

Viability of a Reusable Lunar Lander. Natan Vidra¹, ¹ Co-Founder of Lunar8 and Student of Applied and Engineering Physics at Cornell University [1]. 100 Ridgewood Road, Ithaca, NY, 14850. nv78@cornell.edu

With the utilization of insitu resources, the creation of a Moon Village, and the completion of Google LunarX Prize all potentially in store, sustainability and economic feasibility are needed now more than ever. The development of ports in LEO and LLO, the creation of a Lunar Lander, and the making of a hub and spoke network for flights are essential for the colonization of the Moon and beyond. In order to realize this vision, it is essential that we create a safe and synchronized model of transportation to get cargo and modules to LLO and lunar surface.

Lunar8 [2], an aerospace startup founded by a group of Cornell Engineers, intends to help create this mode of transportation. Our goal is to build a Reusable Lunar Lander (RLL) that will travel from lunar orbit to lunar surface, helping deliver cargo and modules to the Moon's surface. In creating this cargo delivery service, we tackle a major limitation to the Moon Village Initiative by allowing more entities to access the Moon at an affordable price. The reusability of our lander would save millions of dollars of materials that would have otherwise been thrown away into the vacuum of space after a single use.

An RLL will require in-situ resource utilization in order to create a sustainable retropropulsion lander, which will reduce inhibiting cost drivers of lunar transportation. Companies that use our RLL can also dedicate the space usually reserved for a lander to other cargo, and save the time, materials, and capital required to develop one. More importantly, the technological innovations that Lunar8 will strive for has the potential to revolutionize our economy, shifting gears from a rocket-centered space industry towards an industry willing to invest in technologies necessary for extraterrestrial expansion.

An African Proverb States: "If you want to go far, go alone. If you want to go fast, go together." With this comes a paradigm shift in the fundamental logistics of space exploration. In order to enable rockets to fly to Saturn, Uranus, Neptune and beyond, we must first work together to create a sustainable means of getting to the lunar surface.

References:

- [1] <http://nextgenlunar.weebly.com/featured-member.html> (see month of June for my bio)
- [2] <http://www.lunar8.space>