

Federal Communications Commission

Space Modernization for the 21st Century

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Introduction

Space is becoming the front line of American dynamism and resilience, serving as the critical infrastructure underpinning much of the economy and national security.¹ As with other critical infrastructure, such as the health care system and the defense industrial base, space systems serve as the oft-overlooked sinew of American society, pulling together logistics, communications, and military preparedness into a comprehensive network of terrestrial and extra-terrestrial assets.² It is also a key sector of economic growth, generating significant spillover effects in manufacturing, research and development, and overall productivity.³

However, this surge has met a corresponding increase in Chinese space investment, particularly as Beijing seeks to dominate the commercial space market while developing dual-use platforms capable of executing the People's Liberation Army (PLA) military space doctrine. Partially spurred by the success of SpaceX, Chinese private investment in space-based commercial activity has surged, often accompanied by aggressive state support.⁴ In contrast to the United States, this investment has typically complemented, rather than replaced, the long-standing ties between the country's defense industrial base and its space program. Chinese commercial satellites are launched on rockets that copy long-standing military designs, while Chinese satellite imaging firms offer support to both Russia and Iran in targeting American interests and assets.⁵ This trend poses a direct but familiar threat to U.S. national security. China's strategy of combining artificially low prices with relatively high quality may encourage more U.S. firms, along with Washington's allies and partners, to utilize Chinese infrastructure highly vulnerable to espionage while undermining American competitiveness. Moreover, China's growing aggression

¹ Maggie Miller, "Officials plan for new age of cyber threats to satellites," *Politico*, March 25, 2024. (<https://mccraryinstitute.com/app/uploads/2025/03/officials-plan-for-new-age-of-cyber-threats-to-satellites-politico.pdf>); Frank Cilluffo and Tory Bruno, "Space Is the Battlefield: Deterrence, Hypersonics, and China's Threat with ULA CEO Tory Bruno," *Cyber Focus*, June 3, 2025. (<https://podcasts.apple.com/us/podcast/space-is-the-battlefield-deterrence-hypersonics/id1727584821?i=1000711060400>); "Presidential Transition Task Force Report," *McCrary Institute for Cyber and Critical Infrastructure Security*, October 22, 2024. (<https://mccraryinstitute.com/presidential-transition-task-force-report>)

² Bob Kolasky, "Examining critical infrastructure definitions and priorities," *McCrary Institute for Cyber and Critical Infrastructure Security*, April 15, 2025. (<https://mccraryinstitute.com/examining-critical-infrastructure-definitions-and-priorities>); Frank J. Cilluffo and Mark Montgomery, "Time to designate space systems as critical infrastructure," *Space News*, April 14, 2023. (<https://spacenews.com/time-to-designate-space-systems-as-critical-infrastructure>)

³ "Space Economy," *Bureau of Economic Statistics*, March 2025. (<https://www.bea.gov/data/special-topics/space-economy>); Mija Aleksandraviciute, Stephen Michael Impink, and Robert Seamans, "Industrial policy for the final frontier: Governing growth in the emerging space economy," *Brookings Institute*, September 23, 2025. (<https://www.brookings.edu/articles/industrial-policy-for-the-final-frontier-governing-growth-in-the-emerging-space-economy>)

⁴ Henry Boyd, Erik Green, and Meia Nouwens, "China's commercial space sector," *The International Institute for Strategic Studies*, August 21, 2025. (<https://www.iiss.org/online-analysis/charting-china/2025/08/chinas-commercial-space-sector>)

⁵ "How is China Advancing its Space Launch Capabilities?" *Center for Strategic and International Studies*, accessed October 22, 2025. (<https://chinapower.csis.org/china-space-launch>); Lydia LaFavor, Jack Burnham, and Natalie Ecanow, "5 Things to Know About China-Iran Security Cooperation," *Foundation for Defense of Democracies*, July 3, 2025. (<https://www.fdd.org/analysis/2025/07/03/5-things-to-know-about-china-iran-security-cooperation>); Ketki Korkiya and John Hardie, "Ukraine Alleges China Provides Satellite Imagery To Support Russian Strikes," *Foundation for Defense of Democracies*, October 15, 2025. (<https://www.fdd.org/analysis/2025/10/15/ukraine-alleges-china-provides-satellite-imagery-to-support-russian-strikes>)

in space, including simulating “dogfighting” using satellite arrays, suggests that Beijing may eventually target civilian communications networks, such as Starlink, that also serve military units operating in degraded communications environments.⁶

In approaching possible changes in space regulation, the Federal Communications Commission (FCC) should balance the need for speed with the sanctity of security — pairing modernized regulatory processes with strong national security safeguards to both prioritize and protect the nation’s critical infrastructure.

China’s Space Economy Threatens American Prosperity and Security

Space is at the frontlines of the Sino-American rivalry, with both Beijing and Washington prioritizing both commercial advantage and military supremacy across a range of capabilities, from low-earth orbit platforms to surveillance satellites to potential lunar exploration.

Even after the end of major manned spaceflight efforts, America’s space economy continues to surge. Along with providing nearly \$241 billion in direct gross economic output in 2023, American investment in space generates significant spill-over effects, both in the form of driving investments in advanced manufacturing and enhancing overall productivity due to improved communication and data-gathering.⁷ Though perhaps uncounted, this spillover effect is captured in another way: providing the backbone for much of the country’s economy in the event of a crisis by allowing businesses to pivot toward satellite-based communications, logistics firms to provision supplies, and first responders to offer timely, targeted assistance.⁸ Space systems serve not only as an economic driver and backstop but also are fundamental to the everyday functioning of the industrial control systems powering pipelines and transmission lines and enabling financial services such as trading and transactions, ATMs, and credit cards.⁹ The security of space infrastructure is vital to the continuity of the economy and services in lifeline sectors.

⁶ Jack Burnham, “Showcasing Advanced Space Capabilities, China Displays ‘Dogfighting’ Maneuvers in Low Earth Orbit,” *Foundation for Defense of Democracies*, March 21, 2025.

(https://www.fdd.org/analysis/policy_briefs/2025/03/21/showcasing-advanced-space-capabilities-china-displays-dogfighting-maneuvers-in-low-earth-orbit); John Hardie, “What the suspension of US aid means for Ukrainian forces,” *Foundation for Defense of Democracies*, March 5, 2025. (https://www.fdd.org/analysis/op_ed/2025/03/05/what-the-suspension-of-us-aid-means-for-ukrainian-forces/)

⁷ “Space Economy,” *Bureau of Economic Statistics*, March 2025. (<https://www.bea.gov/data/special-topics/space-economy>); Mija Aleksandraviciute, Stephen Michael Impink, and Robert Seamans, “Industrial policy for the final frontier: Governing growth in the emerging space economy,” *Brookings Institute*, September 23, 2025. (<https://www.brookings.edu/articles/industrial-policy-for-the-final-frontier-governing-growth-in-the-emerging-space-economy/>)

⁸ Mija Aleksandraviciute, Stephen Michael Impink, and Robert Seamans, “Industrial policy for the final frontier: Governing growth in the emerging space economy,” *Brookings Institute*, September 23, 2025. (<https://www.brookings.edu/articles/industrial-policy-for-the-final-frontier-governing-growth-in-the-emerging-space-economy/>)

⁹ Frank Cilluffo, Mark Montgomery, Sharon Cardash, and Kelsey Shields, “Time to Designate Space Systems as Critical Infrastructure,” *Foundation for Defense of Democracies*, April 14, 2023. (https://www.fdd.org/wp-content/uploads/2023/04/CSC2.0_Report_Space.pdf)

While it may initially appear to fall outside of the Commission's remit, space also remains at the frontier of the American way of war, underpinning much of the country's military reconnaissance, communications infrastructure (MILSTAR), and precision-strike capabilities.¹⁰ This position is only poised to grow within the coming years, particularly as the Trump administration plans to invest in the "Golden Dome," a homeland missile defense network which will likely employ a range of space and land-based interceptors.¹¹ Moreover, technologies such as Starlink, which serve as both a civilian internet provider and a critical military communications platform for Ukrainian forces, highlight the FCC's growing role in regulating dual-use technologies that directly impact U.S. national security.¹²

China's space sector has also grown significantly over the past decade, largely due to a burgeoning private sector and Beijing's desire to follow a perceived military imperative. Following the success of American firm SpaceX, Beijing allowed private investment in space travel in 2014, unleashing a wave of investment to compete with two large state-owned firms, the China Aerospace Science and Technology Corporation (CASTC) and the China Aerospace Science and Industry Corporation.¹³ This investment has primarily focused on the commercial satellite launch sector, with Chinese firms looking to establish an edge in low-earth orbit to build out communications arrays and collect geospatial data.¹⁴

However, even in its maturation, China's space industry has retained its substantial military underpinnings. Many of China's current launches are still conducted using a variant of the Long March family of rockets, which was developed by CASTC as a military launch platform before being put into civilian use.¹⁵ Moreover, China has remained highly active in militarizing space, both as an overriding matter of military strategy to launch "blinding" attacks against U.S. space-based assets and as a means to achieve new precision-strike capabilities.¹⁶ Having previously

¹⁰ "Milstar Satellite Communications System," United States Space Force, accessed October 22, 2025. (<https://www.spaceforce.mil/about-us/fact-sheets/article/2197755/milstar-satellite-communications-system>); Zachary Burdette, "Why the United States Should Not Fear a Space Pearl Harbor," *RAND*, July 28, 2025. (<https://www.rand.org/pubs/commentary/2025/07/why-the-united-states-should-not-fear-a-space-pearl.html>)

¹¹ Bradley Bowman and Mark Montgomery, "Trump's 'Golden Dome' missile defense is costly, ambitious — and necessary," *Foundation for Defense of Democracies*, May 22, 2025. (<https://www.fdd.org/analysis/2025/05/22/trumps-golden-dome-missile-defense-is-costly-ambitious-and-necessary>)

¹² John Hardie, "What the suspension of US aid means for Ukrainian forces," *Foundation for Defense of Democracies*, March 5, 2025. (https://www.fdd.org/analysis/op_ed/2025/03/05/what-the-suspension-of-us-aid-means-for-ukrainian-forces)

¹³ Henry Boyd, Erik Green, and Meia Nouwens, "China's commercial space sector," *The International Institute for Strategic Studies*, August 21, 2025. (<https://www.iiss.org/online-analysis/charting-china/2025/08/chinas-commercial-space-sector>)

¹⁴ Ibid.

¹⁵ "How is China Advancing its Space Launch Capabilities?" *Center for Strategic and International Studies*, accessed October 22, 2025. (<https://chinapower.csis.org/china-space-launch>); Du Qiongfang and Deng Xiaoci, "China makes 600th launch of Long March rocket, sending internet satellites to orbit," *Global Times* (China), October 16, 2025. (<https://www.globaltimes.cn/page/202510/1345836.shtml>)

¹⁶ Katherine Fung, "China Building Destructive Space Weapons to 'Blind' U.S. Satellites, Intelligence Report Reveals," *Newsweek*, April 14, 2021. (<https://www.newsweek.com/china-building-destructive-space-weapons-blind-us-satellites-intelligence-report-reveals-1583672>); Bharath Gopalaswamy and Dylan Rebstock, "As China Builds Ability to Attack Satellites, Here is How US Should Respond," *The Atlantic Council*, April 16, 2014. (<https://www.atlanticcouncil.org/blogs/new-atlanticist/as-china-builds-ability-to-attack-satellites-here-is-how-us-should-respond>)

displayed a direct-ascent anti-satellite missile in 2007, the Chinese military has continued to conduct military maneuvers in space, including using satellite arrays in low-earth orbit to practice “dogfighting” in March 2025.¹⁷ China has also developed its ability to strike satellites by using cyber operations and electronic warfare.¹⁸

Beijing’s militarization of space is also directly tied to China’s burgeoning relationship with Russia and Iran. Both Chinese state and private space firms underpin a range of strategic treaties, dual-use platforms, and niche capabilities used by Russian forces and Iranian proxies to conduct precision strikes on a range of American interests and assets.¹⁹ This cooperation is likely to continue, both as China seeks to improve its Beidou system of global navigational satellites and establish itself as a permanent lunar power within the coming decade.²⁰

This intersection points to a range of potential threats posed by China’s growing space economy to the United States. As in other communications sectors, such as undersea cables, China may use artificially depressed costs to hollow out the American private market while placing a greater share of American data streams on Chinese infrastructure vulnerable to espionage due to Beijing’s Cybersecurity and National Intelligence laws.²¹ Moreover, China’s growing military capabilities in space also opens another vulnerability, as Beijing may attempt to disrupt civilian and military communications in the event of an Earth-bound crisis, similar to its current efforts to gain a foothold in other American critical infrastructure sectors with campaigns such as Volt Typhoon.²²

¹⁷ Jack Burnham, “Showcasing Advanced Space Capabilities, China Displays ‘Dogfighting’ Maneuvers in Low Earth Orbit,” *Foundation for Defense of Democracies*, March 21, 2025. (https://www.fdd.org/analysis/policy_briefs/2025/03/21/showcasing-advanced-space-capabilities-china-displays-dogfighting-maneuvers-in-low-earth-orbit)

¹⁸ Frank Cilluffo, Mark Montgomery, Sharon Cardash, Kelsey Shields, “Time to Designate Space Systems as Critical Infrastructure,” *Foundation for Defense of Democracies*, April 14, 2023. (https://www.fdd.org/wp-content/uploads/2023/04/CSC2.0_Report_Space.pdf)

¹⁹ Greg Hadley, “SPACECOM Alarmed as China, Russia, Iran, and N. Korea Forge Closer Ties in Space,” *Air and Space Forces Magazine*, June 24, 2024. (<https://www.airandspaceforces.com/space-command-boss-russia-china-north-korea-iran>); Lydia LaFavor, Jack Burnham, Natalie Ecanow, “5 Things to Know About China-Iran Security Cooperation,” *Foundation for Defense of Democracies*, July 3, 2025. (<https://www.fdd.org/analysis/2025/07/03/5-things-to-know-about-china-iran-security-cooperation>); Ketki Korkiya and John Hardie, “Ukraine Alleges China Provides Satellite Imagery To Support Russian Strikes,” *Foundation for Defense of Democracies*, October 15, 2025. (<https://www.fdd.org/analysis/2025/10/15/ukraine-alleges-china-provides-satellite-imagery-to-support-russian-strikes>)

²⁰ Kevin Pollpeter, “To Be More Precise: Beidou, GPS, and the Emerging Competition in Satellite-Based PNT,” *China Aerospace Studies Institute*, May 20, 2024. (<https://www.airuniversity.af.edu/CASI/Display/Article/3778910/to-be-more-precise-beidou-gps-and-the-emerging-competition-in-satellite-based-p>); Eduardo Baptista, “China, Russia may build nuclear plant on moon to power lunar station, official says,” *Reuters*, April 23, 2025. (<https://www.reuters.com/business/energy/china-led-lunar-base-include-nuclear-power-plant-moons-surface-space-official-2025-04-23>)

²¹ Mark Montgomery, Craig Singleton, Jack Burnham, and Annie Fixler, “Review of Submarine Cable Landing License Rules and Procedures To Assess Evolving National Security, Law Enforcement, Foreign Policy, and Trade Policy Risks; Schedule of Application Fees,” *Foundation for Defense of Democracies*, April 14, 2025. (<https://www.fdd.org/analysis/2025/04/14/review-of-submarine-cable-landing-license-rules-and-procedures-to-assess-evolving-national-security-law-enforcement-foreign-policy-and-trade-policy-risks-schedule-of-application-fees>)

²² Jack Burnham and Johanna Yang, “Protecting Our Communications Networks by Promoting Transparency Regarding Foreign Adversary Control,” *Foundation for Defense of Democracies*, July 21, 2025.

Recommendations

The FCC should adopt a framework that pairs the need for speed with the sanctity of security, allowing for innovation and market efficiency via clear, transparent, and timely regulation while safeguarding national security. These efforts should primarily focus on simplifying the licensing process, adding flexibility to account for novel or innovative proposals, enhancing foreign ownership disclosure requirements, improving data sharing, and ensuring high cybersecurity standards.

- **The Commission should streamline its regulatory process for approving license applications.** The FCC should adopt a “licensing assembly line” that will focus primarily on upholding the public interest. This process should include clear, predictable standards for applicants, which in turn will contribute to clearer timelines for investors and improved market efficiency. This move should be paired with the FCC’s proposed licensing “building block” approach, which allows license-holders to apply for new licenses for specific additions to account for evolving and changing technologies. Taken together, these moves will offer a flexible regulatory framework to account for rapid technological changes while maintaining high standards to ensure security.
- **The Commission should adapt its licensing procedures to account for innovative and novel space practices.** The Commission should adopt an overtly broad definition of “Variable Trajectory Spacecraft System (VTSS),” a new licensing category alongside more traditional satellites that maintain steady orbits, allowing for greater innovation on the part of American firms seeking to develop new spacefaring technologies. Establishing this category will also allow the United States to diversify its space assets, offering redundancy, while enhancing its capacity to compete with China over lunar exploration, particularly as Beijing has expressed a greater desire to establish a permanent presence on the Moon over the coming decade.
- **The Commission should bolster its foreign ownership reporting requirements to safeguard U.S. space assets.** The Commission should ensure that any new application process aligns with the Foreign Adversary Notice of Proposed Rulemaking, particularly as China, Russia, and Iran seek to aggressively position themselves as leaders in space technology. Moreover, given the importance of this sector, the Commission should consider mandating that all applicants disclose information about individuals or entities holding a 5 percent or more direct or indirect (equity and/or voting interest) in the applicant or a controlling interest, as well as the names, citizenship, and address of each officer and director in the application. While lower than the uniform 10 percent, this proposed threshold may better capture the ownership structures used by foreign adversaries, particularly China, to avoid transparency while offering a more complete financial picture of each applicant.

(<https://www.fdd.org/analysis/2025/07/21/protecting-our-communications-networks-by-promoting-transparency-regarding-foreign-adversary-control>)

- **The Commission should require space station operators to share space situational awareness data.** Sharing ephemeris data is critical to maintaining operational capacity in space, particularly as more satellites enter orbit and the FCC considers the introduction of a VTSS category. While specific missions may require sensitive information, including provisions accounting for different levels of information-sharing requirements, this change should include flexibility for the varied sensitivity of mission data. While data sharing is necessary, it must be done with data security in mind, including built-in protections for ensuring data integrity. Without these requirements, data that could allow adversaries to target important systems could be compromised.
- **The Commission should mandate stronger cybersecurity standards throughout its licensing process.** Speed and efficiency in regulation processes will expedite innovation and deployment but must not ignore the necessity of cybersecurity standards. Space systems can be more vulnerable than Earth-based infrastructure due to the fact that they are generally built for longevity rather than security, lack physical protections, and are infeasible to access for physical updates.²³ Many of these challenges are due to the remote, persistent, and distributed nature of space assets — factors that increase vulnerability to radio frequency attacks, electronic warfare, and other attacks that compromise signal integrity. The FCC should also focus on futureproofing its cybersecurity standards, including prioritizing encryption adaptability, given the long-term nature of many space-based assets.

Conclusion

The United States has always been a pioneer in space, offering opportunities for peaceful exploration even to adversaries seeking to cement their dominance in this near-endless domain. As space systems have transformed into a key but vulnerable aspect of the nation's critical infrastructure, the FCC should ensure the vitality and security of America's space economy by promoting flexible regulatory frameworks to enhance market efficiency and unleash innovation while promoting strong security standards.

Thank you for considering our comments. We look forward to seeing how our input is incorporated into the Commission's actions on this matter.

²³ Georgianna Shea and Humza Khan, "Critical Orbit: The Case for Designating Space as National Infrastructure in the Cyber Age," *CPI TechREG Chronicle*, July 30, 2025. (<https://www.fdd.org/wp-content/uploads/2025/07/1b588c7940d383f3c75173b6d4013afc4dbdce12c72b1468182c3300f8d2.pdf>)