

## Support H.R. 6131

***H.R. 6131, the Commercial Space Act of 2023, is a comprehensive bill that addresses several issues facing the commercial space sector. Those issues range from the extension to the “Learning Period” to how novel space applications are authorized.***

Activities in space are currently overseen by various agencies: FCC, FAA/AST, OSC, and NOAA. This mix of Agencies creates significant delays and uncertainty for commercial companies. There is broad consensus that a single agency should have the limited authority necessary to ensure compliance with international treaties and US laws.

There is no broad consensus as to how far beyond strict treaty compliance any new framework should go. This fundamental question of regulatory scope has hindered many new ideas for space development, such as space solar power, private space stations, and space mining. These proposals (sometimes referred to as “novel space activities”) will form the backbone of our future in space, but only if we have clear oversight authority that is grounded in concrete evidence and widespread consensus.

H.R. 6131 seeks to create clarity around what is legally required for compliance with the Outer Space Treaties, which federal agencies are responsible for that compliance, space situational awareness, the role of the Office of Space Commerce, the status of the “Learning Period”, etc.

### ***Treaty Obligations***

This bill primarily addresses the issue of how to “authorize” and “supervise” a space mission operating by “non-governmental entities”. This language comes directly from the Outer Space Treaty’s Article IX which states:

States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the Moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty.

The bill takes a limited and light-touch approach to fulfilling this treaty obligation by creating a registry maintained by the Office of Space Commerce whereby every mission to space performed by a US citizen, corporation, or other US entity must register and provide the following information:

- contact information,
- proof that they are a US entity,
- when and where the launch will be,

## **Elevate the Office of Space Commerce**

***The Department of Commerce's Office of Space Commerce should be designated as a Bureau within the Department of Commerce, its Director should report directly to the Secretary of Commerce, and its FY 2025 budget should be \$80M as requested for FY25.***

The Office of Space Commerce was created by the Commercial Space Act of 1998 (51 USC 507) to foster economic growth, coordinate Commerce Department space policies and actions, advocate for U.S. industry abroad, and promote geospatial and position, navigation, and timing (PNT) technologies and interagency PNT planning. Recently the Office was tasked with licensing commercial remote sensing systems and a comprehensive Space Situational Awareness system.

The Office currently resides within the NOAA bureaucracy, but its responsibilities cut across several Commerce Dept Bureaus (NOAA, NIST, NTIA, ITA, BIS, etc...) The Office often struggles to defend itself against jurisdictional overreach into its legislated authority by other Agencies and against budget fights within NOAA and the rest of DoC.

As the commercial space sector has grown over the past decade, the need for high-level promotion and coordination of commercial space policy has become glaringly obvious. The Office of Space Commerce is the only organization qualified and legislatively chartered to do that holistically and with a mandate to promote the entire range of the commercial space industry.

The Office also enjoys widespread consensus that it should be the organization in charge of both promoting and regulating the space sector going forward, with the noted jurisdictional exception of the FAA's Office of Commercial Space Transportation which oversees launch and the FCC which oversees RF spectrum allocations.

The industry needs an active, well-funded advocate in Government who understands that space policy is economic policy, not just science or national security.

### ***Elevating the Office***

When originally constituted in 1998, the Office of Space Commerce reported directly to the Secretary of Commerce, thus the only new legislation needed is to specify that the Department of Commerce make the organizational change and to provide the FY25 requested budget of \$80M. The other provisions of H.R. 6131 related to the Office being the sole location where space operational registrations, space debris monitoring, and remediation occur are also necessary to clarify current jurisdictional boundaries. H.R. 6131 also designates the Office as the location for mission authorization.

- the physical form of the spacecraft,
- a description of how the spacecraft will operate that includes when and where the object will operate and how it will terminate operations,
- a space debris mitigation plan,
- information on third-party liability insurance if any is obtained,
- and whether or not the spacecraft will carry nuclear weapons or other weapons of mass destruction.

If there are no discrepancies in the registration information or questions concerning the operations or debris mitigation plan then the registration is considered complete and the mission is logged in the registry. If a registration is incomplete or questions come up, there is a lightweight process to update and/or appeal the registration process. The process does include an automatic interagency consultation but it has a hard deadline.

### ***Known Unknowns and the Unknown Unknowns***

The primary issues raised in various forums since the Bill was released revolve around how silent the Bill is on issues that have gained a fair amount of media attention recently such as space debris, norms of behavior, and generally how to prevent bad things from happening. H.R. 6131's silence on those issues is not a statement that those issues are being ignored but that they are simply either not sufficiently ripe or no general consensus exists around a solution.

H.R. 6131 assumes that future legislation is required and even asks for several annual reports on the state of some of those areas to monitor when changes might be warranted.

### ***Secondary Considerations***

H.R. 6131 also covers several other topics discussed in the Alliance's other briefings provided within this briefing package.

## Extend the Learning Period and Preserve Informed Consent

***The “Learning Period” defined in 51 U.S. Code § 50905<sup>1</sup> should be extended for at least another eight years, and the informed consent regime should be preserved indefinitely.***

The “Commercial Space Launch Amendments Act of 2004” (49 USC 70105 (2004)) contains two crucial elements necessary for continued innovation in human space flight. These are the so-called “learning period” and the *informed consent regime*.

### ***The Learning Period***

The first element is a limited moratorium on the FAA’s ability to promulgate regulations regarding the health and safety of spaceflight participants and crews of commercial spacecraft. While sometimes called a “moratorium” on regulations, it is only a partial restriction: the law ([51 USC 50905\(c\)\(9\) \(2004\)](#)) still allows the FAA to issue regulations in the event of a serious or fatal injury during flight, or an incident that posed a “high risk” of causing such an injury. This moratorium is referred to as the “learning period”. ***The Alliance and its member organizations support extending the Learning Period for at least another eight years.***

### ***Informed Consent***

The second element is referred to as the “informed consent regime” which allows license holders to fly space flight participants and crew on licensed vehicles *for compensation* without requiring certification by the Federal Government that the vehicle meets “commercial air travel” safety rules. Without the informed consent regime no rocket could carry paying passengers until they could prove the rocket was as safe as any commercial airline even though commercial passenger travel had over two decades of little to no regulations for compensated passenger travel at the dawn of commercial aviation. ***The Alliance and its member organizations support preserving the informed consent regime and, wherever possible, encouraging the FAA to promulgate voluntary standards rather than regulations.***

### ***Simply Not Ready***

When passed originally in 2004 there was every expectation that the company behind the winning XPRIZE<sup>2</sup> flight (which eventually became Virgin Galactic) would begin passenger service almost immediately. In reality, the task proved to be more complex than anyone thought at the time. This, coupled with the 2008 financial crisis, delayed the first flights of

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<sup>1</sup> 51 U.S. Code § 50905(c)(9). United States Code, 2012 Edition, Supplement 3, Title 51 - NATIONAL AND COMMERCIAL SPACE PROGRAMS.

<https://www.govinfo.gov/app/details/USCODE-2015-title51/USCODE-2015-title51-subtitleV-chap509-se-c50905>

<sup>2</sup> The Ansari XPRIZE. October 4, 2004. <https://www.xprize.org/prizes/ansari>

commercial launch vehicles to 2021<sup>3</sup>, far beyond original expectations. The learning period should be extended until 2029, at a minimum, **to allow the originally expected 8 years of revenue flight experience to take place and allow the government to learn more about these systems.**

It's plainly obvious that commercial spaceflight has little in common with commercial aviation today, whether common carrier or other compensated flight. In reality, **the commercial spaceflight industry is not yet capable of being a common-carrier transportation service.** Spaceflight is not a technologically mature and static industry with a high expectation of customer safety. It has only a few years of operations, rather than a century of operations (aviation, automobiles, railroads, passenger ships). **Spaceflight is an experimental, voluntary, and risky experience that requires the informed consent of customers, including the federal government taking no responsibility for the safety of the experience.**

While it is not yet safe for the general flying public, it is also very different from the expensive and infrequent government approach to human spaceflight, where analysis provides "comfort" but not real safety, as opposed to 10s, then 100s, then 1000s of commercial flights with ever-improving designs, operating practices, and safety while carrying fully informed and consenting participants.

The learning period is modeled on the early unregulated period of commercial aviation when innovators rapidly improved technology and practices and consensus industry standards emerged. Regulations were only needed (and actually pursued by the industry) when it became clear some operators were ignoring standards and hurting the industry as a whole. Even then, regulations were limited to proscribing proven unsafe practices rather than imagined practices with no supporting flight data. **The FAA has the authority to publish occupant safety regulations today,** based on either an accident or even an incident that could have led to an accident. At least one accident has occurred (Virgin Galactic), but the FAA has not chosen to regulate or even publish an advisory circular. There is no need for additional authority when the FAA hasn't used the authority they already have.

### ***Risk-taking is Uniquely American***

Americans have always been risk-takers. We routinely make sports of dangerous activities such as cave diving and sky-diving. Participants may be injured or even killed, but still, people participate with enthusiasm. Space travel is still comparable to an "extreme sport." It requires hours of high-G and zero-G training, experience with danger and stress, and training for emergency situations. Both the informed consent regime and the learning period should not only be preserved but should be embraced and extended as one of the key enabling factors that put America into space to begin with.

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<sup>3</sup> Cao, Sissi. "Every Space Tourism Package Available in 2021 Ranked: From \$125K to \$60 Million". 2021 <https://observer.com/2021/11/commercial-space-travel-roundup-spacex-blue-origin-virgin/>

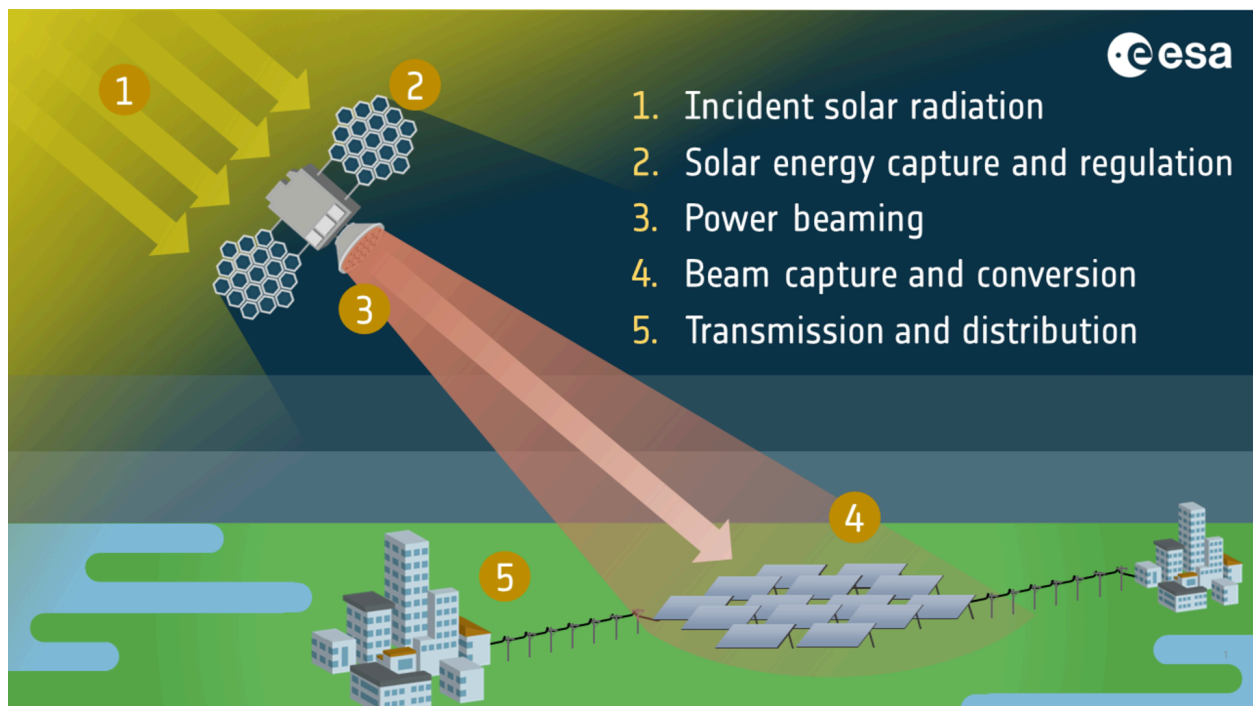
## Space Solar Power Study

***A bipartisan amendment to H.R. 6131 offered by Representatives Mullin (D-CA) and McCormick (R-GA) was adopted unanimously by the House Science, Space, and Technology Committee to instruct the Office of Space Commerce and NASA jointly to analyze the potential of space-based solar power.***

The amendment specifically calls for a report to be written that includes an analysis of the economic viability of commercial space-based solar power specifically including the analysis done by NASA recently. It also asks for any new or updated international agreements necessary to maintain the orbits for such a system when/if it were found to be viable. Unlike other reports, this one requires details on the investments being made by other countries.

### Space Solar Power Background

Space Solar Power is a concept where large solar power stations are built in space, usually in a geosynchronous orbit, where solar energy is converted into a form suitable for transmitting to the Earth's surface. The form of the energy being transferred to Earth is generally microwave radio waves in a frequency range that is not affected by water and is considered harmless to life. The receiving system on Earth is called a rectifying antenna (or rectenna) which is highly efficient at converting radio waves to DC power.



Today, **SSP technology is under active development around the world, by both partners and competitors:**

- Japan's space agency, JAXA,<sup>1</sup> and Japan Space Systems are working to demonstrate SSP microwave wireless power transmission to Earth from LEO by 2024.<sup>2</sup>
- The United Kingdom's Space Energy Initiative is developing SSP to deploy an in-space demonstration by 2030 and supply their national grid by 2040.<sup>3</sup>
- European Space Agency SOLARIS program will mature enabling technologies and concepts to inform a 2025 decision on large scale SSP deployment.<sup>4</sup>
- China plans to deploy a 10 kilowatt technology demonstration by 2028, and deploy a 10 megawatt geostationary solar power station by 2030. This would be followed by a 2-gigawatt station by 2050—capable of powering a large city.<sup>5</sup>

We believe this report is a good next step to understanding the *economic* impacts of space solar power which can lead to expanding support both governmentally and commercially.

For more information on Space Solar Power see this National Space Society paper: <https://space.nss.org/wp-content/uploads/NSS-Position-Paper-SSP-Clean-Energy-from-Space-2021.pdf>.

*Note on terminology: This paper uses the term Space Solar Power (SSP). The term Space-Based Solar Power (SBSP) is also widely used. SSP and SBSP are equivalent. Orbiting solar power platforms are generally known as Solar Power Satellites (SPS).*

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<sup>1</sup> Research on the Space Solar Power Systems, <https://www.kenkai.jaxa.jp/eng/research/ssps/ssps-index.html>

<sup>2</sup> Japan Tackles Clean Energy From Space, NSS Press Release, Jan 2022, <https://space.nss.org/japan-tackles-clean-energy-from-space/>

<sup>3</sup> Space Energy Initiative, <https://spaceenergyinitiative.org.uk/space-based-solar-power/>

<sup>4</sup> Plan to research solar power from space, European Space Agency, [https://www.esa.int/Enabling\\_Support/Space\\_Engineering\\_Technology/SOLARIS/Plan\\_to\\_research\\_solar\\_power\\_from\\_space](https://www.esa.int/Enabling_Support/Space_Engineering_Technology/SOLARIS/Plan_to_research_solar_power_from_space)

<sup>5</sup> Mark R. Whittington, "China's space-based solar power project could be a clean energy game-changer," *The Hill*, 19 June 2022, <https://thehill.com/opinion/technology/3526022-chinas-space-based-solar-power-project-could-be-a-clean-energy-game-changer/>

# Reform/Elevate the Office of Commercial Space Transportation to become the Commercial Space Transportation Administration

***The Office of Commercial Space Transportation, created in 1983, should be elevated out of the FAA, updated to be a more organic and adaptive industry partner, and funded well enough to protect public safety while allowing industry to innovate, lowering costs and increasing safety, reliability, and capacity.***

## ***The History***

[51 U.S.C. 509](#) gives the Secretary of Transportation authority for licensing space launches and reentries, and launch/reentry sites (spaceports). In 1983 the Office of Commercial Space Transportation was created in DOT's Office of the Secretary. It stayed there until 1996 when it was 'demoted' to become a unit within the FAA (where it received the organizational code of "AST"). This administrative change was never codified into law.

FAA/AST's budget and staffing have grown by a factor of 10 since then but still have not kept pace with the industry's fast growth/innovation over the past 15 years. This is at least partly because the office is buried inside the much larger and older FAA.

The problem is that aviation and space transportation are very different industries. Aviation is over 120 years old and has been regulated since 1926 while the commercial space industry is barely 30. The first commercial human flights for revenue only took place in 2021, a full 17 years after the Ansari X-Prize was won and the legislation formally enabling commercial human spaceflight (the Commercial Space Launch Amendments Act of 2004) was enacted.

## ***Improving licensing performance***

While the Biden Administration's proposal for "Mission Authorization" splits authority between Transportation and Commerce, no introduced commercial space bills in the 118th Congress grant DOT any authority over novel commercial space activities. Essentially all of the U.S. commercial space industry supports giving new authority to Commerce so that DOT can focus on improving its vital mission of launch/reentry licensing.

FAA completed a rulemaking in 2020 (Part 450) to streamline its licensing rules but failed to adopt many of the changes proposed by an industry rulemaking committee. Most existing vehicles are still grandfathered under the old regulations, but they must transition to Part 450 by 2026. At least half of the new Part 450 licenses issued so far have been late (beyond the 180-day statutory deadline).

In 2023, FAA/AST announced they would have to begin to "queue" license applications, approving licenses on the FAA's schedule as limited resources/expertise becomes available to



analyze proposed launch and/or reentry operations. This inevitably slows innovation and international competitiveness for spacecraft as well as launch companies, with negative impacts on U.S. civil and national security space goals as well as economic growth.

In fact, NASA's Artemis program schedule is now dependent on FAA/AST's licensing speed because developmental flight tests of Starship have been slowed despite having no impact on public safety. And while DOD launches are not licensed by the FAA, the U.S. Space Force increasingly gains leverage from the thriving innovation and technological leadership of the U.S. commercial launch and spacecraft industries. Regulatory delays therefore negatively impact critical national security space dominance.

Fortunately, FAA/AST just announced a new rulemaking committee will be set in the Fall of 2024 to recommend fixes to Part 450 (three years after the industry requested this), but space rulemaking typically has to wait for "big FAA" legal and economic analysis human resources to proceed with regulatory reform efforts.

### ***It is time for a Commercial Space Transportation Agency***

The FAA clearly needs to focus on aviation passenger safety and the modernization of the U.S. air traffic control system. Space needs a different approach: protect public safety but allow the industry to become safer, more reliable, and more affordable at the speed of innovation, not government micromanagement, and that is best done in a more flexible organization separate from the FAA, which is responsible for regulating a common carrier transportation mode.

Space transportation needs its own agency within DOT to focus on promoting this vital new industry and Congress must address the chronic underfunding of DOT's core space mission without distracting it with other responsibilities until it has fixed launch and reentry licensing.

H.R. 6131 has a provision that allows the industry to self-fund additional licensing personnel, which will provide leverage to limited public resources. Extending the Learning Period will keep DOT focused on public safety, rather than preemptively regulating occupant safety and freezing the current level of technology in place. Finally, reportedly bipartisan legislation is being developed in the Senate which would create a separate Commercial Space Transportation Administration.

The Congress' primary goal should be to preserve public safety while allowing the fastest possible pace of innovation and growth in U.S. commercial space transportation capabilities. Reorganization without the right strategic focus, operational flexibility, and sufficient resources will only delay rather than enable critical reforms of federal space transportation oversight, and therefore postpone the fullest opening of the space frontier to U.S. economic development and human settlement. .