



NSS Position Paper

The Artemis Moon Program

November 2019

The NASA Artemis Moon program aims to land the first woman and the next man on the Moon by 2024, a goal that the National Space Society (NSS) applauds. Due to recent efforts to cancel or reduce some of the best aspects of Artemis, NSS has decided to specifically endorse the following:

Human Lunar Lander Commercial Contracting

- NSS strongly endorses NASA contracting the service of landing on the Moon, rather than building, owning, and operating a lunar landing system itself.
- NSS endorses NASA's efforts to initially fund three lunar lander vendors and to fully fund two vendors through landing on the Moon. The Commercial Orbital Transportation Services (COTS) and Commercial Crew Development (CCDev) programs have shown the value of relying on multiple technologically dissimilar vendors.
- NSS notes that NASA is wisely adding a third vendor (Sierra Nevada Dream Chaser) to Commercial Resupply Services second-phase contracts (CRS-2) for the International Space Station, and NSS urges the same course be followed regarding lunar landers. One possible approach is to select a third human-class lander from among the leading vendors of the Commercial Lunar Payload Services (CLPS) program endorsed below.
- NSS endorses the use of commercially procured launch vehicles to send lunar lander components to the Moon.

Commercial Lunar Payload Services (CLPS)

- NSS strongly endorses NASA's Commercial Lunar Payload Services (CLPS) program with its emphasis on multiple commercially procured lunar landers and a willingness on the part of NASA to assume greater risk than is normally the case with NASA programs. CLPS is literally NASA done right and provides a shining example for other NASA programs to follow.
- NSS applauds the recent additions of Blue Origin, Ceres Robotics, Sierra Nevada Corporation, SpaceX, and Tyvak to the pool of vendors eligible to bid on proposals to

provide deliveries to the surface of the Moon through NASA's CLPS initiative. These additions increase the list of CLPS participants on contract to 14.

Role of the Gateway

- NSS endorses the flexibility NASA has shown in not requiring that a lunar lander dock with the Gateway.
- NSS supports the use of commercially procured launch vehicles to resupply the Gateway.

Sustainable Lunar Economy

- NSS supports the efforts of NASA to create an economically sustainable lunar landing program and cautions against any approach to Artemis that is not targeted toward future commercial operations on and around the Moon.
- NSS endorses the focus on exploring the potential water resources of the lunar poles.
- NSS strongly endorses NASA's Volatiles Investigating Polar Exploration Rover (VIPER) a mobile robot that will roam around the Moon's south pole looking for water ice. The VIPER mission will provide surface-level detail of where the water is and how much is available for use.

Tipping Point Grants

NSS also endorses "Tipping Point" grants¹ in general and calls attention to the following Moon-related actions by NASA:

- An unfunded Space Act Agreement with SpaceX to study the impact of landing large vehicles on the Moon. An additional Space Act Agreement with SpaceX calls for the study of on-orbit Starship-based fuel transfer.
- Three unfunded Space Act Agreements with Blue Origin related to the development of lunar lander technologies.
- A \$3M Tipping Point grant to SpaceX to study methods of on-orbit ship-to-ship fuel transfer
- A \$10M Tipping Point grant going to Blue Origin to conduct a ground-based demonstration of hydrogen and oxygen liquification and storage.

NSS looks forward to these and other Tipping Point grants becoming the core of a program of lunar exploration and development that leads eventually to lunar bases and finally settlements, rather than another unsustainable "flags-and-footprints" Apollo-like program.

¹ The public-private partnerships established through Tipping Point selections combine NASA resources with an industry contribution of at least 25% of the program costs, shepherding the development of critical space technologies while also saving the agency, and American taxpayers, money. See https://www.nasa.gov/directorates/spacetech/solicitations/tipping_points

About the National Space Society (NSS): NSS is an independent non-profit educational membership organization dedicated to the creation of a spacefaring civilization. NSS is widely acknowledged as the preeminent citizen's voice on space, with over 50 chapters in the United States and around the world. The Society publishes *Ad Astra* magazine, an award-winning periodical chronicling the most important developments in space. To learn more, visit space.nss.org.