

REMAKING U.S. REGULATION OF SPACE COMMERCE

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Issue Brief

The U.S. administration is planning to significantly enlarge the space portfolio of the U.S. Department of Commerce to help expand the nation's commercial space sector and accelerate its evolution. The reinvigoration of what traditionally has been a small office can start with providing adequate resources to carry out a space commerce strategic plan that has been in place for more than a decade. Additionally, the office is expected to regulate and facilitate an array of space activities that are emerging in the private sector. As a result, its range of responsibilities will include far more than just regulatory reform and space traffic management, the two topics that dominate current planning.

What's Old Is New Again

The latest strategic plan of the U.S. Department of Commerce (DOC) identifies space commerce as one of the important components of American economic leadership.¹ The prominent placement of space commerce as Strategic Objective 1.1, according to insiders, was done purposefully by Commerce Secretary Wilbur Ross. The strategic plan envisions DOC as “the lead federal agency for the advancement of commercial space activities” that will act “as an industry advocate within government, promoting commercial space opportunities.” The intent is to ensure that the United States “is the world leader in space commerce” and will “remain the preferred destination for commercial space business activity.” This strategy is reinforced by a subsequent presidential directive² and a reorganization proposal submitted to Congress by Secretary Ross.^a

Although the level of attention is new, the department has been involved in commercial space activities through its Office of Space Commerce (OSC) since the late 1980s.^b The expanded portfolio may seem overly ambitious given that OSC in recent years has had a very small staff and has been without a full-time director for a decade. But the basic requirements have been in place at least since OSC issued its strategic plan in 2007.³ Some of the elements of that plan still resonate today:

- ♦ **Vision:** A robust and responsive U.S. industry that is the world leader in space commerce.
- ♦ **Mission statement:** Foster the conditions for the economic growth and technological advancement of the U.S. commercial space industry.

^a The Ross proposal would create a Space Policy Advancing Commercial Enterprise (SPACE) Administration reporting directly to the Secretary. It would include OSC, the Office of Commercial Remote Sensing and Regulatory Affairs, and representatives from the Bureau of Industry and Security (BIS), the International Trade Administration (ITA), the National Institute of Standards and Technology (NIST), the National Oceanographic and Atmospheric Administration (NOAA), and the National Telecommunications and Information Administration (NTIA). Marcia Smith, “Ross to Create Department of Commerce SPACE Administration,” *SpacePolicyOnline*, May 28, 2018 (<https://spacepolicyonline.com/news/ross-to-create-department-of-commerce-space-administration/>).

^b From 1988-1996, OSC was the “Office of Space Commerce” within the Office of the Secretary of Commerce. From 1996-2005, it was the “Office of Air and Space Commercialization” and then the “Office of Space Commercialization” within the department’s Technology Administration. It retained the latter name from 2005-2018 as a unit of NOAA’s National Environmental Satellite Data and Information Service (NESDIS) (<http://www.space.commerce.gov/law/office-of-space-commercialization/>).

◆ **Functions:**

- ▶ Seek the removal of legal, policy, and institutional impediments to space commerce.
- ▶ Assist commercial space companies in their efforts to do business with the U.S. government and act as industry’s advocate within the Executive Branch.
- ▶ Increase U.S. government use of commercial space goods and services.
- ▶ Reduce U.S. government competition with industry.
- ▶ Promote growth in the export of space-related goods and services.

From this sample of the functions envisioned for OSC in 2007, we can see that today’s focus on regulatory reform is nothing new, nor is the desire to increase government use of commercial systems, to grow the export market or to maintain world leadership in space commerce. But OSC was not given sufficient personnel, funding, or priority to meet the demands of its strategic plan. Tasks outlined in the plan—such as collection and analysis of industry and market data, sponsorship of workshops and seminars, and publication of a variety of reports—were not executed or were undertaken at minimal levels. If the administration and Congress remedy the resource problem, the office will have the opportunity to accomplish much of what is on today’s agenda by following and expanding on an existing strategic plan.

New Challenges

Although the 2007 OSC strategic plan provides a fitting baseline for the expanded organization, there is much that needs to be added. As indicated above, the high priority of regulatory reform is already represented in the plan but another high-visibility concern on the administration’s agenda—space traffic management—is not. Nor are a host of other topics that will become DOC’s responsibility in the years ahead.

The administration’s space commerce reorganization, as envisioned so far, keeps the U.S. Department of Transportation in charge of licensing and regulation of

commercial launch and reentry, and the Federal Communications Commission retains its responsibility for regulating electromagnetic spectrum use. Everything else in the commercial development of space—a very broad and growing field—would be handled by a “one-stop shop” at DOC.⁴

Some duties of the reinvigorated office are obvious. It will absorb the commercial remote sensing licensing and regulation functions from the National Oceanic and Atmospheric Administration (NOAA). It will provide services in space surveillance and, eventually, space traffic management (STM), as announced by Vice President Mike Pence and Secretary Ross in April 2018⁵ and directed by President Trump two months later.⁶ For this function, the department will be climbing a steep learning curve, making it dependent for some time on other federal agencies and contractors with relevant expertise. STM is likely to command much of the spotlight due to its importance and urgency in an era of growing space activity and concerns about orbital debris. But it is just one piece of a portfolio that could expand dramatically in the not-too-distant future.

As pointed out in another paper in this series,⁷ it is important to recognize the breadth and diversity of the activities—technical, legal, and regulatory—required to establish a space infrastructure. The full extent of what it will take to provide the backbone of a sustainable space economy can only be estimated at this stage. The discussion below briefly highlights key areas that will require the attention of DOC—in some cases very soon—if the current one-stop-shop plan is established and maintained.

Inter-orbital transportation is not addressed in the statutory authority granted to the U.S. Department of Transportation, which is responsible only for launch and reentry. As a result, spaceflight is the only form of transportation in which the beginning and the end are covered by regulations and behavioral norms, but not the journey in between. As Earth orbital space becomes more congested, and increased use of maneuverable assets makes space tracking less predictable, DOC will need to exercise its leadership of civilian STM to establish order in coordination with international counterparts. The near-term plans of multiple non-government and non-U.S. entities to initiate **on-orbit servicing** will soon make this a

pressing issue. Fortunately, industry and government coalitions already have formed to begin developing consensus standards.⁸

Private-sector space stations are expected to pick up where the International Space Station leaves off after 2025. But some ventures may appear sooner, offering habitable volume on orbit for research and other purposes.^c The operation of such stations will have implications for both space traffic and human safety. Government-sanctioned regulations or standards may prove essential to gaining customer and investor confidence and obtaining insurance coverage. In addition to safe orbital operations, other concerns include the onboard environment (e.g., air quality, pressure, and temperature) and emergency procedures (e.g., evacuation plans and standardization of airlocks for rescue).

The **exploitation of extraterrestrial resources and locations** entails multiple unsettled issues that will compel DOC to work closely with the U.S. Department of State and NASA. The placement of private installations on celestial bodies and the extraction of material resources for profit prompt questions about property rights and perceived claims of national sovereignty in violation of international law. Additionally, these circumstances elicit concerns about planetary protection (i.e., forward and backward contamination) as non-government entities begin sending missions to solar system bodies. Should they follow protocols similar to those used by government science missions? Lunar and asteroid missions may be of less concern due to their low probability of harboring life, but private-sector missions to Mars already have been proposed, and other solar system locations may follow.

A variety of **utilities in cislunar space** may emerge to serve multiple missions and customers. Possibilities include storage depots for liquid fuels; solar energy collection and distribution systems, expansion of communications and navigation systems to better serve all of cislunar space; and realtime detection and reporting systems for space weather, especially to protect inhabited facilities from hazards such as solar flares.

DOC can expect to be involved, and often in the lead on behalf of the U.S. government, in the facilitation, promotion, regulation, and licensing of these and other space-related developments. In many cases, the actions taken will be breaking new ground and setting precedents. DOC will need to call upon expertise in numerous disciplines that currently does not exist within the agency.

Execution of an implementation plan for the nation's expanded space commerce strategy will require a time frame measured in years, not months. Although today's perspective may be that regulatory reform is the first priority on DOC's space agenda, in the long run it is a small initial effort in a much grander enterprise.

References

- ¹ "U.S. Department of Commerce Strategic Plan, 2018-2022: Helping the Economy Grow," p. 6, https://www.commerce.gov/sites/commerce.gov/files/us_department_of_commerce_2018-2022_strategic_plan.pdf. The relevant language is presented in Appendix 1 of this paper.
- ² Trump, D. J., "Space Policy Directive-2: Streamlining Regulations on Commercial Use of Space," May 24, 2018, <https://www.whitehouse.gov/presidential-actions/space-policy-directive-2-streamlining-regulations-commercial-use-space/>.
- ³ "U.S. Leadership in Space Commerce: Office of Space Commercialization Strategic Plan," March 2007, <http://www.space.commerce.gov/wp-content/uploads/NOAA-2007-Space-Commercialization-Strategic-Plan-6-pages.pdf>. The complete text of the document is presented in Appendix 2 of this paper.
- ⁴ Smith, M., "Ross to Create Department of Commerce SPACE Administration," SpacePolicyOnline, May 28, 2018, <https://spacepolicyonline.com/news/ross-to-create-department-of-commerce-space-administration/>.
- ⁵ Department of Commerce, Office of Space Commerce, "Vice President, Secretary Ross Announce New Space Traffic Management Policy," April 23, 2018, <http://www.space.commerce.gov/vice-president-secretary-ross-announce-new-space-traffic-management-policy/>.
- ⁶ Trump, D. J., "Space Policy Directive-3: National Space Traffic Management Policy," June 18, 2018, <https://www.whitehouse.gov/presidential-actions/space->

^c Bigelow Aerospace, which has an inflatable module attached to the International Space Station, is a prominent example of a potentially near-term commercial space station (<http://www.bigelowaerospace.com/>).

policy-directive-3-national-space-traffic-management-policy/.

- ⁷ Vedda, J. A., “Cislunar Development: What to Build – and Why,” Aerospace Corporation, April 2018, <http://aerospace.wpengine.netdna-cdn.com/wp-content/uploads/2018/04/CislunarDevelopment.pdf>.
- ⁸ Reesman, R., and A. Rogers, “Getting in Your Space: Learning from Past Rendezvous and Proximity Operations,” Aerospace Corporation, May 2018, <http://aerospace.wpengine.netdna-cdn.com/wp-content/uploads/2018/05/GettingInYourSpace.pdf>.

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Appendix 1
Space commerce excerpt from
U.S. Department of Commerce Strategic Plan,
2018-2022: Helping the Economy Grow
March 2018

https://www.commerce.gov/sites/commerce.gov/files/us_department_of_commerce_2018-2022_strategic_plan.pdf

Strategic Objective 1.1 – Expand Commercial Space Activities

The scientific discoveries resulting from space exploration have created new industries and technologies that improve our lives, our economy, and our national security. Technological advancement of commercial space activities has created profitable opportunities. However, current government regulations are an impediment to the commercial space sector. We will advocate for the industry to ensure the United States remains the leader in space commerce.

Strategies

- **Expand the Office of Space Commerce.** The Office of Space Commerce is the lead federal agency for the advancement of commercial space activities. It acts as an industry advocate within government, promoting commercial space opportunities, and coordinating space commerce policy issues within the Department while maintaining close cooperation with the National Space Council. We will elevate the Office of Space Commerce to have direct line of reporting to the Secretary, giving it a stronger voice to advocate for the U.S. commercial space industry.
- **Actively participate in the National Space Council to advance American leadership in commercial space activities.** Through close coordination with the commercial space sector, we will learn what government actions and policies are needed for the industry to flourish. We will promote a robust and responsive U.S. industry that is the world leader in space commerce.
- **Support American companies operating in space.** We will focus on regulatory reform needed for the U.S. commercial space industry to lead human creativity and advancement in space, and remain the preferred destination for commercial space business activity.

Performance Indicators

- Office of Space Commerce action plan milestones achieved on time
- Number of major national space policy decision processes, events, and industry engagements
- Number of tools (e.g., workshops, reports, requirements) developed by the Office of Space Commerce to facilitate commercial space entry into the marketplace

Appendix 2

STRATEGIC PLAN FOR THE OFFICE OF SPACE COMMERCIALIZATION (OSC) U.S. DEPARTMENT OF COMMERCE/NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION March 2007

<http://www.space.commerce.gov/wp-content/uploads/NOAA-2007-Space-Commercialization-Strategic-Plan-6-pages.pdf>

VISION

A robust and responsive U.S. industry that is the world leader in space commerce.

MISSION, FUNCTIONS, AND AUTHORITY

Mission Statement

The Office of Space Commercialization shall foster the conditions for the economic growth and technological advancement of the U.S. commercial space industry.

Functions

The Office shall be the principal unit for space commerce policy activities within NOAA and the Department. Its responsibilities include:

- Coordinate space commerce policy issues and actions within NOAA and the Department.
- Represent the Department in the development of U.S. policies and in negotiations with foreign countries to promote U.S. space commerce.
- Assist commercial space companies in their efforts to do business with the U.S. Government, and act as industry's advocate within the Executive Branch to ensure the Government meets its space-related requirements, to the maximum practical extent, with commercially available space goods and services, consistent with national security.
- Work to ensure the U.S. Government does not engage in space-related activities that preclude, deter, or compete with U.S. commercial space activities unless required by national security or public safety.
- Promote and coordinate increased U.S. private sector participation in the design and development of U.S. Government space systems and infrastructures, and encourage U.S. Government agencies to make space activities, technology, and infrastructure available for private use to the maximum practical extent.
- Seek the removal of legal, policy, and institutional impediments to space commerce.
- Collect, analyze, and disseminate information on space markets, and conduct workshops and seminars to increase awareness of opportunities to promote private sector investment in U.S. space commerce.
- Implement the Department's responsibilities to support the National Space-Based Positioning, Navigation, and Timing Executive Committee and its Coordination Office.

Authority

Congress established the Office of Space Commercialization under Section 8 of the Technology Administration Act of 1998 (Public Law 105-309, as amended).

OUTCOMES AND OBJECTIVES

Outcomes

- A robust U.S. commercial space industry that is internationally competitive.
- A commercial space industry that is responsive to U.S. Government customers.
- An informed U.S. Government that is responsive to the interests of the U.S. commercial space industry.
- An international business environment that provides growth opportunities for U.S. space businesses.
- An investment community and general public that are well informed of the market opportunities in space commerce.

Performance Objectives

- Facilitate an environment that enables increased space commerce investment.
- Increase U.S. Government use of commercial space goods and services.
- Reduce U.S. Government competition with industry.
- Reduce legal, policy, and institutional impediments to space commerce.
- Promote growth in the export of space-related goods and services.
- Advocate free and fair-trade practices in space commerce.
- Increase communication between the U.S. Government, commercial space industry, the media, and the general public on space commerce issues.

STRATEGY

Facilitate an environment that enables increased space commerce investment.

- OSC will promote a stable and predictable policy and regulatory environment that contributes to the success of existing U.S. commercial space efforts, the entry of new firms (including those not traditionally associated with space activities), and the creation of new markets for space goods and services.
- OSC will evaluate selected risk areas identified by industry and other entities, including financial, market, and political risk areas, with a view toward lowering barriers to entry.
- OSC will support a policy and procurement environment that supports private sector intellectual property and real property rights.

Increase U.S. Government use of commercial space goods and services.

- OSC will work within the executive branch of the federal government to facilitate the use of commercially available space goods and services when they meet U.S. Government requirements, and modify commercially available capabilities and services to meet those requirements when the modification is cost effective.
- OSC will assess commercial space capabilities and provide information to the appropriate U.S. Government customers.
- OSC will facilitate interaction between non-traditional space industries and U.S. Government customers with space-related requirements.

Reduce U.S. Government competition with industry.

- OSC will consult with the U.S. commercial space industry to identify those areas where competition exists.
- To the extent competition is identified, OSC will engage with agencies responsible for space system procurement and operations to eliminate it except in cases of national security or public safety.

Reduce policy, legal, regulatory and institutional impediments to space commerce.

- OSC will coordinate with U.S. commercial space industry and other government entities to contribute to the future development of the legal, regulatory, and institutional framework for promoting space commerce, and will identify and review related issues that may impede U.S. commercial space efforts.

Promote growth in the export of space-related goods and services.

- OSC will engage in dialogue with the U.S. commercial space industry and other government entities on the current status and effectiveness of the U.S. export control regime and will seek to modify export restrictions as appropriate.

Advocate free and fair-trade practices in space commerce.

- OSC will coordinate with other government agencies in developing and conducting trade-related strategies that impact the U.S. commercial space industry.
- OSC will ensure U.S. commercial space interests are considered during relevant international consultations and negotiations.

Improve communication among the U.S. Government, commercial space industry, the media, and the general public on space commerce issues.

- OSC will establish cooperative relationships with space policy-related offices in other federal entities.
- OSC will collect, analyze, and assess information on space-related markets based on stakeholder inputs.
- OSC will increase exposure of space commerce through outreach activities such as workshops, seminars, and publications.
- OSC will encourage and facilitate private sector efforts to educate the public on the benefits and potential of space commerce.
- OSC will disseminate trend information to policy-makers, industry, and the public.
- OSC will establish an independent advisory function to provide inputs for the implementation of the strategic plan and to evaluate achievement of performance objectives.