



Position Paper:
The Artemis Moon Program

May 2020 (updated from 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 on-going 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 recent selection of three technologically dissimilar vendors, Dynetics, SpaceX, and the Blue Origin “National Team” for the initial contracts to provide human class lunar landers. Although only one vendor can be selected to support the initial return of humans to the lunar surface, NSS urges the development of preferably all three, and definitely at least two of the vendors’ proposals to operational status to ensure that NASA can reliably reach the lunar surface in a sustainable fashion.
- NSS endorses the use of commercially procured launch vehicles to send lunar lander components to the Moon.
- While it may in the short term seem burdensome to U.S. taxpayers to fund three human landers versus a single government owned vehicle, longer term such a strategy will lead to more diverse capabilities, higher total resiliency, and lower program risk and indeed cost to taxpayers. Instead of funding a government-owned vehicle like the Shuttle that has a finite program life and no market checks on cost, this procurement strategy will create a new sustainable commercial space sector that will over time compete and innovate to bring new capabilities to the market at ever lower price points.

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 is pleased to note the selection of Astrobotic and Intuitive Machines in the smaller class of CLPS lunar landers and looks forward to their initial lunar landings in 2021.
- 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.
- NSS supports the addition of the Masten medium-class XL-1 lander to the CLPS program and looks forward to many successful landings in the area of the lunar south pole.

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 and is pleased to note that NASA has selected SpaceX's Dragon XL as the initial logistics vehicle to supply the Gateway. NSS urges that a second technologically dissimilar commercial provider be selected to help ensure reliable service to 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. It is essential the ISRU (In-Situ Resource Utilization) be a core part of Artemis.
- 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. NSS believes that the costs of establishing and maintaining a lunar base will be paid back many-fold in lowering the amount of new technology needed to be developed to go to Mars.

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.