

NASA Advisory Council Recommendation

Plan for Lunar Sustainability 2022-02-03

Name of Committee: Human Exploration and Operations Committee

Chair of Committee: Mr. Wayne Hale

Date of Council Public Deliberation: August 10, 2022

Short Title of Recommendation: Plan for Lunar Sustainability

Recommendation:

NASA should develop a plan for lunar sustainability beyond the currently planned Artemis missions. This plan should include the required capabilities/systems and timelines for development. The plan should include commercial and international involvement and be used to develop preliminary funding requirements.

Major Reasons for the Recommendation:

The current Artemis missions do not result in a sustained lunar presence as required by U.S. policy. Many capabilities will be required that are not planned beyond initial technology development.

Consequences of No Action on the Recommendation:

The risk is that Artemis will end like Apollo, with more flags and footprints, but no sustained presence.

NASA Response:

NASA concurs that sustained lunar presence requires a plan beyond the currently planned Artemis I-V missions. There are many definitions for “sustainability,” however, in this response, we are interpreting sustained to mean continued access to the lunar surface.

NASA has begun working with U.S. industry and international space agencies to define objectives for the Moon and Mars, and recently released a refined set of Moon to Mars Objectives that resulted from thousands of write-in inputs (from industry, internationals, academia, and the NASA workforce) and two workshops with U.S. industry and international space agencies. As a part of this effort, NASA is in discussions with U.S. industry focused on commercial activities and with international space agencies to determine the infrastructure needed for long term, continued access, and sustainable commercial/industrial ventures on the Moon.

Enclosure

NASA's near-term focus has been on the transportation systems to access the lunar surface. NASA is developing technologies and identifying new elements that will grow the lunar infrastructure and allow a smoother transition to commercial and international partner-led surface activities.

Scientific discovery and technology advancement will continue to be key drivers for NASA's planned lunar infrastructure and international space agencies around the world have the same drivers that compel them to invest in Artemis. Like NASA, these space agencies rely primarily on their national industrial bases to innovate new capabilities. The success of NASA's commercial crew and cargo programs in low-Earth orbit (LEO) have bolstered a private LEO economy. NASA is continuing to work with industry partners to understand an evolution of a lunar economy.

The goals for Artemis are vastly different from Apollo. The primary risk of reaching the same fate is if cost for access to the Moon holds or increases, or if public interest declines. We believe that public-private partnerships and service-based models will drive down access costs while simultaneously increasing public interest and generating demand in future markets like prospecting, academic research, tourism, supply chain, and logistics. As these markets develop, NASA will become one of many customers for lunar access and will be able to conduct long-term research on the Moon while focusing development funds on the capabilities needed to send humans to Mars.