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The United States–China Economic and Security Review Commission
"The Rocket's Red Glare: China's Ambitions to Dominate Space"
April 3, 2025

Introduction

Commissioner Kuiken, Commissioner Sims, and distinguished Members of the Commission, thank you for inviting me to testify on behalf of the Commercial Space Federation (CSF).

CSF is the leading U.S.-based trade association representing the commercial space industry. Our members represent multiple sectors of the space economy including launch and reentry, remote sensing, spaceports, satellite-based internet, in-space research and manufacturing, commercial space stations, space situational awareness, and more. CSF and its members are focused on expanding America's leadership in space by offering innovative – and often less expensive – solutions to U.S. government customers including NASA, the U.S. Space Force, and the intelligence community. In addition, CSF advocates for policies that will grow a sustainable space economy, the global value of which is already estimated at $570 billion[1] and projected to grow to $1.8 trillion by 2035.[2] The commercial space industry has created tens of thousands of high-paying engineering and manufacturing jobs in the United States and has invested billions of dollars across the country, revitalizing a domestic aerospace supply chain that had been in decline and unlocking new potential in space that will benefit us on Earth.

A New Space Race

Over the last few years, we have heard many of our civil and national security space leaders state or allude to the fact that the United States is in a space race with China. But what does this really mean? And why should Americans care?

To answer these questions, it's worth revisiting history. The 20th century space race between the United States and the Soviet Union ignited a massive U.S. government investment and effort in space exploration and technology development that ultimately landed Neil Armstrong and Buzz Aldrin on the lunar surface in 1969.[3] By 1972, the race was won, interest in human space exploration declined, and the Apollo lunar program ended a little more than three years after

[1] https://www.spacefoundation.org/2024/07/18/the-space-report-2024-q2/
[2] https://www.mckinsey.com/industries/aerospace-and-defense/our-insights/space-the-1-point-8-trillion-dollar-opportunity-for-global-economic-growth
[3] https://www.planetary.org/space-policy/cost-of-apollo

that first giant leap for mankind. Fortunately, the legacy of Apollo goes far beyond American boot prints on the Moon. The scientific discoveries and advancements resulting from space exploration propelled the United States to technology and economic dominance throughout the remainder of the 20th century. Private industry recognized the opportunity and value of space and developed new space businesses, first focused on satellite communications and later Earth imaging and launch services. Completely new industries like software engineering and computer sciences were born out of technologies and processes that needed to be developed to send humans into space, keep them alive, and get them home safely. The Apollo program also inspired thousands of young people to dedicate themselves to studying engineering, science, and computing – the workforce America needed to lead the world in high-tech fields.

The space race of the 21st century is very different. There is no one destination to win and no finish line. This must be a long-term, sustained expansion of human activity into space. It is critical for national security, technology dominance, economic growth, and soft power diplomacy. Yes, we need presence on and near the Moon, but also at strategic orbits like Lagrange Points and low-Earth orbit. There is no one space technology we need to dominate, but rather all of them – launch, operations infrastructure, remote sensing, satellite communications, in-space operations and mobility, and resource utilization to name a few.

So how are we doing vis a vis China? The U.S. is still the global leader in space, but the People's Republic of China (PRC) is executing on their plan to catch up and overtake the U.S. The PRC's stated goal is to make China a world leader in space by 2050 and a key competitor with the U.S. in space, for decades to come.[4] It's important to point out that the PRC is a centrally planned economy. There is no Office of Management and Budget, no Congress, no appropriations process. The PRC funds what it wants to fund, and its funding space. Furthermore, the PRC has no respect for the environment, public safety, space sustainability, or intellectual property. There are no regulators limiting the PRC's actions in space.

In 2019, this Commission put out a report with information on China's space ambitions. Many of the findings are still relevant and important scene setters today. For example:

- "China's goal to establish a leading position in the economic and military use of outer space, or what Beijing calls its "space dream," is a core component of its aim to realize the "great rejuvenation of the Chinese nation." In pursuit of this goal, China has dedicated high-level attention and ample funding to catch up to and eventually surpass other spacefaring countries in terms of space-related industry, technology, diplomacy, and military power."

[4] https://www.voanews.com/a/china-space-plan-highlights-commitment-to-space-exploration-analysts-say/7836873.html

- "China is taking steps to establish a commanding position in the commercial launch and satellite sectors relying in part on aggressive state-backed financing that foreign market-driven companies cannot match. China has already succeeded in undercutting some U.S. and other foreign launch and satellite providers in the international market, threatening to hollow out these countries' space industrial bases."[5]

Since the publication of the 2019 report, China has made significant progress in space. Recent activities include:

- Launch of the Tiangong space station, a three-module station continuously crewed since 2022. China recently announced plans to host an international crew member.
- Announcement of the International Lunar Research Station (ILRS), a partnership co-led by China and Russia, to enable long-term lunar missions in the 2030s. China anticipates landing crew on the lunar surface by 2030 and has made significant progress on the architecture including super heavy lift launch vehicles.
- In 2021, China became the second nation to successfully land and operate a robotic probe on Mars.
- In 2022, China demonstrated capability to dock with and maneuver an unresponsive satellite.
- In 2024, China became the first nation to land on the far side of the Moon and return samples.
- China has demonstrated multiple high-altitude launch and landing tests with liquid fueled reusable launch vehicles.
- Launches of satellite broadband communications constellation into LEO.
- China announced plans to launch a Mars sample return mission in 2028, returning samples in 2030.

A key component of China's space ambitions is building up its domestic commercial space industry. Before 2014, space activity in China was a state-owned and controlled enterprise. Ten years ago, the PRC opened the aperture and called for private investment in areas such as space launch and satellite manufacturing. This strategic shift was a direct response to the innovation happening in the U.S. commercial space industry and a recognition that China needed to foster its own industry to compete internationally and position China to surpass the U.S. in space technology. While China's industry may not always receive funding directly from the central government, they receive engineering support and access to government facilities. Some launch vehicles are based on government owned launch vehicles or have major components purchased

[5] https://www.uscc.gov/sites/default/files/2019-11/2019%20Annual%20Report%20to%20Congress.pdf

from the state. In addition, provincial and municipal governments follow national guidelines to subsidize the development of new capabilities for commercial launch companies.

In just ten years, China has made tremendous progress in growing its non-government space capabilities, particularly in areas currently dominated by U.S. industry – launch and satellite manufacturing. In 2024, 145 orbital launches originated from the United States. China was second in the world at 68 launches attempts.[6] There are now multiple non-government space launch enterprises in China, with six new reusable rockets planned for maiden launches in 2025.[7] China has also made significant investments in launch infrastructure, including the construction of two new launch pads over just two years.

On the satellite side, China is accelerating build out of two LEO satellite broadband constellations. China has constructed at least seven new manufacturing facilities in recent years, with the capability to produce thousands of satellites annually. China's national and provincial governments continue to pass regulatory plans and orders intended to accelerate development of a LEO satellite and launch systems. By the end of 2024, China's filings at the International Telecommunications Union indicate plans for more than 156,800 satellites. Here, China's goal is objective and clear: to connect every unserved and underserved community across the world with state owned, state censored internet from space ahead of the U.S., just as they have on Earth with Huawei and ZTE.

It is important to note that China's expansion into LEO has not been done with consideration for principles like space sustainability and orbital debris mitigation. In the last 20 years, China has launched more rocket body mass in LEO that will not adhere to the 25-year disposal rule than rest of the world combined. Thousands of pieces of debris from China's 2007 anti-satellite test are still in orbit, where they will remain for 100 years. It goes without saying that the proliferation of space debris stemming from Chinese activities is a threat that endangers existing space operations and the future usability of space for all.

Recommendations

While those who are tired of continuing resolutions look with envy from time to time on a centrally planned economy, I believe the U.S. will continue to dominate in space precisely because we have a free and open society. We will win based on the strength of our ideas, our creativity, our ability to innovate. We will win, as long as we thoughtfully implement policies that unleash the innovation of the commercial space sector. CSF would humbly suggest consideration of the following recommendations.

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[6] https://payloadspace.com/2024-orbital-launch-attempts-by-country/

[7] https://www.wsj.com/world/china/chinas-own-elon-musks-are-racing-to-catch-up-to-spacex-74b02a95?st=wQGt7k

- **Space As a National Priority -** The United States has recognized the value of investing in and unleashing "industries of the future" like AI, semiconductors, and quantum computing in order to maintain America's competitive edge. The space sector is a critical industry of the future, and in need of a comprehensive, focused U.S. policy.
- **Buy Commercial** – The U.S. Government should rely to the maximum extent possible on the domestic commercial space industry. The Department of Defense, intelligence community, and civilian agencies should look to integrate commercial solutions first before building their own capabilities to compete with commercial. They should invest in a healthy and competitive space industrial base and provide consistent funding for space programs. Furthermore, the U.S. Government must become a smarter buyer of commercial space solutions by using commercial contract vehicles and procurement options appropriately, which includes having well-defined, stable requirements.
- **Civil Space Exploration -** NASA and Congress should commit sufficient funding for civil space exploration and space science, including funding for a sustained U.S. presence on the Moon, ensuring access to the lunar surface and its resources. NASA should partner with the commercial industry to complete the Mars Sample Return mission and other space science missions and investigations. NASA should continue to partner with the commercial space sector across its programs, lowering costs and paying for results rather than effort.
- **ISS Transition -** NASA should aggressively move out on awarding and funding new commercial space stations in LEO in order to host research, economic activity, and American astronauts and international crew upon retirement of the International Space Station in 2030.
- **Spaceport Infrastructure Investment -** The Administration and Congress should make robust investments in spaceport infrastructure to increase U.S. access to space from a variety of launch providers and locations. The Administration should seek to streamline or waive regulatory requirements impeding the construction of new launch sites and launch infrastructure.
- **Launch Licensing Reform -** The Department of Transportation should reduce and streamline regulatory oversight of space launch and reentry in order to increase U.S. launch cadence and mass to orbit. CSF has previously testified on specific improvements that should be made to the commercial launch and reentry licensing process.[8]
- **CRSRA Licensing Reform –** The Department of Commerce, in consultation with the interagency, should reduce licensing time and continue to streamline licensing of commercial remote sensing systems.
- **Mission Authorization -** The Department of Commerce should begin to implement authorization and supervision of novel space activities not currently overseen by an

[8] https://democrats-science.house.gov/imo/media/doc/Mr.%20Cavossa%20-%20Testimony.pdf

existing regulatory regime, in order to give commercial operators certainty they have a pathway to flight operations.

- **International Leadership -** The Administration should continue to lead international discussions about norms in space, prioritizing sustainability.

Conclusion

The furthest humans have ventured into space since 1972 was last year, on a privately funded, privately crewed expedition called Polaris Dawn. The United States commercial space industry has the innovations and the talent to maintain American leadership in space and dominance in technology, we just need a willing partnership with the government to realize our full potential. I thank the commission for your attention to this important issue and look forward to your questions.