



December 9, 2020

MEMORANDUM FOR THE VICE PRESIDENT  
THE SECRETARY OF STATE  
THE SECRETARY OF DEFENSE  
THE ATTORNEY GENERAL  
THE SECRETARY OF THE INTERIOR  
THE SECRETARY OF COMMERCE  
THE SECRETARY OF TRANSPORTATION  
THE SECRETARY OF ENERGY  
THE SECRETARY OF HOMELAND SECURITY  
THE DIRECTOR OF THE OFFICE OF MANAGEMENT AND BUDGET  
THE DIRECTOR OF NATIONAL INTELLIGENCE  
THE ASSISTANT TO THE PRESIDENT FOR NATIONAL SECURITY AFFAIRS  
THE ADMINISTRATOR OF THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
THE DIRECTOR OF THE OFFICE OF SCIENCE AND TECHNOLOGY POLICY  
THE CHAIRMAN OF THE JOINT CHIEFS OF STAFF

SUBJECT: The National Space Policy

Section 1. References. This directive supersedes Presidential Policy Directive - 4 (June 29, 2010) and references, promotes, and reemphasizes the following policy directives and memoranda:

- a) Presidential Policy Directive 26 - National Space Transportation Policy (November 21, 2013)
- b) Executive Order 13803 - Reviving the National Space Council (June 30, 2017)
- c) Space Policy Directive 1 - Reinvigorating America's Human Space Exploration Program (December 11, 2017)
- d) The National Space Strategy (March 23, 2018)
- e) Space Policy Directive 2 - Streamlining Regulations on Commercial Use of Space (May 24, 2018)
- f) Space Policy Directive 3 - National Space Traffic Management Policy (June 18, 2018)
- g) Space Policy Directive 4 - Establishment of the United States Space Force (February 19, 2019)

- h) National Security Presidential Memorandum 20 - Launch of Spacecraft Containing Space Nuclear Systems (August 20, 2019)
- i) Executive Order 13906 - Amending Executive Order 13803 - Reviving the National Space Council (February 13, 2020)
- j) Executive Order 13905 - Strengthening National Resilience Through Responsible Use of Positioning, Navigation, and Timing Services (February 12, 2020)
- k) Executive Order 13914 - Encouraging International Support for the Recovery and Use of Space Resources (April 6, 2020)
- l) Space Policy Directive 5 - Cybersecurity Principles for Space Systems (September 4, 2020)

Sec. 2. Principles. It is the policy of the United States to ensure that space operations are consistent with the following principles.

1. It is the shared interest of all nations to act responsibly in space to ensure the safety, stability, security, and long-term sustainability of space activities. Responsible space actors operate with openness, transparency, and predictability to maintain the benefits of space for all humanity.
2. A robust, innovative, and competitive commercial space sector is the source of continued progress and sustained United States leadership in space. The United States remains committed to encouraging and facilitating the continued growth of a domestic commercial space sector that is globally competitive, supports national interests, and advances United States leadership in the generation of new markets and innovation-driven entrepreneurship.
3. In this resurgent era of space exploration, the United States will expand its leadership alongside nations that share its democratic values, respect for human rights, and economic freedom. Those values will extend with us to all space destinations as the United States once again steps beyond Earth, starting with the Moon and continuing to Mars.

4. As established in international law, outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means. The United States will pursue the extraction and utilization of space resources in compliance with applicable law, recognizing those resources as critical for sustainable exploration, scientific discovery, and commercial operations.

5. All nations have the right to explore and to use space for peaceful purposes and for the benefit of all humanity, in accordance with applicable law. Consistent with that principle, the United States will continue to use space for national security activities, including for the exercise of the inherent right of self-defense. Unfettered access and freedom to operate in space is a vital national interest.

6. The United States considers the space systems of all nations to have the right to pass through and conduct operations in space without interference. Purposeful interference with space systems, including supporting infrastructure, will be considered an infringement of a nation's rights. Consistent with the defense of those rights, the United States will seek to deter, counter, and defeat threats in the space domain that are hostile to the national interests of the United States and its allies. Any purposeful interference with or an attack upon the space systems of the United States or its allies that directly affects national rights will be met with a deliberate response at a time, place, manner, and domain of our choosing.

Sec. 3. Goals. The United States shall:

1. **Promote and incentivize private industry** to facilitate the creation of new global and domestic markets for United States space goods and services, and strengthen and preserve the position of the United States as the global partner of choice for international space commerce.

2. **Encourage and uphold the rights of nations to use space responsibly and peacefully** by developing and implementing diplomatic, economic, and security capabilities and strategies to identify and respond to behaviors that threaten those rights.

3. **Lead, encourage, and expand international cooperation** on mutually beneficial space activities that broaden and extend the benefits of space for all humanity; further the exploration and use of space for peaceful purposes; protect the interests of the United States, its allies, and partners; advance United States interests and values; and enhance access to space-derived information and services.

4. **Create a safe, stable, secure, and sustainable environment for space activities**, in collaboration with industry and international partners, through the development and promotion of responsible behaviors; improved practices for the collection and sharing of information on space objects; protection of critical space systems and supporting infrastructures, with special attention to cybersecurity and supply chains; and measures to mitigate orbital debris.

5. **Increase the assurance of national critical functions** enabled by commercial, civil, scientific, and national security spacecraft and supporting infrastructure against disruption, degradation, and destruction through the development and fielding of materiel and non-materiel capabilities and rehearsal of continuity of operations practices.

6. **Extend human economic activity into deep space** by establishing a permanent human presence on the Moon, and, in cooperation with private industry and international partners, develop infrastructure and services that will enable science-driven exploration, space resource utilization, and human missions to Mars.

7. **Increase the quality of life for all humanity** through the cultivation, maturation, and development of space-enabled scientific and economic capabilities, including space and Earth resource discovery, management, and utilization; space and Earth weather and environmental monitoring and prediction; disaster monitoring, prediction, response, and recovery; and planetary defense.

8. **Preserve and expand United States leadership** in the development of innovative space technologies, services, and operations. Work with likeminded international and private partners, to prevent the transfer of sensitive space capabilities to those who threaten the interests of the

United States, its allies, and its supporting industrial base.

Sec. 4. Cross-sector Space Policy Guidelines. The heads of all executive departments and agencies (agencies), consistent with their respective missions and authorities, shall execute the guidance provided in this section consistent with applicable law.

Heads of agencies with representation on the National Space Council shall designate a senior official with responsibility for overseeing their respective agency's implementation of the National Space Policy. This official shall periodically report to the National Space Council on the progress of implementation of this policy within respective agencies.

1. Foundational Activities and Capabilities. Foundational activities and capabilities enable the United States to fulfill the principles and goals directed in this policy.

(a) **Strengthen United States Leadership in Space-related Science and Technology.** Heads of agencies shall:

- i. Reinforce United States technological leadership by promoting technology development; improved industrial capacity; a robust supplier base; and science, technology, engineering, and mathematics (STEM) education opportunities necessary to support United States leadership in space innovation;
- ii. Conduct basic and applied research that increases space capabilities and decreases costs, if such research is best supported by the Government; and
- iii. Encourage commercial space innovation and entrepreneurship through targeted investment in promising technologies that improve the Nation's leadership in space operations.

(b) **Strengthen and Secure the United States Space Industrial Base.** To further foster the security and resilience of the domestic space industrial base, heads of agencies, to the maximum extent practicable and consistent with applicable law, shall:

- i. Promote the availability of space-related industrial capabilities in support of national critical functions;
- ii. Identify suppliers and manufacturers key to the United States space-related science, technology, and industrial bases and incentivizing them to remain in, or return to, the United States;
- iii. Support innovative entrepreneurial space companies through appropriate deregulatory actions;
- iv. Strengthen the security, integrity, and reliability of the supply chains of United States space-related science, technology, and industrial bases by identifying and eliminating dependence on suppliers owned by, controlled by, or subject to the jurisdiction or direction of foreign adversaries, and engaging with United States and international industrial partners to improve processes and effectively manage and secure supply chains; and
- v. Incorporate cybersecurity principles across all phases of space systems design, development, acquisition, and deployment.

(c) **Enhance Capabilities for Assured Access to Space.** United States access to space depends in the first instance on assured launch capabilities. To the extent consistent with applicable law, United States Government payloads shall be launched on vehicles manufactured in the United States, unless approved for foreign launch in support of:

- i. No-exchange-of-funds agreements involving international scientific programs, launches of scientific instruments on international spacecraft, or other cooperative government-to-government agreements;
- ii. Launches of secondary-technology demonstrators or scientific payloads for which no United States launch service is available;

- iii. Hosted payload arrangements on spacecraft not owned by the United States Government; or
- iv. Other circumstances on a case-by-case exemption as coordinated by the Assistant to the President for National Security Affairs and the Director of the Office of Science and Technology Policy, consistent with established interagency standards and coordination guidelines.
- v. To the maximum extent practicable and consistent with their responsibilities and applicable law, the heads of agencies shall:
  - 1. Work collaboratively to acquire space launch services and hosted Government payload arrangements that are secure, reliable, cost-effective, and responsive to United States Government needs;
  - 2. Enhance operational efficiency, increase capacity, and reduce launch costs by investing in the modernization of space launch infrastructure;
  - 3. Permit the launch of United States Government spacecraft manufactured in the United States from territories of allied and likeminded nations when launched on vehicles manufactured in the United States; and
  - 4. When sufficient United States commercial capabilities and services do not exist, support industry-led efforts to rapidly develop new and modernized launch systems and technologies necessary to assure and to sustain future reliable, resilient, and efficient access to space.

(d) **Safeguard Space Components of Critical Infrastructure.** The space domain is important to the function of critical infrastructure vital to the security, economy, resilience, public health, and safety of the United States. Multiple infrastructure sectors depend on reliable access to space-based systems to perform their functions.

- i. The United States will develop strategies, capabilities, and options to respond to any purposeful interference with or attack on the space systems of the United States or its allies that directly affects national rights, especially those necessary for the operation of the Nation's critical infrastructure. Such strategies, capabilities, and options will allow for a deliberate response at a time, place, manner, and domain of its choosing.
- ii. The Secretary of Defense, the Secretary of Homeland Security, and the Director of National Intelligence, in consultation with other heads of agencies, as appropriate, shall develop and maintain focused threat and risk assessments on the effect of deleterious actions in the space domain to the Nation's critical infrastructure.

(e) **Maintain and Enhance Space-based Positioning, Navigation, and Timing (PNT) Systems.** The United States must maintain its leadership in the service, provision, and responsible use of global navigation satellite systems (GNSS). To that end, the United States shall:

- i. Provide continuous worldwide access, for peaceful civil uses, to the Global Positioning System (GPS) and its Government-provided augmentations, free of direct user fees;
- ii. Engage with international GNSS providers to ensure compatibility, encourage interoperability with likeminded nations, promote transparency in civil service provision, and enable market access for United States industry;
- iii. Operate and maintain the GPS constellation to satisfy civil and national security needs, consistent with published performance standards and interface specifications;
- iv. Improve the cybersecurity of GPS, its augmentations, and federally owned GPS-enabled devices, and foster commercial space sector adoption of cyber-secure GPS enabled systems

consistent with cybersecurity principles for space systems;

- v. Allow for the continued use of allied and other trusted international PNT services in conjunction with GPS in a manner that ensures the resilience of PNT services and is consistent with applicable law;
- vi. Invest in domestic capabilities and support international activities to detect, analyze, mitigate, and increase resilience to harmful interference to GNSS;
- vii. Identify and promote, as appropriate, multiple and diverse complementary PNT systems or approaches for critical infrastructure and mission-essential functions; and
- viii. Promote the responsible use of United States space-based PNT services and capabilities in civil and commercial sectors at the Federal, State, and local levels, including the utilization of multiple and diverse complementary PNT systems or approaches for national critical functions.

(f) **Develop and Retain Space Professionals.** The primary goals of space professional development are to achieve mission success in space operations and acquisition; stimulate innovation to improve commercial, civil, and national security space capabilities; and advance science, exploration, and discovery. Toward these ends, the heads of agencies, in cooperation with industry and academia, as appropriate, shall:

- i. Establish standards for accession and career progression;
- ii. Seek to create educational and professional development opportunities for the current space workforce, including internships and fellowships, and to implement measures to recruit, develop, maintain, and retain skilled space professionals, including engineering and scientific personnel and experienced space

system developers and operators, across Government and commercial sectors;

- iii. Promote and expand public-private partnerships within space and technology industries to foster transdisciplinary educational achievement in STEM programs, supported by targeted investments in such initiatives;
- iv. Promote the exchange of scientists, engineers, and technologists among Federal laboratories, universities, and the commercial space sector to facilitate the exchange of diverse ideas and to build capacity in space technical knowledge and skills;
- v. Develop the means to recruit and to employ qualified and skilled space professionals from likeminded nations to increase United States leadership in space commerce, science, exploration, and security; and
- vi. Support training and education in key enabling scientific and engineering disciplines, including: artificial intelligence and machine learning, autonomy, orbital mechanics, collision avoidance methods, robotics, computer science and engineering, digital design and engineering, electromagnetics, materials science, hypersonics, geoscience, quantum-related technologies and applications, and cybersecurity.

(g) **Improve Space System Development and Procurement.**

The heads of agencies shall:

- i. Improve timely acquisition and deployment of space systems through enhancements in estimating costs, assessing technological risk and maturity, and leveraging and understanding emerging industrial base capabilities and capacity;
- ii. Reduce programmatic risk through improved management of program requirements, reduce the use of cost-plus contracts, where appropriate, and take advantage of cost-effective

opportunities to test high-risk components, payloads, and technologies in digital, space, or other relevant environments;

- iii. Create opportunities to strengthen and to develop pertinent expertise in the Government workforce through internships and fellowships with the commercial space sector;
- iv. Pursue and endorse cooperative research and development agreements;
- v. Incorporate rapid prototyping, experimentation, and other efforts to accelerate development cycles to improve performance and to reduce costs;
- vi. Embrace innovation to cultivate and to sustain an entrepreneurial United States research and development environment;
- vii. Engage with the industrial base to improve processes and effectively manage and secure supply chains; and
- viii. Promote, where consistent with applicable rules and regulations concerning Government contracting, procurement of critical materials and sub-tier components, such as solar cells and microelectronics, from domestic and other trusted sources of supply.

(h) **Strengthen Interagency and Commercial Partnerships.** As facilitated by the Executive Secretary of the National Space Council, the heads of agencies shall, consistent with applicable law:

- i. Strengthen existing partnerships and pursue new partnerships among interagency members, the United States commercial space and related sectors, and United States academic institutions through cooperation, collaboration, information sharing, innovative procurements, and alignment of common pursuits to achieve United States goals;

- ii. Encourage the sharing of capabilities and the exchange of expertise among agencies and, to the maximum extent practicable, with the United States commercial sectors to strengthen the Nation's ability to pursue its strategic goals;
- iii. Develop implementation and response strategies and leverage United States capabilities to increase technology innovation and achieve desired outcomes involving space operations relating to science, public safety, national security, and economic growth.

2. International Cooperation.

(a) **Strengthen United States Leadership in Space.** The heads of agencies, in collaboration with the Secretary of State, shall:

- i. Demonstrate United States leadership in space-related fora and activities to strengthen deterrence and assure allies and partners of its commitment to preserving the safety, stability, security, and long-term sustainability of space activities;
- ii. Identify areas of mutual interest and benefit, such as collective self-defense and the promotion of secure and resilient space-related infrastructure;
- iii. Lead the enhancement of safety, stability, security, and long-term sustainability in space by promoting a framework for responsible behavior in outer space, including the pursuit and effective implementation of best practices, standards, and norms of behavior;
- iv. Encourage other nations to adopt United States space regulatory approaches and commercial space sector practices;
- v. Encourage interoperability among United States, allied, and partner space systems, services, and data;

- vi. Facilitate new market opportunities for United States commercial space capabilities and services, including commercial applications that rely on United States Government-provided space systems;
- vii. Promote the adoption of policies and practices internationally that facilitate full, open, and timely access to Government space-derived environmental data on a reciprocal basis;
- viii. Promote appropriate burden-, cost-, and risk-sharing among international partners; and
- ix. Augment United States capabilities by leveraging existing and planned space capabilities of allies and partners.

(b) **Identify and Expand Areas for International Cooperation.** The heads of agencies shall identify potential areas for international cooperation across the spectrum of commercial, civil, and national security space activities that increase the understanding of Earth and space sciences, expand the detection of hazardous near-Earth objects, ensure the freedom of operation in and through space, increase the quality and safety of life on Earth, extend human presence and economic activity beyond low Earth orbit, and reduce the cost of achieving the Nation's goals.

- i. The Secretary of State, in coordination with the heads of agencies, shall:
  - 1. Carry out diplomatic and public diplomacy efforts to strengthen the understanding of, and support for, United States national space policies and programs and to promote the international use of United States space capabilities, systems, and services;
  - 2. Encourage international support for the recovery and use of outer space resources;
  - 3. Lead the consideration of proposals and concepts for arms control measures if they are equitable, effectively verifiable, and

enhance the national security of the United States and its allies;

4. Pursue bilateral and multilateral transparency and confidence-building measures to encourage responsible actions in, and the peaceful use of, outer space to strengthen the safety, stability, security, and long-term sustainability of space activities, to increase predictability and reduce the risk of misunderstanding and inadvertent conflict escalation; and

5. Cooperate with likeminded international partners to establish standards of safe and responsible behavior, including openness, transparency, and predictability, to facilitate the detection, identification, and attribution of actions in space that are inconsistent with the safety, stability, security, and long-term sustainability of space activities.

- ii. The Director of the Office of Science and Technology Policy, in coordination with the Administrator of the National Aeronautics and Space Administration (NASA), the Secretary of Commerce, and the heads of other agencies as appropriate, shall lead the development of national and international planetary protection guidelines, working with scientific, commercial, and international partners, for the appropriate protection of planetary bodies and Earth from harmful biological contamination.

3. Preserving the Space Environment to Enhance the Long-term Sustainability of Space Activities.

(a) **Preserve the Space Environment.** To preserve the space environment for responsible, peaceful, and safe use, and with a focus on minimizing space debris the United States shall:

- i. Continue leading the development and adoption of international and industry standards and policies, such as the Guidelines for the Long-term Sustainability of Outer Space Activities

and the Space Debris Mitigation Guidelines of the United Nations Committee on the Peaceful Uses of Outer Space;

- ii. Continue to make available basic space situational awareness (SSA) data, and provide for basic space traffic coordination (including conjunction and reentry notifications), free of direct user fees while supporting new opportunities for United States commercial and non-profit products and services;
- iii. Develop, maintain, and use SSA information from commercial, civil, and national security sources in an open architecture data repository to detect, identify, and attribute actions in space that are inconsistent with the safety, stability, security, and the long-term sustainability of space activities;
- iv. Develop and maintain space flight safety standards and best practices to coordinate space traffic;
- v. Ensure that, consistent with international obligations, timely and accurate information concerning United States space objects launched into Earth orbit or beyond is entered into the United States domestic space object registry maintained by the Secretary of State and internationally registered with the United Nations as soon as practicable;
- vi. Limit the creation of new debris, consistent with mission requirements and cost effectiveness, during the procurement and operation of spacecraft, launch services, and conduct of tests and experiments in space by following and periodically updating the United States Government Orbital Debris Mitigation Standard Practices;
- vii. Regularly assess existing guidelines for non-government activities in or beyond Earth orbit, and maintain a timely and responsive regulatory environment for licensing those activities,

consistent with United States law and international obligations;

- viii. Pursue research and development of technologies and techniques to characterize and to mitigate risks from orbital debris, reduce hazards, and increase understanding of the current and future debris environment;
- ix. Evaluate and pursue, in coordination with allies and partners, active debris removal as a potential long-term approach to ensure the safety of flight in key orbital regimes;
- x. Require approval of exceptions to the United States Government Orbital Debris Mitigation Standard Practices from the head of the sponsoring agency and notification to the Secretary of State; and
- xi. Continue to foster the development of best practices to prevent on-orbit collisions by collaborating with the commercial space sector and likeminded nations to: maintain and improve space object databases; pursue common international data standards and integrity measures; provide services and disseminate orbital tracking information, including predictions of space-object conjunctions, to commercial and international entities; and expand SSA to deep space.

(b) **Effective Export Policies.**

- i. The United States will work to stem the flow of advanced space technology to unauthorized parties while ensuring the competitiveness of the United States space industrial base. The heads of agencies are responsible for protecting against adverse technology transfer in the conduct of their programs.
- ii. The United States Government shall:
  - 1. Consider letters of request and the issuance of licenses for space-related exports on a case-by-case basis, pursuant

to, and in accordance with, the International Traffic in Arms Regulations (ITAR), the Conventional Arms Transfer Policy, the Export Administration Regulations, and other applicable laws and commitments;

2. Encourage the export of space-related items when doing so would not threaten the national interest;

3. Make eligible for streamlined authorization the export of space-related items that are generally available in the global marketplace, do not provide critical military functions, and are destined for certain allied or partner countries.

iii. Consistent with the foregoing, and consistent with existing law and regulation, license applications for exports of space-related items will be subject to a presumption of denial when destined for arms-embargoed destinations or other embargoed destinations.

iv. Sensitive or advanced spacecraft-related exports may require government-to-government transfers through the Foreign Military Sales process. The Secretary of State shall determine whether current arms transfer and nonproliferation policy directives provide sufficient guidance for the transfer of emerging technologies and space capabilities.

(c) **Space Nuclear Power and Propulsion.**

i. The United States will develop and use space nuclear power and propulsion (SNPP) systems where such systems enable achievement of United States scientific, national security, and commercial objectives. The United States will adhere to principles of safety, stability, security, and long-term sustainability in its development and utilization of space nuclear systems. In accordance with the National Security Policy Memorandum-20 Presidential Memorandum on Launch of Spacecraft Containing

Space Nuclear Systems (August 20, 2019), authorization for launches of spacecraft containing space nuclear systems shall follow a tiered process based on the characteristics of the system, level of potential hazard, and national security considerations.

- ii. The Administrator of NASA and the Secretary of Defense shall conduct and support design, development, and utilization of space nuclear systems, as appropriate, to enable and achieve their respective mission objectives.
- iii. The Secretary of Energy shall support the design, development, and utilization of SNPP systems to enable and achieve the scientific, exploration, and national security objectives of the United States, in coordination with sponsoring agencies and other entities, as appropriate. The Secretary of Energy shall maintain, on a full cost recovery basis, the capability and infrastructure to develop, furnish, and conduct safety analyses for space nuclear systems for use in United States Government space systems.
- iv. The Secretary of Energy, in cooperation with the Secretary of Homeland Security and the heads of appropriate agencies, shall provide technical and operational support to the launch of SNPP systems to prepare for and respond to any potential radiological impacts of a launch to ensure the protection of public health and safety.
- v. The Secretary of Commerce, in coordination with other appropriate agencies, shall promote responsible United States commercial space nuclear system investment, innovation, and operations.
- vi. The Secretary of Transportation shall, in consultation with other applicable agencies, serve as the licensing authority for commercial launches of space nuclear systems.

(d) **Protection of Electromagnetic Spectrum.** In matters pertaining to the electromagnetic spectrum the United States shall:

- i. Seek to protect access to, and operation in, the electromagnetic spectrum and related orbital assignments required to support the use of space by the United States Government, its allies, and partners, and United States commercial users;
- ii. Preserve and protect the electromagnetic spectrum required to sustain existing and emergent space-based capabilities, including communications, navigation, and Earth observation;
- iii. Explicitly address requirements for electromagnetic spectrum and orbital assignments prior to approving acquisition of space capabilities;
- iv. Coordinate stable and predictable national and international regulatory frameworks to enable and support the competitiveness of space services and systems licensed by the United States;
- v. Seek to remove or to streamline regulatory impediments that may discourage commercial space communications providers from obtaining licenses from the United States;
- vi. Conduct and publish thorough operational, technical, and policy impact assessments, in coordination with Government space system operators, prior to reallocating spectrum for commercial, Government, or shared use;
- vii. Enhance capabilities and techniques, in cooperation with commercial, civil, and international partners, to detect, identify, locate, and attribute sources of radio frequency interference, and to take necessary measures to sustain the electromagnetic environment in which critical United States space systems operate;

- viii. Seek appropriate regulatory approval under United States domestic regulations for United States Government Earth stations operating with commercially owned satellites, consistent with the regulatory approvals granted to analogous commercial Earth stations; and
- ix. Prioritize research and development of advanced technologies, innovative spectrum-utilization methods, and spectrum-sharing tools and techniques that increase spectrum access, efficiency, and effectiveness.

(e) **Cybersecurity for United States Space Systems.** In matters relating to cybersecurity for space systems the United States Government shall:

- i. Seek to ensure space systems and their supporting infrastructure, including software, are designed, developed, and operated using risk-based, cybersecurity-informed engineering;
- ii. Collaborate with industry and encourage development and integration of cybersecurity plans for space systems that mitigate unauthorized access to critical space system functions, reduce vulnerabilities, protect ground systems, promote cybersecurity hygiene practices, and manage supply chain risks;
- iii. Collaborate with interagency, allied, partner, and commercial space system operators to promote the development and adoption of best practices and mitigations;
- iv. Leverage widely adopted best practices and standards in the creation of rules and regulations, as appropriate; and
- v. Determine appropriate cybersecurity measures for Government space systems through a mission risk assessment specific to a space system's design and operations.

(f) **Assurance of National Critical Functions.** The United States Government, in cooperation with private and public sectors, shall:

- i. Assure space-enabled national critical functions by developing the techniques, measures, relationships, and capabilities necessary to maintain continuity of services;
- ii. Pursue efforts to enhance the protection, cybersecurity, and resilience of selected spacecraft and supporting infrastructure;
- iii. Periodically conduct operationally-focused exercises to test the continuity of national critical functions and Federal mission assurance in a degraded or denied space environment due to natural or manmade disruptions;
- iv. Incorporate the simulated disruption of space systems into interagency and national exercises; and
- v. Address mission assurance and architectural resilience through the design, acquisition, command and control, exercise, and operation of materiel and non-materiel space and non-space capabilities.

Sec. 5. Sector Guidelines. The United States conducts space activities in three distinct but interdependent sectors: commercial, civil, and national security. Consistent with all applicable legal obligations agencies shall comply with the following guidance.

1. Commercial Space Guidelines.

The term "commercial," for the purposes of this policy, refers to goods, services, or activities provided by private sector enterprises that bear a reasonable portion of the investment risk and responsibility for the activity, operate in accordance with typical market-based incentives for controlling cost and optimizing return on investment, and have the legal capacity to offer those goods or services to existing or potential non-governmental customers.

A United States commercial space sector that leads in the global space marketplace is foundational to national strategic objectives that include increased and sustained

prosperity, free market principles, enhanced international partnerships and collaboration, technological innovation, and scientific discovery, and is vital to United States and allied security.

(a) **Promoting a Robust Commercial Space Industry.** To promote a robust domestic commercial space industry and strengthen United States leadership as the country of choice for conducting commercial space activities, the heads of agencies shall:

- i. Purchase and use United States commercial space capabilities and services, to the maximum practical extent under existing law, when such capabilities and services meet United States Government requirements;
- ii. Prioritize partnerships with commercial industry to meet Government requirements through the modification of existing commercial space capabilities and services when potential system modifications represent a cost-effective and timely acquisition approach for the Government and are consistent with system and mission-security practices and principles;
- iii. Consider inventive, nontraditional arrangements for acquiring commercial space goods and services to meet United States Government requirements, including measures such as hosting Government capabilities on commercial spacecraft, purchasing scientific or operational data from commercial satellite operators in support of Government missions, leveraging satellite servicing or on-orbit manufacturing, and public-private partnerships;
- iv. Develop Government space systems only when in the national interest and no suitable or cost-effective United States commercial or, as appropriate, international commercial capability or service is available or could be available in time to meet Government requirements;
- v. Refrain from conducting United States Government space activities that preclude, discourage, or compete with United States commercial space

activities, unless required by national security or public safety;

- vi. Pursue opportunities for transferring routine operational space functions to the commercial space sector where beneficial and cost-effective and consistent with legal, security, or safety needs;
- vii. Cultivate increased technological innovation and entrepreneurship and provide alternatives to predatory foreign investment in the commercial space sector through the use of incentives such as prizes, competitions, and competitive grants;
- viii. Ensure that United States Government space technology and infrastructure are made available for commercial use on a reimbursable, non-interference and equitable basis to the maximum practical extent, consistent with applicable laws and national security interests;
- ix. Promote continued commercial United States leadership in space by making available, consistent with applicable laws and national security, commercially relevant technologies developed by Federal research and development programs to United States industry;
- x. Create transparent regulatory processes that minimize, consistent with national security and public safety, the regulatory burden and uncertainty for commercial space activities and that are flexible so as to accommodate and to adapt to technical development, business innovation, and market demands;
- xi. Encourage State and local governments to support the commercial space sector for the purposes of cultivating a technically skilled work force, diversifying innovation potential, and stimulating economic growth;
- xii. Foster fair and open global trade and commerce through the promotion of standards and regulations that have been developed with input from United States industry;

- xiii. Encourage the purchase and use of United States commercial space services and capabilities in international cooperative arrangements;
- xiv. Encourage the growth of United States commercial human space exploration, including logistical provisioning, delivery, and the continued commercialization of operations in and beyond low Earth orbit, and the use of microgravity as a domain for research and development; and
- xv. Promote the export of United States commercial space goods and services, including those developed by small and medium-sized enterprises, for use in international markets, consistent with United States export controls and national security objectives.

(b) **International Trade Agreements.** The United States Trade Representative (USTR) has the primary responsibility for international trade agreements to which the United States is a party. USTR, in consultation with other relevant heads of agencies, will lead any effort relating to the negotiation and implementation of trade disciplines governing trade in goods and services related to space.

(c) **Mission Authorization of Novel Activities.** The Secretary of Commerce, in coordination with the National Space Council, shall:

- i. Identify whether any planned space activities fall beyond the scope of existing authorization and supervision processes necessary to meet international obligations; and
- ii. Lead, if necessary, the development of minimally burdensome, responsive, transparent, and adaptive review, authorization, and supervision processes for such activities, consistent with national security and public safety interests, with a presumption of approval and prompt appeals process.

(d) **Foster the Development of Space Collision Warning Measures.** The Secretary of Commerce, in consultation

with the Secretaries of State, Defense, and Transportation, the Administrator of NASA, and the heads of other agencies, shall collaborate, consistent with applicable law, with industry and foreign nations to:

- i. Maintain and improve space object identification databases;
- ii. Pursue common international data standards and data integrity measures;
- iii. Disseminate orbital tracking information to commercial and international entities, including predictions of space object conjunctions;
- iv. Enhance the common understanding of resident space objects;
- v. Develop and implement standard practices for conjunction assessment operations to ensure the safety of flight of all space operations, across all orbital regimes; and
- vi. Develop common commercial operating guidelines and propose licensing requirements, consistent with respective agency mission and authorities, for large constellations, rendezvous and proximity operations, satellite servicing, small satellites, end-of-mission planning, and other classes of space operations.

## 2. Civil Space Guidelines.

(a) **Space Science, Exploration, and Discovery.** The United States shall lead an innovative and sustainable program of scientific discovery, technology development, and space exploration with commercial and international partners to enable human expansion across the solar system and to bring back to Earth new knowledge and opportunities. Beginning with missions beyond low Earth orbit, the United States will lead the return of humans to the Moon for long-term exploration and utilization, followed by human missions to Mars and other destinations.

(b) The Administrator of NASA, in collaboration with other appropriate agencies, Federal laboratories, and commercial partners, shall, consistent with applicable law:

- i. Lead a program to land the next American man and the first American woman on the Moon by 2024, followed by a sustained presence on the Moon by 2028, and the subsequent landing of the first human on Mars;
- ii. Continue the operation of the International Space Station (ISS) in cooperation with international partners for scientific, technological, commercial, diplomatic, and educational purposes while developing separate commercial platforms to sustain continuous United States presence in and utilization of low Earth orbit and to transition beyond ISS operations;
- iii. Develop partnerships to foster new economic activities in and beyond low Earth orbit that enable NASA and other customers to purchase services and capabilities at lower cost;
- iv. In consultation with international and commercial partners as appropriate, support activities that include the presence of humans in space; maintain continuous human presence in Earth orbit by transitioning from ISS to commercial platforms and services; and continue to support future objectives in human space exploration;
- v. Continue as the launch agent for the civil space sector while utilizing commercial space capabilities and services to the maximum practical extent;
- vi. Continue to grow partnerships with the commercial space sector to enable safe, reliable, and cost-effective transport of crew and cargo to destinations in low Earth and cislunar orbits, and to the lunar surface;

- vii. Lead space exploration technology development efforts in collaboration with industry, academia, and international partners to increase capabilities for future human and robotic space exploration missions while decreasing mission costs;
- viii. Maintain a sustained robotic presence in the solar system with international and commercial partners to: prepare for future human missions; conduct scientific investigations; map and characterize water, mineral, and elemental resources; and demonstrate new technologies;
- ix. Conduct space science for observations, research, and analysis of the Sun, space weather, the solar system, and the universe to enhance knowledge of the cosmos, advance scientific understanding, understand the conditions that may support the development of life, and search for planetary bodies and Earth-like planets in orbit around other stars;
- x. Pursue capabilities, in cooperation with other agencies, commercial, and international partners, to detect, track, catalog, and characterize near Earth objects to warn of any predicted Earth impact and to identify potentially resource-rich planetary objects; and
- xi. Develop options, in collaboration with other agencies, and international partners, for planetary defense actions both on Earth and in space to mitigate the potential effects of a predicted near Earth object impact or trajectory.

(c) **Observation of the Earth's Surface, Environment, and Weather.** To continue and to enhance a broad array of programs of space-based observation, research, and analysis of the Earth's surface, oceans, and atmosphere and their interactions, and to improve life on Earth:

- i. The Administrator of NASA, in coordination with the heads of other appropriate agencies, shall conduct a program of research to understand

Earth's interconnected systems, including the development of new Earth observing satellites for other agencies to use for operational purposes.

- ii. The Secretary of Commerce, through the Administrator of the National Oceanic and Atmospheric Administration (NOAA), shall be responsible for the requirements, funding, and operation of civil environmental satellites and data-gathering in support of atmospheric and space weather forecasting. NOAA may utilize NASA as the acquisition agent for operational environmental satellites for those activities and programs.
- iii. The Secretary of Commerce, through the Administrator of NOAA, and the Secretary of Defense, through the Secretary of the Air Force, in coordination with the Administrator of NASA and the heads of other appropriate agencies, shall:
  - 1. Continue existing coverage responsibilities;
  - 2. Develop a plan to provide Earth environmental satellite observation capabilities, including ground systems for operations, that meet current and future civil and national security requirements; and
  - 3. Ensure the continued sharing of data from all systems.
- iv. In support of operational requirements the Secretary of Commerce, in coordination with the Secretary of Defense, the Administrator of NASA, and the heads of other appropriate agencies, shall:
  - 1. Collaborate with academia, the commercial sector, and international partners to ensure uninterrupted operational environmental satellite observations using

cost-effective, resilient methods to acquire global meteorological satellite data;

2. Coordinate, as practicable, on future satellite and ground system architectures to reduce duplication of space acquisition processes and capabilities;

3. Utilize international partnerships to sustain and enhance a robust Earth observations program that meets civil and national security requirements, including weather, climate, ocean, and coastal observations; and

4. Purchase commercial environmental data for use in meteorological and space weather models when appropriate.

- v. The Director of the Office of Science and Technology Policy, in consultation with the Assistant to the President for National Security Affairs, shall coordinate the implementation of the National Space Weather Strategy and Action Plan. The goals of this strategy are to: enhance the protection of Government and commercial systems against the effects of space weather; disseminate accurate and timely space weather characterization and forecasts; and establish plans and procedures for responding to and recovering from space weather events. Agencies contributing to the United States Government Earth science enterprise shall pursue innovative partnerships with the commercial sector to make their agency's Earth observation data more easily discoverable, accessible, and usable to the public.

(d) **Land Remote Sensing.**

- i. The Secretary of the Interior, through the Director of the United States Geological Survey (USGS), shall:
1. Conduct integrated predictive science, which includes research, monitoring, assessments, and modeling, on natural and

human-induced changes to Earth's land, land cover, and inland surface waters, and manage a national global land surface data archive and its distribution;

2. Determine the operational requirements for collecting, processing, archiving, and distributing land surface data to the United States Government and other users;

3. Use international and commercial partnerships to help sustain and enhance land surface observations from space; and

4. Utilize, consistent with national security classification guidelines and sharing agreements and in coordination with the Secretary of Defense and the Director of National Intelligence, remote sensing information related to the environment and to disasters that is acquired from national security space systems.

ii. The Secretary of the Interior, through the Director of the USGS, and the Administrator of NASA shall work together to maintain a sustainable land-imaging program for operational land remote sensing observations that meets the needs of core United States users and leverages government, commercial, and international capabilities.

iii. The Administrators of NASA and NOAA, and the Director of the USGS shall:

1. Collaborate, as practicable, on future satellite and ground system architectures to ensure that civil space acquisition processes and capabilities are not unnecessarily duplicated; and

2. Continue to develop civil applications and information tools based on data collected by Earth observation satellites. They shall, to the maximum extent practicable, develop those applications and tools using known standards and open

protocols and make data and applications from United States Government satellites openly available to the public.

- iv. The Secretary of Commerce shall license and regulate private remote sensing systems consistent with the recognition that long-term United States national security and foreign policy interests are best served by ensuring that United States industry continues to lead the rapidly maturing and highly competitive commercial space-based remote sensing market. The Secretary of Commerce shall consult with the Secretary of State and Secretary of Defense in these matters in accordance with applicable law.

3. National Security Space Guidelines.

(a) The United States seeks a secure, stable, and accessible space domain, which has become a warfighting domain as a result of competitors seeking to challenge United States and allied interests in space.

(b) Strength and security in space contribute to United States and international security and stability. It is imperative that the United States adapt its national security organizations, policies, strategies, doctrine, security classification frameworks, and capabilities to deter hostilities, demonstrate responsible behaviors, and, if necessary, defeat aggression and protect United States interests in space through:

- i. Robust space domain awareness of all activities in space with the ability to characterize and attribute potentially threatening behavior;
- ii. Communicating to competitors which space activities the United States considers undesirable or irresponsible, while promoting, demonstrating, and communicating responsible norms of behavior;
- iii. Assured, credible, and demonstrable responses to defend vital national interests in space;

- iv. Resilient space-enabled missions that reduce the impact or deny the effectiveness of adversaries' actions; and
- v. Synchronized diplomatic, information, military, and economic strategies that:
  - 1. Deter adversaries and other actors from conducting activities that may threaten the peaceful use of space by the United States, its allies, and partners; and
  - 2. Compel and impose costs on adversaries to cease behaviors that threaten the peaceful use of space by the United States, its allies, and partners.

(c) The United States Space Force will pursue these objectives as the primary branch of the United States Armed Forces responsible for organizing, training, and equipping forces capable of projecting power in, from, and to space to defend United States national interests; protecting the freedom of operation in, from, and to the space domain; and enhancing the lethality and effectiveness of the Joint Force. The United States Space Force, and other branches of the Armed Forces as appropriate, will also present forces to the United States Space Command, and to the other Combatant Commands as appropriate, to deliver combat and combat support capabilities necessary to enable prompt and sustained offensive and defensive space operations, and to provide space support to joint operations in all domains.

(d) **Synchronized National Security Space.**

- i. The space domain is a priority intelligence and military operational domain for the United States. The United States Intelligence Community and Department of Defense use space capabilities to provide strategic, operational, and tactical intelligence and decisive military advantages to the Nation.
- ii. The Secretary of Defense and the Director of National Intelligence, in consultation with the heads of other appropriate agencies, Federal

laboratories, and, as appropriate, in partnership with United States industry, shall:

1. Develop, acquire, and operate space systems and supporting information systems and networks to aid United States national security interests and to enable defense and intelligence operations;
2. Procure resilient space capabilities and services to provide defense and intelligence operations during times of competition and armed conflict;
3. Develop and apply advanced technologies, capabilities, and concepts that anticipate and rapidly respond to changes in the threat environment and improve the timeliness and quality of intelligence and data to support operations;
4. Identify and characterize current and future threats to United States space missions for the purposes of enabling effective deterrence and defense;
5. Develop resilient, cost-effective architectures and accelerate acquisition and fielding of space capabilities with sufficient capacity to increase the resilience of space-enabled missions and to expand the ability to field or to rapidly reconstitute space capabilities based on the strategic environment;
6. Develop, implement, and exercise plans, procedures, techniques, and capabilities necessary to assure critical national security space-enabled missions;
7. Protect and defend United States national security space assets through integration and synchronization of operational command and control capabilities and activities that foster seamless execution between the Intelligence Community and Department of Defense;

8. Promote, in collaboration with the Secretary of State, norms of behavior for responsible national security space activities that protect United States, allied, and partner interests in space;
9. Ensure cost-effective resilience of space capabilities and assurance of space-enabled missions, including supporting information systems and networks, commensurate with their planned use and taking into account the value these systems provide in countering or mitigating threats, the consequences of their loss or degradation, and the availability of other means to perform the mission;
10. Expand and increase emphasis on disruptive and emerging commercial space capabilities and provide assessments to United States and allied leadership on the effects of these capabilities on national security;
11. Integrate cybersecurity into space operations and capabilities to retain positive control of space systems and verify the integrity of critical functions, missions, and services they provide;
12. Improve, develop, integrate, demonstrate, and proliferate in cooperation with relevant interagency, international, intergovernmental, and commercial entities, space domain awareness capabilities to predict, detect, warn, characterize, and attribute human-caused and naturally occurring activities that pose threats to space systems of United States interest;
13. Provide to the Department of Commerce and other agencies, as necessary, SSA information that supports national security, civil, and human space flight activities, planetary defense from hazardous near-Earth

objects, and commercial and allied space operations;

14. Collaborate with allies and partners actively engaging in space security and intelligence operations to incentivize and institute mechanisms for the exchange of relevant space, and space-related information; and

15. Collaborate with the Secretaries of Commerce and Energy, the Administrator of NASA, and the heads of other relevant agencies to periodically review the health and competitiveness of the United States space industrial base to determine whether the domestic space industry can meet the technical requirements, production, and service of national security space programs.

(e) **Department of Defense.**

i. The Secretary of Defense shall:

1. Defend the use of space for United States national security purposes, the United States economy, allies, and partners;

2. Protect freedom of navigation and preserve lines of communication that are open, safe, and secure in the space domain;

3. Ensure that space capabilities are of sufficient capability and capacity to enable decisive offensive and defensive space operations vital to defending United States, allied, and partner interests in space while continuing to sustain support to joint operations;

4. Conduct operations in, from, and through space to deter conflict, and if deterrence fails, to defeat aggression while protecting and defending United States vital interests with allies and partners;

5. Provide, as launch agent for the Department of Defense and the Intelligence Community, affordable and timely space access for national security purposes while using commercial space capabilities and services to the maximum practical extent;

6. Develop, as launch agent for the Department of Defense and the Intelligence Community, rapid launch options to reinforce or to reconstitute priority national security space capabilities in times of crisis and conflict and that, when practicable and appropriate, leverage commercial capabilities;

7. Detect, characterize, warn, attribute, and respond to, in coordination with the Secretary of State and other relevant agencies, space-related behaviors and activities that threaten the space interests of the United States, its allies, or partners, international peace and security, or the long-term sustainability of the space environment;

8. Periodically conduct policy-driven, threat-informed, strategically-focused space posture reviews and assessments that encompass military, diplomatic, informational, and economic aspects of posture, including evaluation of the suitability of U.S. Government, commercial industry, and international space architectures to deliver effective and integrated deterrence and compellence solutions; and

9. Develop, acquire, and operate space intelligence capabilities to support joint operations.

(f) **Intelligence Community.**

i. The Director of National Intelligence shall:

1. Enhance foundational scientific and technical intelligence collection and single and all-source intelligence analysis;
2. Coordinate with the Secretary of Defense to ensure necessary and sufficient intelligence support for acquisition, operations, and defense of space capabilities;
3. Develop, obtain, and operate space intelligence capabilities to support strategic goals, intelligence priorities, and assigned tasks;
4. Provide robust, timely, and effective collection, processing, analysis, and dissemination of information on foreign space capabilities and threats and supporting information system activities;
5. Integrate all-source intelligence of foreign space capabilities and intentions to produce enhanced intelligence products that support space domain awareness;
6. Support monitoring, compliance, and verification for transparency and confidence-building measures and, if applicable, arms control agreements;
7. Ensure Intelligence Community equities are represented and reviewed in United States Government radio frequency deliberations; and
8. Promote counterintelligence and security partnerships and practices within the commercial, civil, and national security space communities.

Sec. 6. General Provisions. (a) Nothing in this memorandum shall be construed to impair or otherwise affect:

(i) the authority granted by law to an executive department or agency, or the head thereof; or

(ii) the functions of the Director of the Office of Management and Budget relating to budgetary, administrative, or legislative proposals.

(b) This memorandum shall be implemented consistent with applicable law and subject to the availability of appropriations.

(c) This memorandum is not intended to, and does not, create any right or benefit, substantive or procedural, enforceable at law or in equity by any party against the United States, its departments, agencies, or entities, its officers, employees, or agents, or any other person.

(d) The Secretary of Commerce is authorized and directed to publish this memorandum in the *Federal Register*.

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