

ADDENDUM

Commercial Spaceflight Federation (CSF) Consensus Policy Priorities and Recommendations For A Commercial Space Bill

America's commercial spaceflight industry is integral to meeting the Nation's defense, foreign policy, scientific exploration, and economic policy objectives. Today, commercial companies launch all of the country's satellites to space, provide critical space-based services like data relay and Earth observation, and are working to establish a sustainable human presence off the planet. Since the passage of the U.S. Commercial Space Launch Competitiveness Act in 2015, the industry has grown tremendously, supporting thousands of domestic jobs and tens of billions of dollars of annual investment. At the same time, the industry continues to rapidly innovate to introduce new capabilities, operations, and enhancements to safety.

Accordingly, CSF has compiled consensus recommendations where additional policy guidance can help ensure continued industry success and safety, consistent with national needs. CSF has also developed draft legislative text for each of these priorities, which can be found in the attached addendum document.

TIME-SENSITIVE PRIORITIES

Human Spaceflight Regulations

Background: The Federal Aviation Administration (FAA) regulates commercial space operations to protect public safety and property. The Commercial Space Launch Amendments Act of 2005 established a regulatory learning period to enable human spaceflight operations to mature prior to FAA issuance of occupant safety regulations to ensure that the agency had adequate time to develop the expertise required for said regulations. This learning period is currently scheduled to expire on September 30, 2023. However, industry continues to develop and test new systems and has not yet achieved the frequent cadence of crewed flights anticipated at bill passage. As a result, it would be premature to introduce mandatory occupant safety regulations at that time, and doing so would impair safety and innovation, as well as set the U.S. back in its global competition with China.

Spaceflight participants operate under an informed consent and indemnification regime that acknowledges the inherent risk and complexity of spaceflight, consistent with many other activities in the United States. At the same time, the spaceflight industry, with active participation from the FAA and NASA, are making strong progress in developing consensus, performance-based safety standards that document industry and government-derived best practices for the benefit of the commercial space industry. Under the auspices of OMB A-119, these standards can be used when considering a potential regulatory framework at a later date once the industry has reached sufficient operational cadence and technological maturity. The current indemnification statute is set to expire on September 30, 2025. As Congress charts the future path for human spaceflight regulations, it is critical to include indemnification and waivers as authorized in 51 USC 50914 in the conversation to retain international competitiveness.

Proposed Solution: Utilize the standards development process, such as those currently being developed by standards development organizations, primarily ASTM, as one of the primary milestones by which to measure progress within the learning period. That process would create a deadline for developing an initial set of industry consensus standards that covers appropriate aspects of spaceflight participant safety due by October 2027. The road mapping for an initial set of human occupant safety standards should be done through a standards development organization and/or industry/government advisory group. Industry consensus standards would include FAA AST participation in the development and balloting process as well as the assessments of their completeness as a baseline framework for spaceflight participant safety. Involving FAA AST will aid in their learning and capability building process.

Then, starting in October of 2027, there would be three years when operators are encouraged, but not required, to follow the standards. Throughout the development and monitoring periods of this standards-based approach, FAA AST would engage with operators to collect feedback on the practical application of these standards to prepare for follow-on regulatory efforts. This will help the agency develop expertise. Following those three years, the learning period would sunset in 2031. Indemnification and waivers authorized in 51 USC 50914 should be extended to 2031 as part of this process.

Throughout this process, FAA AST would be tasked with periodic evaluations of the standards process, industry maturity, and readiness of the commercial space sector and the Department of Transportation to transition to a safety framework, as authorized in 51 USC 50905(c). In evaluating the standards process, the FAA should coordinate with industry to assess existing standards and their applications. This assessment should focus on: (1) the effectiveness and quality of the standards developed; (2) how well the standards developed achieve the FAA's interest in protecting public and human occupant safety based on lessons-learned during design, test, and operation of existing products; and (3) the applicability of the existing standard base to unique new technologies. This should include a recommendation of the areas where new standards are needed to cover the human occupant safety aspects of these new technologies to inform engagement with industry on future standards as well as recommendations on where updates to existing industry consensus standards may be appropriate. It should also include a recommendation of how the FAA should handle unique new technologies following the expiration of the learning period in 2031.

In evaluating the readiness of FAA AST to transition to a safety framework, the execution of their current responsibilities should be evaluated. A non-comprehensive list of items to review might include demonstrated ability within AST to successfully evaluate novel public safety frameworks and execute other responsibilities required by Part 450 regulations.

Additionally, Congress should explicitly grant the FAA authority to issue waivers and/or other special permissions to applicants utilizing unique new technology to allow the agency time to learn how to appropriately regulate human occupant safety for these vehicles.

Article VI Compliance

Background: The United States should stand up a clear mission authorization structure to comply with Outer Space Treaty Article VI obligations for “continuous supervision” for activities that fall outside of the existing regulatory approval structure (FAA – launch and reentry; FCC –

spectrum utilization; NOAA – remote sensing). Consistent with prior Congressional recommendations and Administration guidance, this authority would most appropriately reside with the Department of Commerce. Legislatively codifying in statute which agency will provide “mission authorization” for new and novel space activities will prevent confusion among applicants and federal agencies, and offer confidence to international partners that the United States takes seriously its treaty commitments. This regime should be light touch to satisfy treaty compliance requirements and provide interagency clarity, while facilitating innovation and American leadership in space.

Proposed Solution: The Office of Space Commerce (OSC) should be explicitly authorized to provide authorization and continuing supervision for U.S. private sector activities in space which present new and novel operations that are not currently licensed through the explicit statutory authority of the Federal Communications Commission, the Federal Aviation Administration, or the National Oceanic and Atmospheric Administration. Specifically, the OSC should be tasked with providing “mission authorization” for relevant commercial activities to create regulatory certainty for companies and reinforce the Office’s mission to “foster the conditions for the economic growth and technological advancement of the U.S. commercial space industry.” The mission authorization process should be simple, transparent, efficient, and based on self-certification provided by the entity seeking the mission authorization. The OSC would manage interagency input as appropriate to consider mission authorization applications. In doing so, the Office should be required to render a decision within 90 days of receipt of an application and grant approval unless there is a clear national security or international treaty obligation rationale for denial. If a classified national security issue is the rationale for denying the application, company officials with proper clearances should be briefed accordingly. To the extent such concerns are raised during interagency review, they should be communicated within three days to the applicant for an opportunity to cure. To ensure effective administration and implementation of these additional responsibilities, OSC should receive appropriate funding to accommodate additional staffing and resource needs.

Space Launch Infrastructure

Background: A space launch and reentry site infrastructure funding program, the Space Transportation Infrastructure Matching Grants Program (STIM), was first authorized in 1993 to promote economic growth and competitiveness. It was funded from 2010 to 2012, but has not received funding since then despite rapid acceleration in commercial space operations and launch cadence at both licensed multi-user and single-user launch sites. The growth of the U.S. space industry requires space launch infrastructure improvements and modernization in order to support civil, commercial, and national security launch needs. The authorized STIM program needs to be statutorily updated to position the nation’s spaceports to support these needs.

Proposed Solution: Update the authorized STIM grant program (51 USC 51101 et al) by (1) modifying the cost share percentages to harmonize them with other infrastructure and rural development programs, which require a 10% non-federal cost share; (2) updating the authorization of appropriations to \$60 million, which is more reflective of current spaceport infrastructure needs; and (3) require the FAA, in coordination with other relevant Federal agencies (e.g., NASA, DoD, DoC, etc.), to set broad objectives for such a grant program and establish specific criteria for evaluating and selecting proposed projects on their merit for advancing those objectives. This grant program should not be funded via user fees.

Regulatory Streamlining

Background: Regulations governing commercial space were developed in an era with limited industry activity and were prescriptive in nature, assuming space programs were static with little to no technology improvement during the program's lifetime. In many cases, these regulations require modernization and streamlining to adapt to ongoing technology development efforts and anticipated growth to maintain safety while reducing bureaucratic burden. For example, in some cases, interagency coordination is manually managed via email, rather than a digital clearinghouse. Additionally, the FAA process for approving launches remains onerous with arbitrary minimum review timelines, giving foreign state powers the competitive advantage in regards to economic and national security interests. Industry compliance with changes in FAA regulations that were enacted in Part 450 of Title 14 of the Code of Federal Regulations has proven significantly more burdensome than prior launch regulations, as was anticipated in industry comments during the FAA AST rulemaking process – see FAA Docket 2019-0229. To maintain America's competitive position, the FAA must be able to effectively and efficiently approve weekly and eventually daily launch and reentry operations by multiple companies in a manner that minimizes the burden on the commercial space industry and government resources. The regulatory revisions that were adopted in Part 450 warrant significant, timely revision to mitigate the immediate negative impacts that industry is facing today. Such updates would be complemented with efforts to streamline and automate the FAA's application review and approval process. Other areas in which the government updated regulatory frameworks, including for commercial remote sensing, often result in a burdensome and slow regulatory process without the flexibility that was promised. This situation forces both the Government and commercial companies to invest considerably more resources in complying with legacy regulations than should be necessary, creates risk of unsustainability as the industry grows, and puts U.S. industry at a competitive disadvantage internationally.

Proposed Solution: Direct FAA AST to review the impacts of Part 450 implementation, including the implementation of the incremental review process, on the commercial spaceflight industry and develop solutions to reduce these regulatory self-induced delays and inefficiencies. Require that FAA AST, consistent with its regulatory goals to facilitate the development of innovative systems and processes, accept reasonable safety rationales proposed by applicants, including new approaches. Require the Administrator to adjudicate determinations and revisions as part of the incremental review process in a timely manner to reduce overall approval timelines. Direct FAA AST to eliminate and streamline duplicative review process(es) with other agencies, particularly on federal ranges, to limit inefficient bureaucratic requirements for applicants, while ensuring transparency and timely feedback on applications. Require FAA AST to assign a Principal Inspector to each applicant company to assist in the review and approval of each license application. Direct FAA AST to develop a report providing objective solutions improving the overall regulatory process' efficiency and effectiveness without solely relying on additional billets or funding.

Direct NOAA to continue to expedite commercial remote sensing licensing applications and provide greater transparency and engagement with applicants throughout the applicant process. Commercial Remote Sensing Regulatory Affairs (CRSRA) should create a hard limit for temporary license conditions placed on Tier 3 systems (i.e. a date or condition certain after which such conditions may not be renewed). CRSRA should also regularly reevaluate the tiering of satellite systems, and in order to maintain U.S. leadership, shall define a timeline where a system is no longer considered "new and novel" and upon that timeframe, immediately reclassify the

system to a lower tier. Clarify that non-Earth imaging is outside the current regulatory authority of CRSRA.

Direct the Department of Commerce and the Department of State to conduct a review of the relevant export control regulations for commercial space activities in collaboration with industry and within 180 days of the enactment of this bill, provide the committee with a report describing reforms that will be made. The policy objectives of the analysis and recommendations in the report shall include 1) promoting U.S. commercial competitiveness internationally and 2) ensuring U.S. companies are subject to export control regulations that are on a level regulatory playing field in the international marketplace. The review should include an examination of export control relief and benefits enjoyed by the International Space Station and how those provisions should be applied to commercial space stations. Finally, the review and recommendations for reform should include establishing firm deadlines for the approval of export-control licenses, including Technical Assistance Agreements. Direct the Office of Space Commerce to establish a Federal Advisory Committee to provide a formal, robust, and regular means of obtaining industry input on a variety of critical issues such as export controls, continuing supervision of innovative commercial space activities, and space traffic management.

PRIORITIES

Space Situational Awareness and Space Traffic Coordination

Background: Space situational awareness (SSA) and space traffic coordination (STC) are critical to continued safe and sustainable access to low-Earth orbit (LEO) and space writ large. Current government SSA services are not keeping pace with the accuracy levels industry needs, which is why Space Policy Directive-3 (SPD-3) directed a transition of civil SSA services to a civil agency. Congress directed the Department of Commerce (DOC) to begin taking this responsibility on, consistent with the recommendations of the National Academies of Public Administration's recommendation, in the fiscal year 2020 appropriations bill. The transition has begun, and DOC should continue to receive the direction and resources that will allow it to successfully take on this mission.

Proposed Solution: Authorize the Office of Space Commerce (OSC) to conduct SSA/STC activities, as per SPD-3. Direct OSC to make available basic-level SSA data, analytics, information, and services for public use with no charge to the end user and provided to the public through an easily accessible and functional web-based interface. These basic-level services should include accurate and timely satellite location tracking data, conjunction and collision avoidance calculations, and other services. Direct the USG and OSC to avoid competing with the domestic commercial SSA services sector, particularly with regard to the provision of advanced services.

Direct OSC maintain a complete public catalogue of SSA data and information and maximize the use of satellite owner/operator data, USG data, and the usage of commercial services, data, analytics, information, services, and platforms. Require that OSC prioritize purchasing data, analytics, information, and services from commercial SSA providers and ensure that any licensing agreements enables private U.S. firms to continue market growth and protects proprietary commercial systems and data. Direct OSC to facilitate the development and adoption

of voluntary industry consensus standards to ensure consistency and standardization in data provided in collaboration with satellite owners and operators, commercial service providers, the academic community, and non-profits in establishing data standardization and best practices. Direct OSC to collaborate with USG and foreign government operators, including China, to encourage participation in data sharing regimes with respect to their assets in orbit. Provide Other Transaction Authority to OSC to allow for rapid research, prototyping, and services.

FAA AST Authorization for Increased Appropriations

Background: The FAA Office of Commercial Space Transportation (AST) is a critical regulatory agency and has a need for increased resources to develop new tools to streamline activities and to rapidly and efficiently process permitting and licensing due to the continued growth of the commercial space industry. Launch cadence alone grew 390% from 2016 to 2021 while FAA AST's budget has only grown 64%. It is critical to ensure that FAA AST is able to keep up with industry, as commercial space companies are increasingly launching civil and national security missions for the government, as well as developing new services to improve life here on Earth.

Proposed Solution: Authorize an increase in appropriations for AST that matches CSF's FY23 budget request of \$52.7 million. This funding should be focused on FAA AST's existing responsibilities, including streamlining and appropriately staffing launch and reentry licensing activities.

FAA's Role in Commercial Space Accident Investigation

Background: As part of its role as the Federal agency responsible for regulating commercial space launch to ensure public safety, FAA maintains authority to investigate commercial space accidents and mishaps, as authorized by Congress in 51 USC 50917. In exercising this authority, FAA involves other agencies in its investigation processes as appropriate. This process has served public safety, the government, and the commercial space industry well. There are clear, transparent steps outlined in statute, the Code of Federal Regulations, and in memoranda of understanding between agencies. In carrying out this process, the FAA and other relevant agencies appropriately focus on protecting public safety instead of attempting to regulate mission success for a nascent industry that continues to innovate and iterate.

Proposed Solution: The FAA should be commended for successfully discharging its authorities to fulfill its statutory responsibilities protecting public safety in conjunction with other agencies, including the National Transportation Safety Board. The legislation should reaffirm the effectiveness of the current accident and mishap investigation regime, including its leveraging of federal investigative partners through one or more memoranda of understanding, and encourage the agency to reasonably update its memoranda of understanding with other agencies as appropriate.

Bolstering the Utilization of ISAM

Background: The White House Office of Science Technology Policy (OSTP) recently issued an In-Space Servicing, Assembly, and Manufacturing (ISAM) National Strategy, recognizing the critical need for the U.S. to remain competitive in this area to support science, the economy, and national security. As this document is implemented, it will be critical to ensure that ISAM adoption is encouraged throughout the federal government. Presently, federal procurement

policies discourage the utilization of innovative, low technology readiness level technologies like ISAM, which is concerning given its strategic significance.

Proposed Solution: Sense of Congress on the importance of ISAM to the nation; supporting OSTP's efforts on their ISAM strategy and implementation plan; encouraging the federal government to pay special attention to any issues or difficulties ISAM providers face with procurement policies; and encouraging NASA and the USSF to develop and release a holistic ISAM vision that lists current and tracked emerging space capabilities along with a plan of how NASA and the USSF plan to utilize those capabilities in carrying out their respective missions.

TNT Equivalency for Methane/Liquid Oxygen (LOX)

Background: The U.S. government currently utilizes a 100% TNT equivalency for calculating hazard areas for test and launch operations using LOX/LNG (methalox). The USG's current approach to characterizing the explosive yield was not designed based on launch vehicle designs or test and launch operations. The result will not be accurate for test/launch operations and is expected to take no less than three years. Further, the testing plans led by the USG are expected to cost the U.S. taxpayer no less than \$80 million. Existing industry data, risk-based characterization capabilities and existing vehicle designs and operations should inform the Government's approach.

Proposed Solution: The TNT equivalency for the explosive siting and hazardous operations for test and operations of space launch vehicles and their components using liquid natural gas as propellant occurring on any U.S. government owned or licensed facility should be not be greater than 25% pending completion of the LOX/Methane assessment process and certification by DoD, NASA, and DOT to Congress. Additionally, DoD, NASA, and DOT should establish a process through which scientifically-valid TNT equivalency determinations can be assessed for launch vehicles while in flight.

Protecting and Expanding Commercial Remote Sensing Data Buys

Background: The last decade has seen rapid growth in the number of established companies building, launching, and operating Earth observing satellites that provide data and analytical tools to an expanding base of public and private sector users. After an initial pilot study and evaluation of commercial data, NASA established the Commercial SmallSat Data Acquisition (CSDA) Program and contracted with companies to provide NASA-funded researchers with scientific access to their Earth observation data. NASA has continued to expand participation in the program by on-ramping additional companies and also expanding access of some commercial imagery to federal civilian scientists and federally funded scientists at U.S. universities and federal laboratories.

Proposed Solution: Congress should codify NASA's CSDA program into statute. Doing so will recognize that commercial remote sensing companies have become a permanent fixture within NASA's Earth Science portfolio. It also acknowledges NASA's intention to grow the program through continuous evaluation and onboarding of new vendors, and the budget resources devoted to the CSDA Program (\$25 million in FY 2019 to \$55 million in FY 2023). Lastly, existing statute granting NASA's authority to acquire Earth sensing data dates back to 1998 (Pub. L. 105-303, title I, § 107a; 51 U.S. Code § 50115a) and has not been updated in the 23 years since.

These factors – plus the recently increased and growing stakeholder base – necessitate the protective measures afforded by updated and formalized authorization of the CSDA program.

Promoting Commercial SmallSat Usage and Proliferated Commercial Satellite Constellation Usage

Background: Commercial small satellites and proliferated satellite constellations are increasingly capable of conducting high-priority government missions with higher performance and resilience at a lower cost than legacy programs. Leadership from a number of U.S. government agencies and key stakeholders, such as the National Academies of Sciences, Engineering, and Medicine, recognize the utility of leveraging small satellites and constellations, but that recognition has not effectively resulted in increased opportunities for implementing new missions. A lack of dedicated funding in key areas continues to limit opportunities for commercial companies to participate as budget constraints naturally favor legacy platforms, which may be costing the U.S. government more money in the long run.

Proposed Solution: Direct the GAO to conduct a report on the best use cases for commercial small satellites and proliferated commercial satellite constellations to inform future USG procurement activities.

FAA's Role in Commercial Space Nuclear Launch Licensing

Background: Key licensing hurdles exist to deploying commercial space nuclear systems despite significant progress in establishing regulatory pathways for the commercial launch and use of space nuclear systems. To ensure that the near-term deployment of new commercial space nuclear systems is not withheld by launch licensing challenges, the FAA and other key parties must execute the direction given under NSPM-20 and SPD-6. While agency-level authorities and responsibilities have been assigned, no official approval process for commercial nuclear launches exists. A sufficiently detailed approval process for commercial nuclear launches comparable in maturity to existing launch approval processes must be produced and published. There must also be adequate staffing with sufficient expertise to respond to and support requests for licensure and to coordinate the necessary interagency engagements.

Proposed Solution: Codify FAA's role, as defined in SPD-6 and NSPM-20, within the commercial space nuclear launch licensing process and direct FAA AST to prioritize developing the capabilities necessary to process commercial nuclear launch license requests in a timely fashion. Direct FAA to formally establish and publish a sufficiently detailed commercial space nuclear launch licensing process.