WRITTEN TESTIMONY OF

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ON

GOVERNMENT PROMOTION OF SAFETY AND INNOVATION IN THE NEW SPACE ECONOMY

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Chairs Cantwell and Sinema, Ranking Members Cruz and Schmitt, and Members of the Committee, thank you for the opportunity to testify regarding the Office of Space Commerce's (OSC) promotion of safety and innovation in the burgeoning space economy. My office, along with our colleagues at the National Oceanic and Atmospheric Administration (NOAA) and the Department of Commerce (DOC), appreciates the continued and consistent support, advocacy, and interest of Congress in these important issues.

For over 30 years, the Office of Space Commerce has worked to support and enable U.S. leadership in the commercial space economy. As the principal unit for space commerce policy activities within the Department of Commerce, our mission is to foster the conditions necessary for the economic growth and technological advancement of this industry. We are advocates for industry within the government; we work closely with the space sector to make sure we understand their needs and that policymaking takes those needs into account. Another key element of our work is to develop the next generation U.S. civil space situational awareness and space traffic coordination system called the Traffic Coordination System for Space (TraCSS).

Our office is acutely aware of the importance of our nation's space industry - and the remarkable workforce which constitutes it. The United States' commercial space sector is a fundamental workhorse of our economy and underpins our nation's security, prosperity, and leadership. It provides the services and ever-expanding connectivity which define our daily lives. American space companies provide the kind of industrial innovation, entrepreneurial ingenuity, and economic competitiveness that will secure our global leadership far into the twenty-first century. The Office of Space Commerce's recent reorganization and elevation within NOAA reflects the priority that Secretary Raimondo, Deputy Secretary Graves and Administrator Spinrad put on this important business sector.

In addition to its role as advocate for the space industry, OSC is also a regulator. OSC's Commercial Remote Sensing Regulatory Affairs (CRSRA) Division provides a clear example of how the Department would intend to implement the additional authorities requested in our legislative proposal. CRSRA has developed a regulatory approach that is easily understandable, provides licensing responses rapidly – usually several weeks – and yet is responsive to national security and other critical U.S. interests. In addition to the support we have received from U.S. industry in response to our regulatory implementation, we are also seeing many foreign firms applying for U.S. remote sensing licenses as the regulatory "flag of choice."

According to the DOC's Bureau of Economic Analysis, the U.S.' space economy in 2021 accounted for more than $211 billion in gross output - representing 0.6 percent of our national GDP - and employed 360,000 Americans in nearly every state in the country. The government's continued facilitation of American space leadership necessitates a regulatory system that can support the dynamic and evolving commercial sector. The OSC recognizes that the U.S. space industry faces competition from companies and regulatory regimes abroad. Just as our companies constantly innovate, our government must also adapt to new circumstances.

Enabling Innovation - the "Authorization & Continuing Supervision" of Non-Traditional Space Activities

The U.S. space regulatory system is decades old and its responsibilities shared across multiple agencies. It is not sufficient at a time when a whole range of new space technologies and platforms are being developed and flown, from robotic in-space satellite servicing to commercial space stations. As more novel space activities are tested, flown, and operated, uncertainty about how such activities will be regulated in the future could affect technical planning, impact business cases, erode investor confidence, and undermine space safety. The U.S. must develop a way to authorize and supervise those commercial activities which do not directly fit within our legacy regulatory system.

This is why the Office of Space Commerce and the Department of Commerce support the legislative proposal recently released by the White House, in coordination with the Department of Transportation and NASA. We are confident that this proposal would create a regulatory system that protects vital U.S. interests, responds to the needs of industry, ensures continued compliance with international obligations, and maintains the U.S. as the "flag of choice" for commercial space.

This proposal would establish the framework for a new, modern, and flexible regulatory system, building on the strengths of our office and those of our interagency colleagues in DOT and NASA. As we move forward, we are committed to conducting any rulemaking transparently and with full engagement of stakeholders, including industry. The DOC is in an ideal position to address many of the new and emerging commercial space activities. Our recent regulatory streamlining for remote sensing systems demonstrates our ability to balance national security while promoting commercial innovation. As a result of this streamlining, we have reduced our average license processing time from 48 days in 2020 to just 14 days today. We also recently relieved 11 of our licensees of 69 operating restrictions, allowing these licensees to offer their full imaging capabilities to the world.

The Administration's proposal does not establish new regulations; rather it is designed to provide future flexibility, understanding that we may not be able to fully envision years into the future

types of novel space activities that will need authorization. As we move forward, my office is committed to transparent rulemaking processes that provide for the engagement of stakeholders, including industry. These rules will build on best practices and knowledge developed by industry, will adhere to strict and quick timelines and, where applicable, will be based on a presumption of approval. Likewise, OSC will continue to regularly engage with industry, including through our Federal Advisory Committee to ensure that industry maintains a meaningful and trusted "voice at the table."

Ensuring Space Safety & Sustainability - the "Traffic Coordination System for Space"

A robust civil space situational awareness (SSA) capability is essential for the safety and sustainability of Earth's orbit - and the innovation and vitality of our space sector. Commercial space companies have launched thousands of new satellites over the past few years and plan to launch tens of thousands more. Orbits are becoming increasingly congested, putting commercial, civil, and national security space missions at risk. There is a growing need to better identify and track objects in space, and to deconflict - and eventually coordinate - orbital traffic. "Space Policy Directive-3," assigns the DOC responsibility for providing basic SSA services to commercial space operators - offloading those responsibilities from the Department of Defense (DOD) so that DOD can focus on its "protect and defend" mission.

We recognize the urgency of fulfilling this mission to prevent the next catastrophic collision in space. In partnership with industry, government, and academia, the OSC is making great strides in implementing an operational public SSA and space traffic coordination (STC) services system called the "Traffic Coordination System for Space" (TraCSS).

TraCSS will provide basic satellite tracking data and associated products and services, free of direct user fees, to support commercial and civil space satellite owner/operators, enabling commercial growth while keeping space operations safe and sustainable. We are developing TraCSS to be a modern IT system leveraging the best-of-breed software, data, and analytics from the commercial sector. This will not only keep us at the edge of innovation but also catalyze the growth of new commercial markets.

We are pursuing a phased development approach for TraCSS to build up capabilities and ensure a smooth offloading of SSA and STC responsibilities from the DOD. TraCSS will ingest unclassified data from DOD and integrate commercial SSA data and services. Over time and with each phase, more commercial data and commercial SSA services will be integrated as core capabilities. This public-private collaboration will continue to evolve through ongoing research, integration, and testing to advance capabilities for civil SSA and STC. These combined efforts are improving SSA data interoperability and increasing SSA data sharing, and coordination across the U.S. Government is ensuring that there is no disruption in basic SSA safety services.

Although we have made significant progress on TraCSS with FY23 funding, the Administration's legislative proposal would provide the Commerce Department with authorities to fully implement the TraCSS program's public-private approach and allow it to successfully scale. The proposal supports stakeholder and operator coordination and participation in TraCSS, encouraging the information sharing needed to effectively conduct space traffic coordination and provide SSA services that have meaningful utility for space safety.

I'd like to highlight some of the many milestones and achievements our office has made with regard to space situational awareness over the past year:

- **Collaborating and coordinating with the Department of Defense:** DOD and OSC engage in weekly working group calls and semi-annual in-person workshops on the transition of SSA responsibility. As part of a pilot project to assess spaceflight safety in the medium Earth orbit (MEO) and geostationary Earth orbit (GEO), the OSC partnered with the DOD through 2023 to award seven contracts to U.S. commercial space firms for space situational awareness data analysis for a subset of spacecraft in the MEO/GEO orbital regime. The pilot project demonstrated that the U.S. Government needs to clearly define program goals, metrics and contractual deliverables to assess commercial performance and to take full advantage of commercial capabilities. It also helped identify clear areas for government-funded "commercial pathfinder" projects with the private sector in Fiscal Years 2024 and 2025 to mature industry capability tailored specifically for OSC TraCSS service needs. These pathfinder projects will directly feed into procuring commercial SSA data and services for sustained TraCSS operations.

- **Defining the scope of basic Space Traffic Coordination services:** On January 26, 2023, the OSC issued a "Basic SSA Services" Request for Information (RFI) seeking input and feedback on the planned scope of basic safety services that the TraCSS program will provide. This input informed OSC's development of capabilities to share basic SSA data, information and services to space operators and the public. The scope of basic safety services will evolve over time to meet the safety needs of the growing commercial space industry, while also ensuring that TraCSS fosters, rather than disrupts, the marketplace for advanced commercial SSA services.

- **Progressing toward deployment of TraCSS Phase 1.0 initial capabilities:** The OSC, working closely with its partners at DoD and NASA, continued to make good progress in our architecture and procurement strategy with the objective of deploying Phase 1.0 initial capabilities in the fourth quarter of Fiscal Year 2024. The OSC developed a procurement strategy that has three distinct components: TraCSS-OASIS - a data lake repository for storing, sharing, and disseminating government, international, and commercial SSA data; TraCSS-SKYLINE - the SSA application layer providing close approach and potential collision alerts, warnings, and other safety services; and TraCSS-HORIZON - a development & testing environment and modeling, simulation, & research environment to advance the state of the art in SSA. In 2023, OSC awarded a cloud utility contract for TraCSS and is progressing on major procurements. We have also defined planning for procurement of a minimum government infrastructure for TraCSS - involving the Cloud Utility, System Integration/Cloud Management, and User Interface.

- **Engaging commercial providers on Space Traffic Coordination services:** The OSC hosted two workshops – a virtual workshop on July 12, 2023 and an in-person workshop on July 19, 2023 – for commercial Space Situational Awareness data/products and service providers to discuss TraCSS. The OSC hosted these workshops as part of a series of continuing engagements with the user community to discuss the future of TraCSS. On April 12, 2023, the OSC hosted a live video presentation about TraCSS, where the OSC

shared its findings from the Basic SSA Services RFI. On July 28, 2023, the OSC released a second video presentation updating the progress of TraCSS, discussing related interagency cooperation between the DOC, DOD, and NASA; the primary objectives for TraCSS; the three components of TraCSS (OASIS, SKYLINE, and HORIZON), what they handle, and how they work together; the roll-out of capabilities across Phase 1 of TraCSS; the engagement approach for integration of commercial SSA data and services in Phase 1; and expectations for future phases. At the recent AMOS (Advanced Maui Optical and Space Surveillance Technologies) Conference, the OSC held multiple engagements with commercial SSA providers on TraCSS including roundtables, public panel discussions, and bilateral meetings.

- **Developing SSA and STC standards and practices:** The OSC and the National Institute of Standards and Technology (NIST) have continued to coordinate and engage to share input from the U.S. Government and commercial industry to develop internationally accepted common standards, best practices, and guidelines for space situational awareness and space traffic coordination. In the next month, OSC is planning to host a virtual listening session on specific technical standards for data output from TraCSS. OSC is also a member of the U.S. Technical Advisory Committee (U.S. TAG) for the International Organization for Standardization (ISO) Technical Committee, Aircraft and Space Vehicle, Subcommittee 14, Space Systems and Operations to support the development of consensus-based technical standards for commercial and civil space sector use.

- **Mitigating the impact of orbital debris:** The OSC participated regularly in the Orbital Debris R&D Interagency Working Group led by the White House Office of Science and Technology Policy. The Office supported the development of the July 2022 National Orbital Debris Mitigation Plan, a national effort to meet the U.S.' space sustainability priorities to mitigate, track, and remediate debris, and continued participation in the Interagency Working Group to deliver implementation updates. The implementation plan accomplishes objectives outlined in the U.S. Space Priorities Framework and builds upon the National Orbital Debris Research and Development Plan published in 2021 that OSC worked on as well.

- **Advancing the state of the art in SSA:** OSC is partnering with NASA on the R&D component of the Traffic Coordination System for Space (TraCSS-HORIZON). NASA will be managing a TraCSS-HORIZON partition consisting of a modeling, simulation, and research environment focused on basic R&D, the academic community, and fostering innovative SSA and STC services to advance the state of the art in SSA. This includes addressing scientific questions on how the space environment impacts SSA, space weather, and orbital debris - and crucially for collision avoidance, how this environment can be forecast. Additionally from late 2022 onwards, through a funded project with MIT Lincoln Labs, OSC has provided independent evaluation and feedback to commercial SSA providers to help validate and verify their commercial products.

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information-sharing needed to effectively conduct space traffic coordination and provide SSA services that have meaningful utility for space safety.

The Office of Space Commerce's Vision for Globally Coordinated SSA/STC

The White House's proposal also provides Commerce with much-needed guidance and authority to engage in international dialogue and collaboration on SSA and STC. This global dialogue is critical to sustaining American leadership in SSA and supporting commercial opportunities for American SSA data providers. It will also require the OSC to open lines of communication with nations operating SSA systems, including those that have not traditionally coordinated their efforts with the U.S.

To that end, OSC, working in partnership with the Department of State, is engaging with allies and partners to frame options related to global data standardization and best practices for information sharing. OSC has identified that the Consultative Committee on Space Data Systems (CCSDS) standards appear to be the most widely adopted in the SSA community today; listening sessions with spacecraft operators and commercial SSA providers suggest that they are well known and frequently used. CCSDS standards - as well as derived and complementary standards produced by the International Organization for Standardization - are developed through an international consultative process, are openly available free of charge to all users, and are directly applicable to the types of SSA data and information that TraCSS will provide. OSC is exploring whether adjustments to the standards would be necessary to fully meet operational needs.

Conclusion

In summary, the Office of Space Commerce is expanding its activities in support of the U.S. commercial space industry, to match the speed and scope of the industry's growth. This legislative proposal would give us the tools to effectively carry out these activities. We fully endorse this proposal and look forward to working with you and your staff, to build on our efforts with DOT, NASA, and DOD, to ensure a safe and sustainable space environment for all humanity. This is critical not just to America's commercial interests, but also our national security and civilian missions.

Thank you for the opportunity to testify today, and I look forward to taking your questions.