NSTM-3 April 14, 2026

MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

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SUBJECT: National Initiative for American Space Nuclear Power

President Trump's Executive Order (EO) 14369, "Ensuring American Space Superiority" (December 18, 2025), established the bold and ambitious goal of enabling near-term use of space nuclear power by deploying nuclear reactors on the Moon and in orbit, including a lunar surface reactor ready for launch by 2030. As directed in the EO, the Office of Science and Technology Policy (OSTP) will coordinate implementation of these goals through the *National Initiative for American Space Nuclear Power* (Initiative). This memorandum provides guidance to Federal departments and agencies (agencies) on achieving the President's priority for space nuclear power through this Initiative.

1. Establishing the National Initiative for American Space Nuclear Power

The United States will lead the world in developing and deploying space nuclear power for exploration, commerce, and defense. Agencies will establish cost-effective partnerships with private-sector innovators to meet near-term objectives that include safely deploying nuclear reactors in orbit as early as 2028 and on the Moon as early as 2030. Achieving these near-term objectives will establish technological viability essential to unlocking space exploration, commerce, and defense applications.

The *National Initiative for American Space Nuclear Power* will:

a. Sustain high-level focus and attention from the White House and relevant agencies, to enable a path that is both ambitious and achievable;

b. Undertake structured and risk-informed development through progressively higher nuclear power levels and advancement of other key technical capabilities;

c. Assign clear accountable leadership for each project and program within the Initiative;

d. Ensure close coordination between participating agencies to maximize cost efficiencies and minimize technical and schedule risk, including on regulatory processes and requirements for reactor development, testing, transportation, and launch; reactor and radiator design; power conversion; materials development; ground testing, handling, and storage; specialized training for relevant personnel; and development of higher-power systems for in-space applications;

e. Coordinate where possible with terrestrial nuclear power efforts to capitalize on relevant supply chains, modeling capabilities, materials data, and subject matter expertise;

f. Identify opportunities for efficiencies and early action in safety analysis, environmental assessments, and launch approval processes to meet requirements on objective timelines, such as nuclear system-specific safety analysis across relevant missions, safety analysis reciprocity between participating agencies, and shared environmental assessments for similar activities;

g. Leverage and enable private sector innovation, including by involving multiple participants to distribute risk and increase likelihood of success, enabling access to technical expertise and capabilities in agencies and National laboratories, and facilitating pathways to commercialization of space nuclear technologies;

h. Make efficient use of existing space nuclear funding across agencies, and other applicable resources where appropriate, with a particular focus on contributing directly toward achieving the near-term objectives outlined through this initiative; and

i. Prioritize the efficient use of resources to achieve intended objectives, deliver measurable results, and optimize outcomes within established fiscal parameters and subject to the availability of appropriations.

2. Strategy

The overall strategy for the Initiative is to conduct parallel and mutually-reinforcing National Aeronautics and Space Administration (NASA) and Department of War (DOW) design competitions to enable near-term demonstration and use of low- to mid-power space reactors in orbit and on the lunar surface, and prepare to deploy high-power reactors in the 2030s.

a. NASA will, within 30 days of this memorandum, initiate a program to develop a mid-power space reactor with a lunar fission surface power (FSP) variant ready for launch by 2030, and an option for a space variant for a nuclear electric propulsion (NEP) demonstration.

    i. NASA will partner with multiple vendors to develop fission power systems (including the reactor and power conversion) through at least preliminary design review and ground tests that demonstrate hardware performance (potentially but not necessarily including a full system ground test), pending successful achievement of all milestones. NASA should consider selecting approaches that differ substantially in the relative roles of private and public sector partners.

ii. NASA should prioritize integrated designs for mid-power FSP and NEP, making use of common elements (including reactor hardware and nuclear fuel) and mature and demonstrated technologies to the extent reasonable for both applications.

iii. NEP variants will be designed for compatibility with launch vehicles that are or will be readily available by 2029, and should ensure that planning for power usage does not drive the overall technical, cost, or schedule risk of the project.

iv. The mid-power reactors will be designed to provide at least 20 kilowatt electric (kWe) during at least 3 years in orbit and at least 5 years on the lunar surface.

v. NASA should consider including one low-power reactor among its selections, designed to provide at least 1 kWe, if doing so offers lower cost and schedule risk. For any development of a low-power option, NASA should consider opportunities for common use of technologies with mid-power FSP and NEP.

vi. Reactor design proposals should consider extensibility to higher power levels, and at least one of the selected designs should be for a reactor that is extensible up to at least 100 kWe.

vii. NASA should downselect to no more than two designs within one year, accounting for NASA's assessment of their likelihood of meeting cost, schedule, and other program objectives.

viii. NASA should preserve the flexibility to select the same or different performers for NEP and FSP demonstrations, depending on cost-effectiveness and mission suitability.

ix. For FSP, NASA should include a strong selection preference for a mid-power reactor.

x. For NEP, NASA should include a strong selection preference for the ability to meet NASA's objective timeline for an NEP demonstration option that is extensible to high-power missions and meets demonstration goals.

xi. To the maximal extent possible, NASA should focus any funding allocated for nuclear thermal propulsion (NTP) on developing common NEP/NTP components for initial use on the potential NEP demonstrator, such as shielding, communications and reactor control systems, and radiation hardened instrumentation. Other NTP-supporting efforts, such as development of high-temperature fuels and materials, may also advance NEP and FSP while laying the path toward NTP as an option for future crewed missions to Mars.

xii. To the maximal extent possible, NASA should focus any funding already allocated for NEP on developing power systems, radiators, thrusters, and other spacecraft systems for the potential NEP demonstrator, and otherwise advancing near-term objectives while laying the path toward NEP systems combining high power and high specific power appropriate for future crewed missions to Mars.

xiii. NASA should work with DOW and other agencies, as appropriate, to explore opportunities to share the cost of any necessary ground infrastructure, such as specialized spacecraft integration capability if required, that will also benefit DOW space nuclear efforts.

b. DOW will, pending availability of funding, pursue deployment of a mission-enabling mid-power in-space reactor by 2031.

i. Within 90 days, DOW will provide a briefing to OSTP, OMB, and NSC on the results of an analysis of operationally-relevant use-cases and payloads for low-power, mid-power, and high-power space nuclear systems, and an initial assessment of the best use of the 2031 mission. DOW will downselect the final mission set in coordination with OSTP, OMB, and NSC.

ii. During the first year of the Initiative, DOW will contribute its available space nuclear funding toward NASA's initial development of space nuclear power systems that will enable subsequent DOW efforts.

iii. Beginning in the second year of the Initiative, DOW should plan to work with at least two competing vendors for its fission power system (to include the reactor and power conversion) through at least preliminary design review and ground tests that demonstrate hardware performance, pending successful achievement of all milestones.

iv. DOW should encourage proposals from existing NASA FSP/NEP program participants, to enable cost-effective use of common reactor and/or common power conversion design and development.

v. DOW should have the option to select any qualified participants in the NASA FSP/NEP program if the DOW program participants fail to meet appropriate programmatic and technical milestones.

vi. DOW should work with NASA and other agencies, as appropriate, to explore opportunities to share cost for any necessary ground infrastructure that will also benefit subsequent space nuclear efforts.

c. NASA should pursue development and deployment of a high-power space reactor that can be ready for launch in the 2030s.

i. The reactor should be designed to provide at least 100 kWe, building on preceding DOW and NASA space nuclear achievements.

ii. NASA should consider pursuing an integrated design that is optimized for in-space propulsion but can also serve FSP needs.

iii. NASA should work with private sector innovators, selecting from among relevant NASA and DOW program participants and/or running a new design competition.

d. Across elements of the Initiative, DOW and NASA will, wherever beneficial and to the extent possible within existing authorities, use mechanisms and approaches that enable and incentivize innovation, rapid progress, and cost-effectiveness for taxpayers, such as:

i. Issuing firm fixed-price contracts, with funding payments provided only on successful completion of interim and final milestones;

ii. Allowing vendors to propose their own interim milestones and associated payments, and favoring payments that are tied primarily to tangible delivery of hardware and demonstration of real capability;

iii. Ensuring that agreements provide for appropriate government use and march-in rights, for example by incorporating standard patent rights clauses of 37 CFR 401.14;

iv. Specifying mass and size requirements as appropriate, in addition to power, but avoiding unnecessarily over-constraining the innovation space;

v. Maximize commonality between in-space and surface-power variants of any integrated design; and

vi. Capitalize on existing capabilities at NASA centers, DOW laboratories, and DOE national laboratories to the extent possible.

e. The Department of Energy (DOE) will, consistent with its mission and expertise and subject to available funding:

i. Support development and use of space nuclear power systems to enable U.S. scientific, exploration, and national security objectives, in coordination with sponsoring agencies and as directed through Space Policy Directive-6, "National Strategy for Space Nuclear Power and Propulsion," (December 21, 2020).

ii. Within 60 days, provide an assessment on the readiness of the U.S. nuclear reactor industrial base to produce up to four space reactors within five years, including reactor design, delivery of long lead-time components, and fuel allocation or production, along with recommendations for addressing any gaps;

iii. Conduct cross-cutting and mission-independent nuclear technology research, development, and analysis related to space nuclear reactors, to close common technology gaps (such as high-temperature fuels and materials to enable more efficient reactors), inform project development, and enable private sector developers;

iv. Coordinate with NASA and DOW to assess authorization and infrastructure needed for fueling, ground testing, reactor development, assembly, and launch;

v. Support consultation of National laboratory experts with participating private sector and government participants on reactor design, development, and testing;

vi. Conduct nuclear safety and security analysis and provide other relevant technical support to the Initiative; and

vii. Provide uranium for reactor fuel where commercial sources are insufficient or unavailable, drawing from the available fuel bank directed under Section 5(b) of Executive Order 14299 on *Deploying Advanced Nuclear Reactor Technologies for National Security*, per the DOE fuel allocation and prioritization process.

f. OSTP will, within 90 days and as part of its overall coordination of the Initiative, develop a roadmap that identifies obstacles to achieving the objectives of this Initiative and recommendations for addressing them. The roadmap will include the considerations referenced in Section 1(d) of this memorandum.

3. Implementation.

The OSTP Coordinator for Strategic Capabilities or other designated staff lead will report to me at least quarterly on implementation of this memorandum.