**.

TO CP-11: *Intuitive Machines, IM3 mission, Nova-C lander, Reiner Gamma swirl, 2024*. Payloads include the Cooperative Autonomous Distributed Robotic Exploration (**CADRE**), the Lunar Vertex **(LVx)** suite (magnetometer, camera, spectrometers, rover); KASI's Lunar Surface Environment Monitor (**LUSEM**), and ESA's (MoonLIGHT Pointing Actuator (**MPAc**).

TO CP-12: *Draper Labs, Team Draper, ispace U.S. SERIES-2 Lander, outer ring of Schrödinger Basin, lunar far side, 2025.* Payloads include the Farside Seismic Suite **(FSS)**, the Lunar Interior Temperature and Materials Suite **(LITMS)**, and Lunar Surface EM Experiment **(LuSEE-Lite)**.

TO CS-3: *Firefly Aerospace, BGM2; farside mid-latitudes, 2025-2026.* Payloads include **LuSEE-Night**, Communications User Terminal (**UT**), and Lunar Pathfinder (**LP,** orbital payload).

TO CS-4: *TBD; orbital, 2025-2026.* This will provide the **LuSEE-Night** orbital **calibration** source**.**

TO CP-21: *TBD; Gruithuisen Domes, 2026.* The payloads include the Lunar Vulkan Imaging and Spectroscopy Explorer (**Lunar-VISE**) suite, **Heimdall** imaging suite; the Sample Acquisition, Morphology Filtering & Probing of Lunar Regolith (**SAMPLR**) robotic arm; the Flammability of Materials on the Moon (**FM2**) fire experiment; and **ROLSES**.

TO CP-22: *TBD; South polar region, 2026.* Payloads include Lunar Compact Infrared Imaging System (**L-CIRiS**),Lunar Explorer Instrument for space biology Applications (**LEIA**), Fluxgate Magnetometer (**MAG**), Prospecting for Exploration, Commercial exploitation & Transportation (**PROSPECT**), Surface Exosphere Alterations by Landers (**SEAL**), and **LRA**.

See also: https://www.nasa.gov/commercial-lunar-payload-services