

NASA's Artemis Mobile Launchers

NASA's mobile launchers are designed to send the Space Launch System rocket, Orion spacecraft, astronauts, and large payloads to the Moon in a single launch. With the new universal stage adapter and enhanced exploration upper stage on SLS beginning with Artemis IV, NASA's mobile launcher 2 will launch 40% more payload to the Moon compared to mobile launcher 1, which launches the SLS Block 1.

Approx. 370 ft.



Mobile Launcher 1 (SLS Block 1 Crew)
Artemis I – Artemis II – Artemis III

Approx. 390 ft.



Mobile Launcher 2 (SLS Block 1B Crew)
Artemis IV & Beyond



The **crew access arm** and **Orion service module umbilical** are located 40 feet higher on mobile launcher 2.



The new **SLS universal stage adapter** provides increased payload capacity.



The more powerful **SLS exploration upper stage** requires a new umbilical on mobile launcher 2 along with enhanced propellant loading capabilities.

EXPLORATION GROUND SYSTEMS

NASA's Artemis Mobile Launchers



Starting with the Artemis IV mission, NASA will use a new mobile launcher to continue the effort to enable humans to live and work on the lunar surface. Mobile launcher 2 (ML2) will allow the agency to send heavier, increasingly complex missions to the Moon. The enhanced capabilities of ML2 will support the Space Launch System (SLS) Block 1B configurations. These larger Artemis rockets will provide the power needed to send astronauts and heavy cargo to the lunar surface.

A Bold Mission Calls for Big Rocket

As Artemis missions evolve, so must our ground support equipment. The powerful SLS Block 1B lifts more than double the mass to trans-lunar injection as compared to current launch vehicles and features a more powerful upper stage that can send both crew and large payloads to space for our most ambitious missions ever attempted. These heavy cargo missions demand a larger and more robust mobile launcher to support SLS prior to launch and withstand the tremendous power of such a large rocket.

What's New with ML2?

NASA engineers implemented lessons learned from the construction of mobile launcher 1 and the launch of Artemis I to make improvements to the next generation mobile launcher. These improvements will enable ML2 to better withstand the immense launch power of SLS Block 1B.

Structurally, ML2 will feature a wider cross-section on the launch tower to better protect equipment and an increased diameter on piping and flow nozzles of the ignition overpressure sound suppression system for a better flow of water to launch platform and flame hole.

New technology includes: a self-contained ground cooling system providing avionics cooling for Orion, reducing reliance on ground support equipment; an improved electrical system; and a new payload accommodations room enabling customers to remotely communicate with payloads.

Mobile Launcher by the Numbers:

Mobile launcher 1

Total height above ground: 380 ft
Tower: 40 ft square, about 355 ft tall
Approximate weight: 10.5 million lbs

Mobile launcher 2

Total height above ground: 402 ft
Tower: 40 x 50 ft square, about 377 ft tall
Approximate weight: 12.4 million lbs



NASA's Space Launch System rocket atop mobile launcher 1 on Launch Pad 39B at Kennedy Space Center in Florida, prior to the launch of Artemis I. Photo Credit: (NASA/Joel Kowsky)