

Summary

Citizens' Space Agenda

WHO WE ARE: We are private U.S. citizens who are visiting you today on our own time, and our own dime, to advocate for a “Citizens’ Space Agenda.”

NON-PROFIT SPONSORING ORGANIZATIONS:

1. The “Citizens’ Space Agenda” August Home District Blitz is a project of the Alliance for Space Development, and is sponsored by the **Space Frontier Foundation** and **National Space Society**.
2. It is supported by Students for the Exploration and Development of Space, Students on Capitol Hill, Lifeboat Foundation, The Mars Foundation, The Mars Society, The Space Development Steering Committee, The Space Tourism Society, Tea Party in Space, the Space Development Foundation, and the Texas Space Alliance.

OUR SPECIFIC REQUESTS:

1. Establish an Ultra Low Cost Access to Space (ULCATS) program based on public-private partnership
2. Enable the development of a robust cis-Lunar economy based on commercial purchase of:
 - A. Transportation services for crew and cargo
 - B. Fuel and Consumables derived from Lunar and asteroid resources
 - C. Goods manufactured in space
3. Add money to the NASA budget to protect the Earth by supporting the JPL NEOCAM space-based Near Earth Object detection telescope.

Six Reasons *Ultra-Low Cost Access To Space* (ULCATS) is Critically Important

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- **National Security** — Currently, America is vulnerable to a Pearl Harbor style attack in space. Commercial high-flight-rate, rapid-turnaround reusable launch vehicles (RLVs) developed by ULCATS could enable a surge capability that can rapidly replenish space assets. The existence of RLVs could be a deterrent to a surprise. RLVs are a stabilizing deterrent to war.
- **Economic Growth** — Space is currently a \$300+ Billion per year revenue industry. With Ultra-Low Cost Access to Space (ULCATS), space development will accelerate, markets will grow, new industries and many thousands of jobs will be created.
- **Civil Space** — Today, our national human space agenda is struggling. With ULCATS, America can lead the large-scale movement of humanity to space, including the Moon, Mars, and other locations throughout the Solar System, affordably & permanently.
- **Imagination & Inspiration** — If ULCATS reusable space vehicles lead to thousands of people orbiting the Earth every year, the world will be inspired by American leadership, ingenuity, and entrepreneurship.
- **Environment** — ULCATS will enable affordable low Earth orbit constellations of satellites that can deliver 24-7, 365-day-per-year high-resolution measurements of the entire planet enabling, among other things, improved border monitoring, weather prediction, storm tracking, and understanding of our home.
- **American Leadership** — With the success of ULCATS, America has the potential to become the undisputed leader of the world in space well into the 21st Century, providing significant soft power benefits for American diplomacy and influence in the world.

Why ULCATS Development Makes Good Economic & Policy Sense

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- **The ULCATS Act** directs the U.S. Government to develop supportive relationships with American companies developing high-flight-rate, rapid-turnaround, surge-capable fully reusable launch vehicles (RLVs).
- **Nature of the Support:** This support should include, but not be limited to, facilities, expertise, software, databases and partial funding for development delivered on the achievement of clearly defined milestones. Successful companies could also receive a contract for a number of launches using the same vehicle.
- **If Successful, It Quickly Pays for Itself:** The U.S. Government currently spends billions per year on space launch. ULCATS could save U.S. taxpayers a significant part of this large amount.
- **Even if Unsuccessful Valuable Technology Will be Developed:** The American aircraft industry's global success was and is due, in no small part, to NACA and later NASA supporting industry with technology development and other assistance. There is every reason to believe that similar support for space launch will lead to important innovation.
- **We Have the Technology:** In 2017 we have the technology to build fully-reusable two-stage-to-orbit RLVs. A number of commercial companies are working on parts of ULCATS. There are relatively inexpensive activities that can assist them and speed development.
- **Draft text can be found at:** <http://allianceforspacedevelopment.org/wp-content/uploads/2017/02/Draft-ULCATS-Act.pdf>
- **REQUEST: Will you be an original co-sponsor of the ULCATS Act?**

Why *Cis-lunar Commercialization* is Critically Important

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- **cis-Lunar space includes:**
 - The area between the Earth and Moon including Earth orbit, Lunar surface, Lunar orbits, L-points.
 - Transport of asteroid material to cis-Lunar space for processing extends reach to NEO asteroids.
- **What is cis-Lunar Commercialization?**
 - The usage of public/private partnerships to supply cargo and crews to cis-Lunar government stations, including those on the Lunar surface.
 - The purchase and storage in cis-Lunar of vital resources from commercial entities, including rocket fuel, oxygen, and water.
 - Enabling both lunar mining and asteroid mining on an equal basis
 - The in-space manufacture of goods for use in space
 - A way of enlisting the private sector in lowering the cost of a journey to Mars
- **Why Now is the Time for cis-Lunar Commercialization:**
 - Companies are seriously pursuing asteroid and lunar mining
 - NASA has begun the process via NASA's **Next Step** of developing a cis-Lunar base in the vicinity of the Moon, to be called the **Deep Space Gateway**.
 - The cost of access to LEO is being addressed by multiple companies, but the cost of access to cis-Lunar space remains high
 - The experience base of LEO COTS/CRS is available as a foundation
 - The prospective availability of new vehicles for reaching cis-Lunar space
 - SLS/Orion, Falcon Heavy, New Glenn, Vulcan

Making *Cis-Lunar Commercialization* a Reality

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- **Benefits of Cis-Lunar Commercialization (CLC):**
 - **Economic Growth** — has the potential, as outlined by the United Launch Alliance CisLunar 1000 vision , to support massive growth in the space economy.
 - **Civil Space** — Today, our national space agenda is struggling. With CLC, America has the opportunity to lead the way to the development of Lunar and asteroidal resources while building the foundation of an affordable journey to Mars.
 - **Imagination & Inspiration** — If CLC leads to profitable companies mining the Moon and asteroids, the world will be inspired by American leadership, ingenuity, and entrepreneurship.
 - **American Leadership** — With the success of CLC, America has the potential to become the undisputed leader of the world in space well into the 21st Century, providing significant soft power benefits for American diplomacy and influence in the world. CLC is more affordable for international participants with more short term practical returns than efforts focused on more distant goals.
- **Cis-Lunar Commercialization Heritage**
 - The draft Bill is based on the Launch Services Purchase Act of 1990 and the 1998 Commercial Space Act, but extended into Cis-Lunar Space
- **REQUEST** Are you willing to be the primary sponsor of Cis-Lunar Commercialization Act of 2017 draft legislation?
- **DRAFT legislation can be found at:** <http://allianceforspacedevelopment.org/wp-content/uploads/2017/02/Draft-Cis-Lunar-Commercialization-Act.pdf>

Why is Planetary Defense Important?

- Millions of asteroids larger than the Chelyabinsk object (~60 ft in size) are in orbits around the Sun that cross the orbit of Earth
- If we do nothing, roughly 2% of these objects will eventually hit Earth.
- Many such objects have struck the Earth in the past (Chelyabinsk meteor[2013], Tunguska[1908], Meteor Crater, AZ [50 Kyr ago] Chicxulub crater in Mexico[66 Myr ago])
 - Effects ranged from many injured to potential city-wide devastation to mass species extinction
- The next major impact could be decades in the future or just a few weeks from now, but could create “climate-change in an afternoon”
- Humanity has the technical capacity to discover and track any object that would cause significant devastation on Earth for modest cost.
- A simple truth: **There will be no space development or settlement if most of us are dead and our civilization lies in ruin due to an unwarned impact of an asteroid from space.**

Why is JPL NEOCAM the next critical step in protecting our planet?

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- Detection of the potential hazard is the essential first step in planetary defense
- Current NASA and international efforts to find dangerous Near Earth Objects (NEOs) using only ground-based instruments has inherent limitations and will take several decades:
 - Cannot see in direction of Sun, near the Moon, during daylight, or through clouds
 - The best frequency for detection (infra-red) is absorbed by the atmosphere
- Best solution is JPL NEOCAM space-based infra-red 0.5 meter telescope
 - Rated #3 of 28 proposals during the recent DISCOVERY mission selection
 - JPL NEOCAM will be located at the Earth-Sun L1 point, allowing it to detect football-field sized objects near Earth, including any potential impactors
 - Total procurement costs, including launch, is ~\$600M spread over four years
 - Objective is to find 2/3 of all larger than 140 meter objects in five years
 - Goal is to achieve 10 years of operations to discover >90% of 140 meter and larger asteroids
 - Asteroids found are also targets for future scientific and mining expeditions
 - Project web site at: <http://neocam.ipac.caltech.edu/>
- **Request:** Sign letter of support to acting NASA administrator Robert Lightfoot