# Executive Summary

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## Presentation Title

Is a LEO Propellant Depot Commercially Viable?

## Key Ideas

Depot customers and needs.
Potential impact on customer mission
Depot concept
Business case boundary conditions

## Supporting Information

Potential customers of a LEO propellant depot include NASA (lunar exploration, interplanetary probes, GEO delivery), DoD (GEO and HEO delivery), GEO launch service providers (comsats), Bigelow Aerospace, and Shackleton Energy Company. Studies conducted by Boeing in 2006 and 2007 addressed the impact a LEO propellant depot could have on the NASA ESAS architecture for lunar exploration. Solutions ranged from reducing heavy lift requirement 72% to increasing lunar landed mass 325% and depot capacities between 65 and 320 mt. For ESAS-defined systems, landed mass can be increased from 18 to 51 t with a 150 – 175 t depot in LEO. GTO, GEO and interplanetary mission capability can be increased 100 – 200% as well. A modular depot configuration and operational concept developed for the NASA ESAS lunar exploration missions includes a central core truss supporting six propellant tanks serviced by a reusable propellant carrier. Two depots are placed in a 28.5 degree orbit for redundancy and to support two annual lunar missions. Business case boundary conditions include LEO propellant value, LEO propellant sales price, propellant launch cost, depot installation cost, depot operations cost and initial need date.