



## Robotic Lunar Lander Development Project Mission Scenarios

# NASA's Robotic Lunar Lander Development Project — Mission Scenarios

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NASA's Marshall Space Flight Center and the Johns Hopkins Applied Physics Laboratory (APL) are leading the Robotic Lunar Lander Development Project to create a new generation of robotic lunar landers. The project is conducting test and risk reduction activities to develop a versatile robotic lunar lander that will enable national scientific and exploration goals. The lander will be capable of landing on the near side or far side of the moon, inside or on the edge of craters, and it will be designed to withstand extreme environments on the lunar surface. The project's test and risk reduction activities could even enable future surface missions to other airless bodies in the solar system, such as Mercury, Europa, and asteroids.

## International Lunar Network

- Determine the composition and structure of the moon's interior: its crust, mantle, and core
- Measure heat flow from the lunar interior
- Monitor lunar seismic activity

## Lunar Polar Volatiles

- In situ characterization of volatile species including water, carbon dioxide, methane, ammonia
- Understand current processes taking place in the lunar atmosphere and cold traps

## Human Exploration Precursor

- Characterize landing sites for human exploration
- Understand the lunar surface environment: lighting, radiation, thermal, and dust
- Provide essential information for future in situ resource utilization

## Other Airless Bodies

- Surface science
- Geophysical networks
- Sample return

For more information on the Robotic Lunar Lander Development Project, please visit <[www.nasa.gov/roboticlander](http://www.nasa.gov/roboticlander)>.