

ULA Rideshare To Support Lunar and Planetary Missions. Gerard (Jake) Szatkowski, phd, United Launch Alliance (ULA) PO Box 277005, Mail Stop U9115, Littleton, CO 80127, gerard.p.szatkowski@ULAlaunch.com.

United Launch Alliance (ULA) launch vehicles have a long history of providing high-value payload accommodations for a variety of customer spacecraft and missions, including planetary missions to Mercury, Mars, Pluto, and the Asteroid Belt. These missions have allowed for a wealth of scientific information to be collected, and they have given us a better understanding of our solar system. These missions have usually been launched as primary payloads and have used the full capability of the launch vehicle, yet there are lower-cost alternatives for achieving similar science objectives.

Rideshare - the approach of sharing available performance margin with a second spacecraft that would otherwise go unused by the primary payload - provides satellite developers the opportunity to get their spacecraft to orbit and beyond in an inexpensive and reliable manner. Such an approach was demonstrated successfully in 2009, when the Lunar Crater Observation and Sensing Satellite (LCROSS) was flown as a secondary payload on a ULA Atlas V launching the Lunar Reconnaissance Orbiter (LRO) mission to the moon. This launch proved that alternative ways to exploring the solar system in a cost-effective manner can be successfully achieved, and these types of missions will become more commonplace as newer launch service capabilities become available. The ULA family of launch vehicles - the Atlas V and the Delta IV - all have rideshare capabilities that could be used by the science community for launching small, inexpensive payloads to planetary locations. These capabilities support a wide range of spacecraft sizes, from the smallest Cubesats, to the largest dual-manifest payloads.

This presentation - will provide a technical overview of each of the rideshare capabilities that are available today or are currently in development. Details on each capability will be provided, including mass, volume, and electrical capabilities; interface hardware; launch operations; development schedules; and launch availability. The capabilities that will be discussed include P-POD dispensers, the C-Adapter Platform (CAP), the Atlas V Aft Bulkhead Carrier (ABC), the EELV Secondary Payload Adapter (ESPA), the Integrated Payload Carrier (IPC), the eXternal Payload Carrier (XPC), the Dual Spacecraft Systems (DSS-4 and DSS-5), and the ESPA Multi-payload Utility Leader with Electric-propulsion (ESPA-MULE). Concept delivery missions using Rideshare will be suggested for the Moon, Mars, and NEO's.