



Restoring American Nuclear Industry Dominance: The Critical Role of the Department of War

Prepared by the United Coalition for Advanced Nuclear Power (UCAN Power)

Introduction

This report highlights the critical role and opportunity for the Department of War (DOW) to lead the development, demonstration, and deployment of advanced nuclear technologies to meet national security requirements. DOW's success will benefit America's commercial nuclear industry in meeting the exploding national demand for electricity. This report provides 34 tangible recommendations for DOW actions over the next year to support national objectives. They are summarized in Annex A of this report. Congress has also provided DOW with guidance and directives in successive legislative cycles to establish oversight for nuclear power programs. These provisions are included in Annex B of this report.

As directed in four Executive Orders signed by President Trump on May 23, 2025, and in response to the National Energy Emergency declared by the President in January 2025, the United States has embarked on a wide-ranging campaign to restore U.S. nuclear energy dominance globally.¹ These Executive Orders are intended to catalyze private sector and government activities that will yield a quadrupling of American nuclear energy capacity by 2050. This ambitious foundational goal will require substantial collaborative efforts between the nuclear industry, the financial community, and federal agencies to bring this vision to reality for the Nation's benefit.

The Department of War can and must lead the way. America's armed forces face persistent challenges on the world stage and in the Homeland. Advanced nuclear technologies provide a solution to enhance energy resilience, improve reliability, and overcome contested logistics challenges. Conversely, DOW's performance in program development, training, sustainment, and technology deployment at scale can provide reactor developers and fuel suppliers the initial order book to bring their technologies to market. DOW, with close collaboration with the Department of Energy must first establish and prioritize the national security imperative, and then invest in commercial technologies to restore resilient, domestic supply chains and drive toward Nth-of-a-kind cost efficiencies.

We acknowledge and thank the strong partnership and expertise of ClearPath, the Nuclear Energy Institute, the UCAN Power Advisory Board, and the Department of War who contributed valuable insight and content for this report.

DOW's relationship with the commercial nuclear industry

America's civil nuclear reactor fleet, and decades of a robust nuclear industrial base, originated within the U.S. defense establishment. National security requirements drove the research and deployment of new fuel sources to diversify the Nation's electricity generating capabilities.

¹ Executive Orders 14299, *Deploying Advanced Nuclear Reactor Technologies for National Security*, 14300, *Ordering the Reform of the Nuclear Regulatory Commission*, 14301, *Reforming Nuclear Reactor Testing at the Department of Energy*, and 14302, *Reinvigorating the Nuclear Industrial Base*, May 23, 2025.

Following World War II, the primary focus of the military and, beginning in 1946, the Atomic Energy Commission (AEC), was on the nuclear deterrent, which expanded exponentially in the early years of the Cold War. Following the discovery of nuclear fission in 1938, many observers predicted civilian uses for nuclear power, but it was not until the 1950s, sparked by President Eisenhower's 1953 Atoms for Peace initiative², that the U.S. commenced the development of a commercial nuclear industry.

Collaboration between defense-related nuclear technology and the commercial industry accelerated development. The first electricity-generating nuclear reactor at Shippingport, Pennsylvania,³ was originally built for an aircraft carrier in a program eventually cancelled. A broader strategy focused on nurturing a commercial nuclear industry in parallel with defense-related programs, primarily the use of specialized light water reactors aboard the U.S. Navy's nuclear-powered submarines and aircraft carriers. By using similar light water reactor technology for civil applications, a strong and reliable domestic supply chain for components, fuel, research and development, and trained and qualified operators and technicians was created to serve both the defense and commercial communities. This linkage is a key reason why light water reactors are the bedrock of the U.S. commercial nuclear fleet.

Several of today's leading nuclear companies played a major role in defense applications in the early years of the nuclear era, with Westinghouse, General Atomics, and Babcock and Wilcox (now BWXT) among many others. For example, Westinghouse designed the Shippingport reactor and was involved in military nuclear programs while establishing leading in the civilian nuclear power market.

Fuel supply, too, grew out of the defense establishment. By 1956, the U.S. had built three massive uranium enrichment plants, the first in Oak Ridge, Tennessee as part of the Manhattan Project, which was followed in the early 1950s by facilities in Paducah, Kentucky and Portsmouth, Ohio. For decades, these gaseous diffusion plants provided the enriched uranium needed to support America's nuclear deterrent and naval reactors, while later also supplying the burgeoning commercial industry with the low enriched uranium needed for civil power operations. Without these enrichment plants being built to meet military requirements, it is unlikely that a commercial nuclear power industry would have blossomed in America, as the power-generating utilities had neither the resources nor the technology to produce their own source of enriched uranium fuel.

Additionally, national security-related investments in technology development had a direct impact on establishing the U.S. as the world's leading nuclear innovator. From 1954 through the 60's, the U.S. Army Nuclear Power Program⁴ deployed microreactors for power and heat to Fort Belvoir VA, Sundance AF WY, Fort Greeley, AK, a research station in Antarctica, an Army post in Greenland, and aboard a barge in the Panama Canal Zone. The Air Force, AEC, and NASA worked collaboratively on nuclear technologies to support space-based operations, including radioisotope thermoelectric generators, power-generating reactors, and nuclear rocket engines. Similarly, the Air Force worked with the AEC from the late 1940s through 1961 to develop a nuclear-powered aircraft. Although this concept proved impractical, the technological achievements helped advance other programs. Many of the advanced reactor designs being developed, demonstrated, and licensed today were born in America's national laboratories to meet national security requirements.

² <https://www.eisenhowerlibrary.gov/research/online-documents/atoms-peace>

³ <https://www.ans.org/news/article-4929/the-legacy-of-the-shippingport-atomic-power-station/>

⁴ <https://www.usace.army.mil/About/History/Exhibits/Nuclear-Power-Program/>

Today's DOW Imperative for Nuclear Power

The U.S. military faces an unparalleled array of threats from nation-state adversaries and nonstate actors with both kinetic and cyber capabilities to target electrical and fuel infrastructure with the intent to deny, disrupt, or defeat the technological advantages of our forces protecting America's interests. To maintain resilient capabilities and readiness for a wide array of missions – including global strike, overseas contingency operations, Next Generation Air and Missile Defense, space force employment, and force dispersal, our forces must have assured access to reliable power. As has been proven with the use of modular reactors in our aircraft carrier and submarine fleet, nuclear power can provide key capabilities at home and in forward battlespaces otherwise unavailable to the military services.

The DOW operates hundreds of installations globally for operations, training, depot/shipyard maintenance, manufacturing, laboratories, and State missions. Many installations host critical national security activities and assets for which the loss or disruption would have a significant detrimental impact on joint operations to defend the Nation's interests. Examples include command and control, space/missile launch sites, ground base radar/interceptor locations, munitions manufacturing, strategic weapon system bases, the use of artificial intelligence, and other missions of critical needs.

Defense and Task Critical Assets, as designated by the Secretary of Energy under current law,⁵ are those for which power disruptions could be harmful to U.S. national security, energy security, or public health. Nearly all domestic DOW facilities are served by their local electrical grid, overseen by private sector utilities, with backup power provided primarily through diesel generators. In modern warfare, the lack of energy resilience is a critical vulnerability. When the grid goes down or power generation is disrupted— whether through malicious action, equipment failure, or natural disaster – affected bases are forced to curtail operations, which can have a deleterious impact on mission effectiveness, especially during extended outages. Our adversaries have confirmed the capability and intent to conduct cyber-attacks against the U.S. electrical grid and other infrastructure to coerce decision-making or deny capabilities. It is imperative we respond with investments and deployment to mitigate the risk of energy vulnerabilities globally.

Executive Order 14299⁶, “Deploying Advanced Nuclear Reactor Technologies for National Security,” addresses these vulnerabilities by calling for “advanced nuclear technologies to support national security objectives, such as the protection and operation of critical infrastructure, critical defense facilities, and other mission capable resources.” The EO directs the following:

- The Secretary of the Army to establish a program of record to build a nuclear reactor at a domestic military installation to commence operations within the next three years.
- The Secretary of Energy to designate AI data centers, located at or operated in coordination with Department of Energy facilities, as critical defense facilities, and the nuclear reactors powering them as defense critical electric infrastructure.
- The Secretary of Energy will designate DOE sites, and work with the private sector, to deploy advanced nuclear technology to power AI infrastructure and meet other national security objectives within 30 months.

⁵ 16 USC 824o-1(c).

⁶ <https://www.whitehouse.gov/fact-sheets/2025/05/fact-sheet-president-donald-j-trump-deploys-advanced-nuclear-reactor-technologies-for-national-security/>

- The Secretary of Energy to release at least 20 metric tons of high-assay low-enriched uranium into a readily available fuel bank for private sector projects operating nuclear reactors to power AI infrastructure at DOE sites.

In addition to the EO, the DOW is now prioritizing installation energy resilience to mitigate risk from actual cyber and anticipated kinetic threats. This push for facility resilience is even more relevant now, in light of the activities by the China's Typhoon group, Russia's Seashell Blizzard, and other malicious actors, whose sabotage malware can disrupt critical U.S. infrastructure in time of crisis. America's vital military facilities must be powered by resilient energy sources free from the threat of disruption. The military services are now pursuing nuclear power deployed on critical military bases in microgrids to provide this always-on reliability.

1. Resilient power and heat for domestic military installations

As a general principle, DOW's use of advanced nuclear reactors, especially when acting as an early-stage customer for a particular technology, can provide benefit to the reactor developer. For example:

1. Build an order book for the company, which makes the reactor design more attractive to other government and commercial customers as well as the financial community.
2. DOE and DOW installations can serve as a proving ground for new reactor deployment.
3. Multiple reactors of the same design results in a firm supply chain, squeeze out first-of-a-kind costs, and move toward the desired Nth-of-a-kind cost efficiencies.
4. Accelerated DOW deployment helps catalyze the domestic nuclear fuel industry.

DOW has been pursuing separate Service initiatives to power its installations using advanced nuclear technologies. Two of these programs focus on microreactors – less than 50 Megawatts of electric output (MWe) – and a third is considering larger nuclear assets to power both the installation and a co-located data center, as described in the following section.

The Air Force and the Defense Logistics Agency

A joint effort between the Air Force and the Defense Logistics Agency, will provide 5 MWe and high-temperature heat to Eielson Air Force Base, near Fairbanks, Alaska.⁷ The reactor vendor will be required to build, own, operate, and decommission the reactor and in exchange will receive a 30-year power purchase agreement for the electricity and heat produced. Designed as a unique, pathfinder program, the Air Force and DLA would compile 'lessons learned' to inform future advanced nuclear deployments. A Request for Proposals was issued in September 2022 and on three occasions the Air Force has issued a Notice of Intent to Award (NOITA) the contract to Oklo, a developer of sodium-cooled reactors, but the first two notices faced protests. A third NOITA was issued on 30 May 2025, with a DAF Press Release on 11 June, 2025.⁸

The Advanced Nuclear Power for Installations Program (ANPI)

In June 2024, the ANPI program established by DOW's Defense Innovation Unit (DIU), the Army, and the Air Force, announced its start⁹. Originally designed to power two Army installations using microreactors of notional 10 MWe output by 2030, eight reactor vendors were selected after an evaluative process for future participation under the ANPI umbrella, and contractual arrangements are

⁷ <https://www.eielson.af.mil/microreactor/>

⁸ <https://mail.google.com/mail/u/2/#inbox/FMfcgzQcqQxHVXFLfstbxKJmlkJTGSvZ?projector=1&messagePartId=0.1>

⁹ <https://www.nrc.gov/docs/ML2509/ML25097A070.pdf>

underway with several of these companies.¹⁰ A source of funding is not yet clear: although the Big Beautiful Bill Act passed by Congress in July 2025 included \$125 million “for the acceleration of development of small, portable modular nuclear reactors for military use.”¹¹ While the Army is now pursuing the Janus program, the Air Force is still working with DIU on the ANPI initiative.

The Janus Program

On October 14, 2025, the Department of Army announced¹² the launch of the Janus Program, a next-generation nuclear power program that will deliver resilient, secure, and assured energy to support national defense installations and critical missions. The Army and DIU modeled contracting mechanisms from NASA’s Commercial Orbital Transportation Services (COTS) program to ensure reactors remain commercially owned and operated, with milestone payments structured to support industry partners in achieving “Nth-of-a-kind” production. The goal is to have small nuclear reactors under 30Mwe powering parts of military installations at nine bases in the U.S. by 2027 and 2028¹³. The Army will provide technical oversight and assistance, including support to the full uranium fuel cycle and broader nuclear supply chain, ensuring the program strengthens both defense and U.S. industrial capabilities.

Fuel Sources

A significant cross-cutting issue relates to the availability of nuclear fuel to power advanced reactors for use on military installations, or for other DOW applications. Unfortunately, the domestic nuclear fuel supply chain has been undercut over decades by foreign government-owned or supported enterprises. U.S. capacity for uranium mining, conversion, and enrichment has in recent years been at historic lows. In 2024, Congress appropriated over \$3 billion to catalyze domestic enrichment and deconversion, but more investment will be needed to restore U.S. fuel production capacity at scale.

Many advanced reactor designs being developed, and in particular microreactors, require fuel not commercially available, such as uranium enriched between 5-20% U235 content, which is known as High Assay Low Enriched Uranium (HALEU) for which a commercial supply chain does not yet exist. Further, many unique fuel forms will be used in advanced reactors, such as tri-structural isotropic (TRISO) pellets, sodium-bonded fuels, or molten salts, which require new fuel supply chains.

The additional capital costs to expand domestic nuclear fuel capacity will be borne by the private sector, but can be backstopped by firm contractual commitments for reactor deployments from DOW. With contracts in hand, nuclear reactor developers can contract for fuel purchases, helping companies in the fuel supply chain accrete the demand needed to commit capital resources. Further, as the military services enter agreements to build significant nuclear power capacity to assure energy resilience for their bases, it will help reactor vendors also expand into non-military markets, further bolstering the demand for fuel and the likelihood that new fuel production capacity can be brought online.

Recommendations

- a. Consistent with the goal of protecting defense critical infrastructure from cyber threats, SECWAR establish a priority list of those military Defense Critical Assets (DCA) and Task Critical Assets

¹⁰ <https://www.diu.mil/latest/DOD-selects-eligible-companies-for-the-Advanced-Nuclear-Power-for-Installations-Program>

¹¹ P.L 119-21, Sec. 20005(a)(15).

¹² https://www.army.mil/article/288903/army_announces_janus_program_for_next_generation_nuclear_energy

¹³ <https://taskandpurpose.com/news/army-nuclear-reactors/>

(TCA) with power vulnerabilities and other conditions that could be de-risked by the deployment of advanced reactors, and identify funding sources through the Under Secretary of War (Comptroller).

- b. Establish a formal process by May 2026, along with associated funding, for a military decision architecture to assess robust energy security metrics, site and technology suitability, regulatory and permitting pathways, acquisition feasibility, costs and market conditions, land availability, and other criteria, to support DOW stakeholders in making informed nuclear energy investments for resilient power on domestic military bases.
- c. Establish indemnification policies related to the development and operation of nuclear technologies on DOW sites and delegate indemnification authority to the office of the Assistant Secretary of War (Energy, Installations, Environment) to reduce bureaucratic friction and ensure timely execution.
- d. Identify emerging technologies to automate the process of site planning and reactor design including promulgating guidance to nuclear reactor developers for the submission and use of digital twins enabled by artificial intelligence to accelerate the modeling and simulation of site selection and development of associated power infrastructure.
- e. Actively engage with defense communities and state military affairs agencies through the Association of Defense Communities¹⁴ and the National Association of State Energy Officials' (NASEO) Advanced Nuclear First Mover Initiative,¹⁵ to raise awareness about the need to deliver advanced nuclear power rapidly, safely, and cost-effectively to enhance energy resilience and the military value of installations in local communities.
- f. Align the program objectives, leadership, and resources of The Janus Program with ANPI and other Service microreactor programs with a goal of powering no less than 9 critical military facilities using microreactors by 2030. In expanding this program, the Department of War should coordinate closely with other microreactor initiatives being overseen by the Department of Energy. Prioritization should be to provide nuclear power to designated Critical Defense Facilities and Defense Critical Assets. Multiple microreactors can be deployed to each selected military installation, as informed by energy needs. An established Program of Record should be included in the Fiscal Year 2027 President's budget request, with guidance on industry cost-shares or power purchase agreements.
- g. Assess options for the Eielson AFB Microreactor Pilot Program to increase the output of the deployed reactor and to accelerate its deployment to mitigate critical vulnerabilities in the Alaska Railbelt electricity transmission system that provides power to U.S. strategic assets in the Fairbanks area (Fort Greeley, Clear Space Force Station, and Fort Wainwright). The larger reactor could also meet the needs of other off-takers that could be sited on Eielson AFB, including data centers needed to support regional Next Generation Air and Missile Defense (formerly Golden Dome) requirements.
- h. Create a collaborative DOW-DOE initiative to support the expansion of the domestic nuclear fuel supply chain. This effort should examine options to:

¹⁴ <https://defensecommunities.org/>

¹⁵ <https://www.naseo.org/issues/electricity/firstmover>

- i. Form a defense-specific nuclear fuel bank for enriched uranium at levels above 5% U235 and for specialty fuel forms such as TRISO; and
 - ii. Work with industry to catalyze private sector investment into nuclear fuel production facilities in the United States, supporting the Defense Production Act Consortium recently created by DOE.
- i. Re-energize the DOW/DOE Electricity Advisory Committee (EAC) charged with recommendations to enhance the resilience of the Critical Electric Infrastructure (DCEI) as agreed to a memorandum of understanding released in September, 2020.
 - j. Employ Other Transaction Agreements and the use of easements to provide maximum flexibility for developer coordination for rapid deployment while establishing well defined terms for intellectual property development and rights during and after the completion of a prototype project.
 - k. Identify resource and funding needs to support U.S. Army approval and licensing of advanced nuclear reactors for use aboard military installations, to ensure adequate staffing and expertise are available to support the Janus program and other deployment initiatives. As appropriate, establish a formal partnership with the Department of Energy for this purpose. Include any funding needs in the DOW FY27 budget submission.
 - l. Update Army Regulation 50-7 (Army Reactor Program), and develop a new guidance document, Army Pamphlet 50-7, to carry out the Army's nuclear regulatory authority derived from section 91b of the Atomic Energy Act (AEA), 42 U.S.C. § 2121(b).
 - m. Establish a formal partnership with DOE and Nuclear Regulatory Commission for a whole-of-government approach to transition through reciprocity from DOE/DOD authorization to NRC licensing for commercialization of technologies.
 - n. Create a program to employ DOW's service laboratories to support research and development and to advance policies to drive adoption of advanced nuclear technologies across the military services. This initiative should focus specifically on the best means to incorporate nuclear energy as a military installation power source to meet mission energy requirements.
 - o. The Assistant Secretary of War (Energy, Installations, Environment) establish a tab on their home website to post for public review all reports and briefings to Congress related to nuclear power for energy resilience.

2. *Financing Resilient Installation Power by Co-locating Digital Off-Takers*

Executive Order 14299 required the Secretary of Energy to take steps to site advanced nuclear reactors on Department of Energy (DOE) sites, including to power AI infrastructure (data centers), with a goal of operating an advanced reactor for these purposes by November 23, 2028. The EO directed the Secretary of Energy to designate AI data centers as critical defense facilities, and supporting power as defense critical electric infrastructure. The EO's set a course for national public infrastructure to be constructed on federal land to meet U.S. energy and security demand for the national interest. In response to the EO, the Department of Energy is soliciting industry proposals for four locations with

decisions to be made in the first quarter of FY26 at no cost to the government other than a land agreement. The four sites are Idaho National Laboratory, ID¹⁶; Oak Ridge National Laboratory, TN¹⁷, Savannah River, SC¹⁸, and Paducah, KY.¹⁹

The co-location of AI data centers and power generation infrastructure on DOW installations provides significant capital for advanced reactor deployment. In recent years, the U.S. digital industry has seen near-exponential growth, and the power demands of the hundreds of new data centers in development are taxing local electrical grids. Providing secure property on which to build data centers – particularly those that are used to support America’s military and intelligence community – is a necessary next step, as it will provide both the military installation and the data center complex access to always-on nuclear power, unencumbered by any perturbations to the local electrical grid.

In addition to the two DOW microreactor programs, a third program to provide resilient power to installations is being overseen by the U.S. Navy. In October 2024, the Navy issued a Request For Information to industry, seeking input on how best to power Navy and Marine Corps installations in the mid-Atlantic region.²⁰ Since then, the Navy has refined the program to include co-located data centers, and on August 7, 2025 issued a solicitation for “Innovative Energy Resilience Solutions to Power Navy and Marine Corps Installations,” with a focus on small modular reactors (SMR), power storage systems, and other technologies that, according to Secretary of the Navy John Phelan, “can deliver power with 99.9% availability, even if the public grid goes dark.”²¹ The solicitation was issued by a pre-established consortium using Other Transaction Authority (OTA). Respondents were asked to describe how their energy solution could power “high-demand data centers” using “alternative capital structures to accelerate deployment and reduce reliance on traditional appropriated funding.”

The Secretary of the Navy’s proposed use of OTAs to ensure resilient power for military bases is a significant advancement from military energy projects over the past 15 years that used ‘enhanced use lease’ (EUL) authorities (10 USC Section 2667) to encumber valuable military lands for green energy projects feeding the commercial grid. This authority limits the energy sources or other improvements developed on leased land to directly be used for military purposes. Both the Air Force²² and Navy²³ still have legacy EUL initiatives underway, with the Air Force focused on data center development with optional power generation. Both will continue to preclude the development of nuclear energy plants and data centers on military land for military purposes.

Two important aspects of co-locating digital infrastructure on DOW installations surround the funding opportunities that are created, and the ability to use the digital capabilities for national security purposes, including the development of Next Generation Air and Missile Defense (formerly Golden

¹⁶ <https://www.energy.gov/ne/articles/energy-department-seeks-proposals-ai-data-centers-energy-projects-idaho-national>

¹⁷ <https://www.energy.gov/em/articles/us-energy-department-seeks-proposals-ai-data-centers-energy-projects-oak-ridge>

¹⁸ <https://sam.gov/workspace/contract/opp/bf8cc2391a8644b88332f9218f2ea098/view>

¹⁹ <https://www.energy.gov/em/articles/us-energy-department-seeks-proposals-ai-data-centers-energy-projects-paducah-site>

²⁰ <https://sam.gov/opp/bde515015bf641a280e77ae7d10ff488/view>

²¹ U.S. Navy Chief of Information, “Department of the Navy Announces Solicitation for Innovative Energy Resilience Solutions to Power Navy and Marine Corps Installations,” Press Release, August 7, 2025.

²² <https://sam.gov/workspace/contract/opp/e74af0fe0e03406e80488d7f5c538baa/view>

²³ <https://www.ameresco.com/ameresco-and-u-s-navy-partner-to-build-ai-optimized-data-center-and-energy-infrastructure-at-nas-lemoore/>

Dome), Sentinel, and other critical programs that rely on artificial intelligence. The four nuclear Executive Orders make clear that the government will do its best to streamline federal regulations and implement creative programs to speed up reactor deployments and the growth of the industry. Funding, however, will rely heavily on the private sector and some level of government loans, such as those tendered through the DOE Loan Programs Office, rather than direct appropriations.

The digital industry is already investing in significant energy generation projects, including nuclear reactor development and operations. In just the past year, major hyperscalers such as Amazon²⁴, Google, and Meta²⁵ have cumulatively committed several billion dollars to reactor vendors to accelerate and deploy their capabilities. The Nation's demand for both power and AI have resulted in innovative private sector financing structures to deploy reactors on DOE/DOW facilities dedicated to powering collocated data centers. In most cases, the power generated on site would have the capacity to meet both data center and federal installation demands allowing either redundancy or separation from the commercial grid.

Virtually all nuclear reactor designs require refueling and maintenance outages, and that the capacity factor for even the most advanced reactor always will be less than 100%. Reactor deployments to power critical DOW and data center infrastructure must take into account the need for 'always on' electricity. To achieve extremely reliable electricity production, nuclear technology can be partnered with natural gas, geothermal, or other sources of energy to meet performance goals. An associated concept is to deploy several reactors at the same site to provide redundancy; for example, a combined data center/military facility requirement for a constant supply of 500 MWe could be powered by six or seven 100 MWe reactors, with any excess production potentially feeding into the local grid if approved by local regulators and the NRC.

The Department of the Navy has also invested in initiatives to galvanize the defense industrial base through three pillars of advanced technology, supply chain optimization, and workforce development. Here, the broad reach of the DOW can be extended to workforce initiatives supporting advanced reactor and fuel supply chain technologies, by collaborating with nuclear power trade associations, non-profit organizations, vocational technical schools, and colleges and universities to align efforts for developing nuclear engineers, technicians, and craftsmen.

Recommendations

- a. Accelerate the Navy's Innovative Energy Resilience program by awarding multiple transactions for development. By December 2025, select three or more Navy, Marine Corps, and other military installations where data center developers will partner with DOW to deploy data centers powered by advanced reactors.
 - i. This program should focus on the deployment of mid-sized reactors (50-300 MWe per unit), in contrast to the smaller output microreactors being pursued under ANPI. Multiple reactor deployments per installation should be considered.

²⁴ <https://apnews.com/article/climate-data-centers-amazon-google-nuclear-energy-e404d52241f965e056a7c53e88abc91a>

²⁵ <https://sustainability.atmeta.com/blog/2024/12/03/accelerating-the-next-wave-of-nuclear-to-power-ai-innovation/>

- ii. Due to expected reactor capacity factors, as necessary, supplement nuclear power generation with natural gas, geothermal, or other energy sources for these deployments.
 - iii. Employ new and innovative funding mechanisms that require the private sector to fund a significant percentage of the reactor buildouts. Any appropriated funds needed to supplement private capital should be included in the FY2027 President's budget request.
- b. Update Air Force and Navy EUL solicitations to ensure improvements built on military land will directly support installation energy resilience, or consolidate resources to the award of OTA's initiated by the Navy to meet critical military requirements for the immediate development of resilient nuclear and other power plants using the statutory authorities contained in 10 U.S.C. § 4022 and 10 USC Section 2668 (a)(13).
 - c. DOW use the expertise and experience from DOE solicitations to accelerate land agreements and projects on DOW installations.
 - d. Designate "nuclear" and "nuclear energy" as covered technology categories for investment by the Department of War Office of Strategic Capital, enabling DOW to accelerate the adoption and commercialization of these as critical national security technologies.
 - e. In coordination with DOE and the Department of Labor, convene stakeholders from academia, technical schools, and the nuclear industrial base in regional forums to establish innovative campaigns encouraging education and training in the nuclear trades and engineering professions.

3. *Powering and heating remote sites*

DOW also requires reliable and resilient energy to power and heat defense and task critical assets operating in remote or harsh environments. Typically, these assets are powered by diesel generators with vulnerable fuel supply routes, or are connected to the local grid, often at great expense and over long distances. In most cases, power needs for these assets are relatively small ranging from tens of kilowatts to lower single-digit megawatts of electric or thermal power.

While in the past nuclear power options for remote and low-power applications were extremely limited, a new generation of microreactor developers has emerged, with designs that are, in some cases, transportable (see following section), and where reactor electrical/heat output aligns with the requirements of many specialty DOW assets.

The Sentinel ICBM program, also known as the Ground Based Strategic Deterrent, is a case in point. By 2029, the first new Sentinel ICBMs are expected to be deployed as a replacement for the aging LGM-30 Minuteman III missiles currently in use as a leg of the strategic nuclear triad. These strategic missiles are based at sprawling Air Force installations in Montana, North Dakota, and Wyoming. Recent analysis has found that new silos will need to be built to house the Sentinel missiles, and microreactors can be used in lieu of currently planned diesel generators to provide reliable, always-on power for these vital national security assets.

The U.S., working through NORAD, maintains a chain of early warning radar stations used to detect attacks or incursions into U.S. and Canadian airspace. The North Warning System consists of 13 long range and 36 short range radar sites, located across Alaska and the Canadian arctic. These sites

have additional purpose: they establish Canadian and U.S military presence in the desolate arctic region, typically house meteorological stations, and are used as logistical, search and rescue, and tactical communications hubs in these austere locales. Additional radar-based warning systems include the Solid State Phased Array Radar System, with five locations –three in the U.S., one in the UK, and one in Greenland – and the Long Range Radar System that is overseen by the Federal Aviation Administration but from which contact data is shared with Air Force Control Centers. These assets as well as new locations will be incorporated into the Next Generation Air and Missile Defense (formerly Golden Dome) comprehensive aerial threat initiative. The use of microreactors to power these essential advanced warning systems, which protect the nation from surprise attacks, could prove highly beneficial to increasing readiness and site resilience.

Recommendations

- a. Select Sentinel sites for microreactor deployment with a goal of powering the initial operating capability of each site, currently estimated for 2029. The microreactors could be used either for primary or backup power. Further, conduct analysis and planning to employ microreactors across the fleet of Sentinel locations as these demonstrations prove successful.
- b. Initiate a siting process to power the Alaska-based long-range radar sites of the North Warning System using microreactors, retaining diesel generators as a backup source of power, with a goal of deploying microreactors to two or more sites as an operational evaluation by 2029.
- c. Engage with the allied nations that host North Warning System and Solid State Phased Array Radar sites and seek collaborative programs to power these vital warning systems with microreactors.
- d. For Next Generation Air and Missile Defense (formerly Golden Dome), prioritize the need for reliable, resilient, secure on-site power generation and co-located data compute capabilities as critical mission assurance capabilities, prioritizing remote and island deployments.
- e. Survey all remote and isolated DOW assets and facilities to ascertain those where nuclear power technologies can be employed to increase readiness and resilience. As appropriate, establish programs to power select facilities using advanced reactors. The survey should be completed by February 2026 and used to inform the FY2028 budget request.

4. Mobile power for deployable use

A mature DOW advanced nuclear technology program is Project Pele,²⁶ overseen by DOW's Strategic Capabilities Office (SCO), which is developing a transportable microreactor for military applications. The program grew out of a Defense Science Board study in 2016 that identified a need for a resilient and transportable power source, to obviate the needs of moving large quantities of fossil fuels through contested territory. The study concluded that "nuclear energy power systems present an opportunity to 'invert' the paradigm of military energy, where the extremities of U.S. military power could become the beneficiaries of reliable, abundant, and continuous energy, rather than the most energy-challenged segments."²⁷

²⁶ https://www.cto.mil/pele_eis/

²⁷ Department of War, War Science Board, "Task Force on Energy Systems for Forward/Remote Operating Bases, Final Report," August 1, 2016, 1.

SCO issued a solicitation in 2020 to industry and selected three vendors to provide concepts for a mobile microreactor, ultimately selecting BWXT as the prime vendor in 2022. X-energy was later put under contract to provide an alternative design. The program has proceeded apace, with the fuel for the demonstration reactor fully manufactured, construction of the reactor site underway at the Idaho National Laboratory, and the reactor to be built and shipped to INL in 2026 for assembly and demonstration.²⁸ The reactor design is a high temperature, gas-cooled reactor using HALEU in the form of tristructural isotropic pellets, which are considered the most resilient of all nuclear fuel forms. The reactor will generate 1.5 MWe for up to three years without refueling and can be transported to site in four 20-foot containers.

Originally conceived for use at military forward operating bases, transportable microreactors can also provide significantly improved power-generating capabilities in emergent situations, such as for disaster relief operations where local power generation will not be available to support recovery efforts for extended periods, or for surge operations where a temporary microgrid can be established to power a large logistics hub or other key facility. For disaster relief operations, transportable reactors could be used to establish microgrids or be stationed at hospitals or relief shelters if transmission lines have been severely damaged in the area. A related concept is to deploy microreactors on barges, which can be transported to ports to support any form of DOW activity, from a forward operating base to an emergency response operations center.

As with the Eielson AFB microreactor project, Project Pele has been seen from the start as a pathfinder program that will not only support DOW mission requirements but will also catalyze industry growth in the field of microreactor development and production. This concept has proven true: the prime vendor, BWXT, has announced that it has upsized the Pele technology to provide roughly 50 MW of thermal energy for commercial use, and is pursuing partnerships to deploy the technology in the civilian mining industry.

The smaller, transportable nuclear technologies required for military operations have significant applications in the private sector. Microreactor developer Radiant, which is bringing to market a transportable 1 MWe gas-cooled reactor, has signed a pre-order agreement and received deposits for 20 reactors from Equinix, a leading global data center provider. Other microreactor developers – some of whom are developing sub-megawatt scale reactors – have indicated that they are receiving strong interest in their technologies from the oil and gas, telecommunications, and infrastructure sectors, with key requirements being that their reactor be factory built and transportable, so that they can be set up and providing power in a short timeframe.

One attribute of most transportable microreactor designs is that they can be operated by a very small crew or even by remote means, from a centralized monitoring location. These concepts are new to the nuclear industry, where the traditional gigawatt-scale light water reactor plant not only has a large operating staff but also on-site security and emergency response forces. Deploying large numbers of transportable microreactors will require a significant change in regulatory, licensing, and operating paradigms. The NRC has done groundbreaking work on this concept and DOW should build off NRC's efforts as it brings transportable nuclear power assets into its inventory.

The DOW acting as a first customer for small, transportable microreactors will have a significantly positive impact on the development of this niche segment of the broader commercial nuclear industry.

²⁸ <https://www.energy.gov/ne/articles/department-defense-breaks-ground-project-pele-microreactor>

Recommendations

- a. Broaden Project Pele to manufacture and deploy three additional transportable microreactors by 2030, using proven microreactor designs and focusing on demonstration deployments to remote locations in the arctic and strategic islands throughout the Pacific region. Initial funding for this expansion should be included in DOW's FY2027 budget request.
- b. Establish a program of record and technology transition office within DOW to establish the policies, programs, and host nation requirements to deploy Pele-style reactors to contingency locations in support of Combatant Commander resilient power requirements.
- c. Establish weapon system deployment requirements where Pele could serve as a off-grid resilient power source, including island and remote contingency locations supporting dispersed forces in a contested logistics environment.
- d. Demonstrate by 2030 transportable microreactors for use in humanitarian and disaster-response situations, in coordination with FEMA, DHS, and the Department of Energy.

5. Space propulsion and power

The U.S is in a race with near-peer competitors to build capacity for operating and maneuvering in space, with Russia and China dedicating significant resources to increase their space-based capabilities, in order to achieve dominance over American and allied interests. With space-based surveillance, command and control, and communications systems essential to U.S. warfighting capabilities, maintaining leadership in space technology has never been more important.

Chemically propelled rockets have since the dawn of the space age been the mainstay for transiting to and through space, whether for on-orbit activities or for voyages to the moon and beyond. However, chemical rockets, no matter how large or advanced, face physical limits to their endurance, efficiency, and power. In today's race for space supremacy, nuclear thermal propulsion (NTP) technologies have the potential for significant increases in operational lifespan of spacecraft and far more ability to change orbits and inclinations over similar chemically propelled vehicles. Simply stated, a nuclear propulsion capacity would yield a notable operational edge for the U.S. military in space.

Similarly, the development of power-generating reactor systems for use aboard orbiting or transiting spacecraft, or for use on the surface of the moon or other celestial bodies, could provide a tremendous boost in available power, thereby allowing more complex and power-intense systems to be deployed. Additionally, radioisotope power systems (RPS), which provide reliable and resilient electricity or thermal energy at relatively low power levels, have a significant track record of success powering a wide range of space missions and their use for military activities in near-earth and cislunar space would add significant value to American military capabilities

Reactor power systems can also be used for nuclear electric propulsion (NEP), where the power generated by the reactor is converted to electricity, which is used to propel ions at high speed to generate thrust. While NEP has much lower thrust than NTP technologies, it is incredibly efficient and offers promise for use in long-duration missions that do not require rapid acceleration.

Nuclear propulsions and power systems should be designed only for use in space. Moving spacecraft and materials from the earth's surface to low earth orbit (LEO) is and should remain the province of the highly capable chemical rockets currently in use. Any nuclear-propelled or powered system would remain inert during its launch to LEO, and the onboard reactor system would not be commissioned until the spacecraft had been verified in a stable orbit that posed no risk to people or the environment. These nuclear-propelled and powered spacecraft would spend their operational lifetime in space and would never return to earth's atmosphere.

Since the 1950s, the U.S. has carried out numerous programs to develop space nuclear propulsion and power systems, but despite significant technological achievements, only a single small power-generating reactor was orbited in 1965. No nuclear-powered rocket has ever been flown, by the U.S. or any other nation.

For nuclear space propulsion, the U.S. military has played a leading role in four major development efforts, alongside the AEC, NASA, and DOE: Project Rover and the associated Nuclear Energy for Rocket Vehicle Applications (NERVA) program, which over 18 years developed and tested 21 reactors and rocket engines (1955-1973); Project Timberwind and the Space Nuclear Thermal Propulsion effort, to develop a particle bed reactor engine (1987-1993); Project Prometheus, to operationalize a nuclear electric propulsion capability for robotic exploration of the solar system (2002-2005); and Reactor on A Rocket, later named the Demonstration Rocket for Agile Cislunar Operations, overseen by the Defense Advanced Research Projects Agency (2020-2025). For nuclear power in space, similar programs such as SNAP (1955-1973) and SP-100 (1983-1994) actively pursued space reactor technologies, with only a single demonstration unit, SNAP-10A, being flown in 1965.

Cumulatively, over \$20 billion in inflation-adjusted funds were expended in these programs. While never yielding an operational asset, technological progress was immense: as far back as 1968 a reactor called Phoebus-2A was demonstrated successfully in the Nevada desert, producing more power than any reactor before or since – over 4000 MW of thermal energy. With today's AI-driven analytic tools, computer modeling and simulation, and advances in additive manufacturing and materials science, it is highly likely that a reactor propelled or powered spacecraft can be developed in a relatively compact time frame and at reasonable cost. Considering the need to maintain American supremacy in space, the distinct operational advantages that nuclear-enabled spacecraft provide should be a priority of Space Force and DOW.

Recommendations

- a. Update a DOW program to develop nuclear thermal propulsion capability, with a goal of on-orbit demonstration by 2030.
- b. Create within the U.S. Navy's Office of Naval Reactors a separate advanced reactor development function to support the DOW nuclear space programs and to assist other DOW elements with the evaluation of advanced reactor technologies.
- c. Support NASA's newly-enhanced 'fission surface power' program, which aims to develop a 100 KWe fission reactor for use on the moon, providing technical support from Naval Reactors and identifying potential DOW uses for the technology.
- d. Accelerate and expand the Air Force Research Laboratory's JETSON program to develop NEP technology to power small spacecraft, with initial operating capability by 2029.

- e. Initiate a program of record for development and deployment of advanced radioisotope power systems to provide satellite power, with on-orbit demonstration of three or more RPS units by 2029.

Conclusion

The Trump administration has set bold, aggressive goals for the expansion of the U.S. nuclear industry, to meet a host of critical missions. Such an expansion will bolster our energy security, improve our national defense, enhance American technology leadership, and re-establish U.S. nuclear energy dominance across the globe.

The Department of War can take significant steps to operationalize advanced reactor technologies to the benefit of our national security posture, while also helping catalyze the domestic advanced nuclear industry. This has been the history of America's commercial nuclear industry since its inception in the 1950s, and today there is no better time to build on that historical record than through active and expanded DOW programs to help spur the deployment of advanced nuclear reactors for both military and civil missions.

The recommendations made in this report rely on the time-tested truth that the immense customer base of the U.S. military can serve as a launching point for many advanced reactor concepts entering the market. DOW adoption of a broad array of reactor technologies will not only add significant value to our defense posture but will send an unambiguous signal to the private sector and financial community that advanced reactors, as a critical national security component, also represents strong value for commercial applications. In doing so, reactor developers will have a trusted initial early partner with an urgent demand, lowering long-term unit production costs through multiple reactor deployments, and building essential supply chains that also will benefit commercial activity.

America faces an energy emergency where electricity and thermal power demands are forecasted to far exceed planned supply. Nuclear power provides a trusted and reliable solution to close the existential gap of the current situation. By further embracing advanced nuclear technologies, the Department of War will not only improve its resilience and operational capabilities, it will provide a bridge for the commercial nuclear industry to benefit each and every American citizen.

About the United Coalition for Advanced Nuclear Power (UCAN Power)

UCAN Power was launched in 2022 with the goal of accelerating the adoption of advanced nuclear technologies to meet growing energy demands and to enhance national security. UCAN Power is a non-partisan, consensus-based coalition led by a group of experts with extensive backgrounds in policy, federal funding, and technology transitions. This leadership structure enables UCAN Power to effectively advocate for nuclear energy solutions and collaborate with key stakeholders. The coalition has actively promoted policies that support the deployment of advanced nuclear reactors, including work with the Department of War to explore innovative energy solutions for military installations, ensuring energy resilience, and addressing the increasing demand for electricity driven by advancements in technology, such as artificial intelligence. Our work is generously supported by annual grants from non-profit associations.

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Annex A - Summary of Recommendations

1. Resilient power for military installations

- 1a. Consistent with the goal of protecting defense critical infrastructure from cyber threats, SECWAR establish a priority list of those military Defense Critical Assets (DCA) and Task Critical Assets (TCA) with power vulnerabilities and other conditions that could be de-risked by the deployment of advanced reactors, and identify funding sources through the Under Secretary of War (Comptroller).
- 1b. Establish a formal process by May 2026, along with associated funding, for a military decision architecture to assess robust energy security metrics, site and technology suitability, regulatory and permitting pathways, acquisition feasibility, costs and market conditions, land availability, and other criteria, to support DOW stakeholders in making informed nuclear energy investments for resilient power on domestic military bases.
- 1c. Establish indemnification policies related to the development and operation of nuclear technologies on DOW sites and delegate indemnification authority to the office of the Assistant Secretary of War (Energy, Installations, Environment) to reduce bureaucratic friction and ensure timely execution.
- 1d. Identify emerging technologies to automate the process of site planning and reactor design including promulgating guidance to nuclear reactor developers for the submission and use of digital twins enabled by artificial intelligence to accelerate the modeling and simulation of site selection and development of associated power infrastructure.
- 1e. Actively engage with defense communities and state military affairs agencies through the Association of Defense Communities and the National Association of State Energy Officials' (NASEO) Advanced Nuclear First Mover Initiative, to raise awareness about the need to deliver advanced nuclear power rapidly, safely, and cost-effectively to enhance energy resilience and the military value of installations in local communities.
- 1f. Align the program objectives, leadership, and resources of The Janus Program with ANPI and other Service microreactor programs with a goal of powering no less than 9 critical military facilities using microreactors by 2030. In expanding this program, the Department of War should coordinate closely with other microreactor initiatives being overseen by the Department of Energy. Prioritization should be to provide nuclear power to designated Critical Defense Facilities and Defense Critical Assets. Multiple microreactors can be deployed to each selected military installation, as informed by energy needs. An established Program of Record should be included in the Fiscal Year 2027 President's budget request, with guidance on industry cost-shares or power purchase agreements.
- 1g. Assess options for the Eielson AFB Microreactor Pilot Program to increase the output of the deployed reactor and to accelerate its deployment to mitigate critical vulnerabilities in the Alaska Railbelt electricity transmission system that provides power to U.S. strategic assets in the Fairbanks area (Fort Greeley, Clear Space Force Station, and Fort Wainwright). The larger reactor could also meet the needs of other off-takers that could be sited on Eielson AFB, including data centers needed to support regional Next Generation Air and Missile Defense (formerly Golden Dome) requirements.
- 1h. Create a collaborative DOW-DOE initiative to support the expansion of the domestic nuclear fuel supply chain. This effort should examine options to:
 - 1hi Form a defense-specific nuclear fuel bank for enriched uranium at levels above 5% U235 and for specialty fuel forms such as TRISO; and
 - 1hii Work with industry to catalyze private sector investment into nuclear fuel production facilities in the United States, supporting the Defense Production Act Consortium recently created by DOE.
- 1i. Re-energize the DOW/DOE Electricity Advisory Committee (EAC) charged with recommendations to enhance the resilience of the Critical Electric Infrastructure (DCEI) as agreed to a memorandum of understanding released in September, 2020.
- 1j. Employ Other Transaction Agreements and the use of easements to provide maximum flexibility for developer coordination for rapid deployment while establishing well defined terms for intellectual property development and rights during and after the completion of a prototype project.

- 1k. Identify resource and funding needs to support U.S. Army approval and licensing of advanced nuclear reactors for use aboard military installations, to ensure adequate staffing and expertise are available to support the Janus program and other deployment initiatives. As appropriate, establish a formal partnership with the Department of Energy for this purpose. Include any funding needs in the DOW FY27 budget submission.
- 1l. Update Army Regulation 50-7 (Army Reactor Program), and develop a new guidance document, Army Pamphlet 50-7, to carry out the Army's nuclear regulatory authority derived from section 91b of the Atomic Energy Act (AEA), 42 U.S.C. § 2121(b).
- 1m. Establish a formal partnership with DOE and Nuclear Regulatory Commission for a whole-of-government approach to transition through reciprocity from DOE/DOD authorization to NRC licensing for commercialization of technologies.
- 1n. Create a program to employ DOW's service laboratories to support research and development and to advance policies to drive adoption of advanced nuclear technologies across the military services. This initiative should focus specifically on the best means to incorporate nuclear energy as a military installation power source to meet mission energy requirements.
- 1o. The Assistant Secretary of War (Energy, Installations, Environment) to establish a tab on their home website to post for public review all reports and briefings to Congress related to nuclear power for energy resilience.

Financing Resilient Installation Power by Co-locating Digital Off-Takers

- 2a. Accelerate the Navy's Innovative Energy Resilience program by awarding multiple transactions for prototype development. By December 2025, select three or more Navy, Marine Corps, and other service installations where data center developers will partner with DOW to deploy data centers powered by advanced reactors.
 - i. This program should focus on the deployment of mid-sized reactors (50-300 MWe per unit), in contrast to the smaller output microreactors being pursued under Janus. Multiple reactor deployments per installation should be considered.
 - ii. As necessary, supplement reactor output with natural gas, geothermal, or other energy sources for these deployments.
 - iii. Employ new and innovative funding mechanisms that require the private sector to fund a significant percentage of the reactor buildouts. Any appropriated funds needed to supplement private capital should be included in the FY2027 President's budget request.
- 2b. Update Air Force and Navy EUL solicitations to ensure improvements built on military land will directly support installation energy resilience, or consolidate resources to the award of OTA's initiated by the Navy to meet critical military requirements for the immediate development of resilient nuclear and other power plants using the statutory authorities contained in 10 U.S.C. § 4022 and 10 USC Section 2668 (a)(13).
- 2c. DOW use the expertise and experience from DOE solicitations to accelerate land agreements and projects on DOW installations.
- 2d. Designate "nuclear" and "nuclear energy" as covered technology categories for investment by the Department of War Office of Strategic Capital, enabling DOW to accelerate the adoption and commercialization of these as critical national security technologies.
- 2e. In coordination with DOE and the Department of Labor, DOW should convene stakeholders from academia, technical schools, and the nuclear industrial base in regional forums to establish innovative campaigns encouraging education and training in the nuclear trades and engineering professions.

2. Powering remote sites

- 3a. Select Sentinel sites for microreactor deployment with a goal of powering the initial operating capability of each site, currently estimated for 2029. The microreactors could be used either for primary or backup power. Further, conduct analysis and planning to employ microreactors across the fleet of Sentinel locations as these demonstrations prove successful.

- 3b. Initiate a siting process to power the Alaska-based long-range radar sites of the North Warning System using microreactors, retaining diesel generators as a backup source of power, with a goal of deploying microreactors to two or more sites as an operational evaluation by 2029.
- 3c. Engage with the allied nations that host North Warning System and Solid State Phased Array Radar sites and seek collaborative programs to power these vital warning systems with microreactors.
- 3d. For Next Generation Air and Missile Defense (formerly Golden Dome), prioritize the need for reliable, resilient, secure on-site power generation and co-located data compute capabilities as critical mission assurance capabilities, prioritizing remote and island deployments.
- 3e. Survey all remote and isolated DOW assets and facilities to ascertain those where nuclear power technologies can be employed to increase readiness and resilience. As appropriate, establish programs to power select facilities using advanced reactors. The survey should be completed by February 2026 and used to inform the FY2028 budget request.

3. *Mobile power for deployable use*

- 4a. Broaden Project Pele to manufacture and deploy three additional transportable microreactors by 2030, focusing on demonstration deployments to remote locations in the arctic and strategic islands through the Pacific region. Funding for this expansion should be included in DOW's FY2027 budget request.
- 4b. Establish a program of record and technology transition office in the DOW to establish the policies, programs, and host nation requirements to deploy Pele to contingency locations in support of Combatant Commander resilient power requirements.
- 4c. Establish weapon system deployment requirements where Pele could serve as a off-grid resilient power source, including island and remote contingency locations supporting dispersed forces in a contested logistics environment.
- 4d. Demonstrate transportable microreactors for use in humanitarian and disaster-response situations, in coordination with FEMA, the Department of Homeland Security, and the Department of Energy.

4. *Space power and propulsion*

- 5a. Update a DOW program to develop nuclear thermal propulsion capability, with a goal of on-orbit demonstration by 2030.
- 5b. Create within the U.S. Navy's Office of Naval Reactors a separate advanced reactor development function to support the DOW nuclear space programs and to assist other DOW elements with the evaluation of advanced reactor technologies.
- 5c. Support NASA's newly-enhanced 'fission surface power' program, which aims to develop a 100 KWe fission reactor for use on the moon, providing technical support from Naval Reactors and identifying potential DOW uses for the technology.
- 5d. Accelerate and expand the Air Force Research Laboratory's JETSON program to develop NEP technology to power small spacecraft, with initial operating capability by 2029.
- 5e. Initiate a program of record to develop and deploy advanced radioisotope power systems to provide satellite power, with on-orbit demonstration of three or more RPS units by 2029.

Appendix B – Congressional Actions Related to Nuclear Power Development – FY2025-FY2026

FY2026 HASC/SASC Directives

National Defense Authorization Act (NDAA) for Fiscal Year 2026 (P.L. 119-60)

SEC. 318. RESPONSIBILITIES OF EXECUTIVE AGENT FOR INSTALLATION AND OPERATIONAL NUCLEAR ENERGY.

- (a) EXECUTIVE AGENT.—The Secretary of Defense, in coordination with the Secretary of the Army, the Under Secretary of Defense for Acquisition and Sustainment, the Under Secretary of Defense for Research and Engineering, and the Director of the Strategic Capabilities Office of the Department of Defense, shall ensure that, not later than one year after the date of the enactment of this Act, there is designated an executive agent of the Department of Defense for installation and operational nuclear energy.
- (b) RESPONSIBILITIES.—The responsibilities of the executive agent specified in subsection (a) shall include the following:
- (1) In coordination with the commanders of the combatant commands and the Joint Chiefs of Staff, assessing installation and operational nuclear energy needs.
 - (2) Consulting with project developers and other experts from the commercial nuclear industry, potential private owners and operators of nuclear reactors to be deployed at military installations, and other persons determined appropriate by the executive agent, to assess the technological capabilities, development status, costs, timelines, risks, and potential need for design evolution of nuclear reactors to meet the needs of the Department of Defense referred to paragraph (1).
 - (3) In coordination with the Secretary of Energy, the Secretaries of the military departments, and the Nuclear Regulatory Commission, assessing the technology readiness, licensability, deployability, operability, and maintainability of nuclear reactors with respect to potential deployment at military installations.
 - (4) In coordination with the Secretary of Defense and the Secretaries of the military departments, integrating technical and project resources across the Department of Defense for the use of nuclear reactors to meet the needs of the Department of Defense referred to in paragraph (1), including by developing a plan to aggregate the demand for, and the acquisition and deployment of, nuclear reactors across military installations and military departments.
 - (5) In coordination with the Secretary of Energy and the Nuclear Regulatory Commission—
 - (A) evaluating the regulatory framework and other requirements applicable to the use of nuclear reactors to meet such needs; and
 - (B) establishing training programs and plans relating to the acquisition and operation of nuclear reactors to meet such needs.
 - (6) Identifying the timelines and resource requirements necessary for the acquisition and operation of nuclear reactors to meet such needs, including—
 - (A) any support necessary from the national laboratories of the Department of Energy; and
 - (B) any funding necessary to carry out interim pilot programs for the limited deployment of nuclear reactors until such timelines and resource requirements are met.
 - (7) Including resource requirements identified pursuant to paragraph (6), and any other resource requirements necessary to carry out this subsection, in applicable planning, programming, budgeting, and execution processes of the Department of Defense, including by preparing, as applicable—
 - (A) a program objective memorandum for any new resource so required; and
 - (B) a budget justification for any new resource so required for inclusion in the budget materials submitted by the Secretary of Defense to Congress in support of the President’s annual budget request (submitted to Congress pursuant to section 1105 of title 31, United States Code).
 - (8) Providing technical support for programs of the military departments relating to the deployment of nuclear reactors for installation energy resilience.
- (c) ANNUAL REPORTS.—Not later than September 30, 2026, and annually thereafter for a period of five years, the executive agent specified in subsection (a) shall submit to the Secretary of Defense and the congressional defense committees a report describing the actions taken to implement this section during the one-year period ending on the date of the submission of such report.
- (d) PLAN FOR PROGRAM OF RECORD.—(1) SUBMISSION.—Not later than one year after the date of the enactment of this Act, the Secretary of Defense, in coordination with the executive agent specified in subsection (a), shall submit to the

congressional defense committees a plan to establish a program of record of the Department of Defense to meet installation and operational nuclear energy needs.

(2) ELEMENTS.—The plan under paragraph (1) shall include the following:

- (A) An identification of requirements necessary for the establishment of the program of record specified in such paragraph.
- (B) A budget estimate for such program of record through 2030 or through the conclusion of the five-year period following the first date on which a nuclear reactor is deployed at a military installation, whichever is later.
- (C) A summary of actions taken to implement the responsibilities under subsection (b) and information derived as a result of such actions.
- (D) Use cases for nuclear reactors, developed in coordination with the commanders of combatant commands with respect to installation and operational needs (including needs relating to the electrification of operational energy, elimination of fuel supply vulnerabilities, military installation resilience, sustainment of military installations, enablement of multi-domain operations, and advanced weaponry).
- (E) An identification of the minimum potential number of military installations at which nuclear reactors would be necessary to deploy in order to establish a cost-effective program, and projected dates by which such nuclear reactors would achieve initial operational capability.
- (F) An estimate of fuel requirements necessary to support the deployment of various models of nuclear reactors at military installations, to inform future acquisition planning.

(e) COMPLIANCE WITH APPLICABLE DIRECTIVE.—The Secretary shall carry out this section in compliance with Directive 5101.01.

(f) SUPPORT WITHIN DEPARTMENT OF DEFENSE.—In accordance with Directive 5101.01, the Secretary shall ensure that the military departments, the Defense Agencies, and other elements of the Department of Defense provide the executive agent specified in subsection (a) with the appropriate support and resources needed to perform the roles, responsibilities, and authorities of the executive agent.

(g) DEFINITIONS.—In this section—

- (1) The term “Directive 5101.01” means Department of Defense Directive 5101.01, or any successor directive relating to the responsibilities of an executive agent of the Department of Defense.
- (2) The terms “energy resilience” and “military installation resilience” have the meanings given those terms in section 101 of title 10, United States Code.
- (3) The term “executive agent” has the meaning given the term “DoD Executive Agent” in Directive 5101.01.
- (4) The term “installation and operational nuclear energy” means energy that is—
 - (A) generated by a utilization facility authorized pursuant to section 91b. of the Atomic Energy Act of 1954 (42 U.S.C. 2121(b)); and
 - (B) used exclusively for the purposes of providing—
 - (i) operational energy (as such term is defined in section 2924 of title 10, United States Code); or
 - (ii) the energy required for a military installation (as such term is defined in section 2801 of title 10, United States Code).

SEC. 319. ESTABLISHMENT OF ADVANCED NUCLEAR TRANSITION WORKING GROUP.

(a) IN GENERAL.—Not later than 180 days after the date of the enactment of this Act, the Secretary of Defense shall establish an Advanced Nuclear Transition Working Group (referred to in this section as the “working group”).

(b) MEMBERSHIP.—The Working Group shall be composed of the following members:

- (1) The Assistant Secretary of Defense for Energy, Installations, and Environment.
- (2) The Assistant Secretary of the Army for Installations, Energy, and Environment.
- (3) The Assistant Secretary of the Navy for Energy, Installations, and Environment.
- (4) The Assistant Secretary of the Air Force for Energy, Installations, and Environment.
- (5) The Joint Staff Director for Logistics, J4.
- (6) The Principal Director for Energy Resilience of the Office of the Under Secretary of Defense for Research and Engineering.
- (7) The Director of the Strategic Capabilities Office.

- (8) The Director of the Defense Innovation Unit.
- (9) The heads of such other components of the Department of Defense, as determined by the Chair.
- (c) CHAIR.—The Assistant Secretary of Defense for Nuclear Deterrence, Chemical, and Biological Defense Policy and Programs, or a designee, shall serve as the Chair of the Working Group.
- (d) DUTIES.—The duties of the Working Group shall include the following:
- (1) To develop and execute a strategy to accelerate the procurement and fielding of commercial advanced nuclear capabilities, in compliance with laws, regulations, and agreements, and consistent with best practices.
 - (2) To identify and elevate the critical energy requirements of the combatant commands, United States military installations, and the infrastructure and mission capability needs of the combatant commands and military installations that may be addressed with advanced nuclear reactors.
 - (3) To connect the combatant commands and military installations with ongoing and planned efforts.
 - (4) To create an accelerated pathway to leverage advanced nuclear technologies to address operational gaps.
 - (5) To provide a forum for members of the Working Group to coordinate advanced nuclear demonstration and transition efforts, including by increasing opportunities and venues for government and commercial research and development, testing and evaluation, and procurement activities.
 - (6) To advocate for appropriate levels of resourcing within planning, programming, budgeting, and execution processes to advance the development and use of nuclear energy technologies across the Department of Defense.
 - (7) To coordinate interagency activities and develop best practices on workforce development, regulatory pathways, licensing frameworks, access to fuel sources, safety and security standards, and decommissioning that currently hinder more rapid fielding of advanced nuclear reactors.
 - (8) To establish venues through which to engage commercial companies developing advanced reactors so as to review the technology readiness, timeline, and availability of reactor capabilities for defense applications.
 - (9) To inform and complete the briefings and reports required in subsection (f).
- (e) MEETINGS.—The Working Group shall meet at the call of the Chair and not less frequently than once per quarter.
- (f) REPORT.—(1) IN GENERAL.—Not later than September 30, 2026, and annually thereafter until 2029, the Chair shall submit to the appropriate congressional committees a report describing the status of advanced nuclear projects, associated funding and requirements, planned program transitions, actions, and milestones of the Working Group, and other matters as determined by the Secretary of Defense and the Working Group during the preceding year.
- (2) CONTENTS.—Each report required by paragraph (1) shall include the following:
- (A) A summary on the adequacy of existing energy storage and distribution systems to meet mission requirements in a contested or austere operating environment.
 - (B) An identification of the critical energy requirements of the combatant commands, United States military installations, and the infrastructure and weapons capabilities needs of the combatant commands and military installations that may be addressed with the use of micro-reactors or small modular reactors, including through expeditionary, transportable, stationary, space-based, or floating power plants.
 - (C) A list of prioritized potential use cases, including—
 - (i) base electric power;
 - (ii) power for operational systems in austere environments;
 - (iii) desalination or other water production systems;
 - (iv) synthetic fuel production;
 - (v) directed energy weapons;
 - (vi) artificial intelligence at the edge;
 - (vii) defense support of civil authorities;
 - (viii) humanitarian response; and
 - (ix) 3D/additive manufacturing.
 - (D) Recommendations for at least three pilot projects.
- (3) APPROPRIATE CONGRESSIONAL COMMITTEES.—In this section, the term “appropriate congressional committees” means—
- (A) the Committee on Armed Services of the Senate; and
 - (B) the Committee on Armed Services of the House of Representatives.
- (g) TERMINATION.—The Working Group shall terminate on September 30, 2029.

SEC. 321. PILOT PROGRAM ON NAVY INSTALLATION NUCLEAR ENERGY.

- (a) **PILOT PROGRAM REQUIRED.**—Beginning not later than one year after the date of the enactment of this Act, the Assistant Secretary of the Navy for Energy, Installations, and Environment shall initiate a ten-year pilot program at one or more naval installations for the purpose of determining how small modular reactors or mobile reactors could be used—
- (1) to meet the installation energy needs of the Department of the Navy during the ten-year period beginning on the date of the enactment of this Act; and
 - (2) to inform the development of concepts for the use of nuclear power facilities to support increased energy security for Navy and Marine Corps installations.
- (b) **CONSIDERATIONS.**—
- (1) **SELECTION OF INSTALLATIONS.**—In selecting naval installations for the pilot program required by subsection (a), the Assistant Secretary of the Navy for Energy, Installations, and Environment shall consider whether an installation—
 - (A) has entered into, as of the date of the enactment of this Act, a memorandum of agreement with a private power provider or reactor technology vendor to explore the use of a small modular reactor or mobile reactor designed for standardized and scaleable production for installation energy requirements;
 - (B) contributes support to naval operations and readiness; and
 - (C) could be co-located with a data center.
 - (2) **SELECTION OF REACTORS.**—In selecting nuclear reactors for use in the pilot program required under subsection (a), the Assistant Secretary shall consider—
 - (A) the type of fuel for advanced nuclear power production, with a preference for fuel that is resistant to high heat, such as tri-structural isotropic particle fuel;
 - (B) the capacity of the reactor, including that the needed capacity of the reactor is in the range of 20MW to 300MW; and
 - (C) whether the reactor includes a passive cooling system to ensure operational safety and sustainability.
- (c) **PROGRAM REQUIREMENTS.**—In carrying out the pilot program required by subsection (a), the Assistant Secretary of the Navy for Energy, Installations, and Environment shall—
- (1) assess and make recommendations regarding how to make available the facilities of a Navy or Marine Corps program selected for participation in the pilot program;
 - (2) ensure that the program includes a plan for refueling and end-of-life waste stream management;
 - (3) ensure that any reactor used in the program is resilient to grid interruption; and
 - (4) coordinate with the working group established by section 319 and the executive agent established by section 318 with respect to timing, sequencing of projects, and locations and to prevent duplication and conflicts between the pilot program and other pilot programs and nuclear initiatives of the Department of Defense.
- (d) **CONTRACTS.**—The pilot program does not require the Secretary of the Navy to enter into any new contract, including an energy savings performance contract.
- (e) **REPORTING REQUIREMENTS.**—
- (1) **ANNUAL REPORT.**—Not later than 30 days after the date of the initiation of the pilot program under subsection (a), the Secretary of the Navy shall submit to the congressional defense committees a report that includes each of the following:
 - (A) A five-year funding plan for all Navy nuclear shore and installation power programs for the Navy, including nuclear efforts provided for in the context of the Navy Shore Energy Program and any identified funding shortfalls.
 - (B) An identification of authorities required and remaining barriers to the provision of nuclear power from a military installation to civilian energy grids.
 - (C) A review of lessons learned from related efforts conducted by the other military departments, the Defense Innovation Unit, and any other entities the Secretary considers relevant.
 - (D) An analysis of efforts taken by the Navy to use nuclear power on Navy installations to support data center power demands.
 - (E) Any other details the Secretary of the Navy considers relevant.

- (2) FINAL REPORT.—Upon conclusion of the pilot program, the Secretary of the Navy shall submit to the congressional defense committees a report that includes, or include in the report required under section 2925 of title 10, United States Code, for the fiscal year during which the pilot program concludes, each of the following:
 - (A) An identification of the funding that would be required to convert the pilot program to a program of record.
 - (B) An identification of all available funding provided in the budget of the Navy for the fiscal year during which the report is submitted for nuclear power at Navy and Marine Corps installations.
 - (C) A list of all installations where the Secretary is considering the future use of nuclear power.

- (f) EARLY TERMINATION.—The Secretary of the Navy may terminate the pilot program before the expiration of the ten-year period referred to in subsection (a) if the Secretary provides notice of such early termination to the congressional defense committees.

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SEC. 323. NOTIFICATION REQUIREMENT WITH RESPECT TO NUCLEAR POWER IN GUAM.

- (a) NOTIFICATION.—Except as provided in subsection (b), the Secretary of Defense shall, not later than one year before any date on which the Secretary carries out the placement of a permanent nuclear reactor in Guam, submit to Congress and the Governor of Guam a notification of such placement.

- (b) EXCEPTION.—Subsection (a) shall not apply to a nuclear reactor aboard a naval vessel.

- (c) NUCLEAR REACTOR DEFINED.—In this section, the term “nuclear reactor” has the meaning given the term “advanced nuclear reactor” in section 951 of the Energy Policy Act of 2005 (42 U.S.C. 16271).

H. Report 119-231 to Accompany H.R. 3838 - Streamlining Procurement For Effective Execution and Delivery, and National Defense Authorization Act For Fiscal Year 2026.

Establishment of Deployable Nuclear Energy Program

The committee recognizes the operational energy challenges faced by forward-deployed forces and expeditionary units, including reliance on vulnerable fuel logistics. The committee understands that advanced deployable nuclear energy systems—such as mobile microreactors—may provide scalable, resilient power solutions for missions in austere environments, improving energy availability while reducing sustainment burdens.

The committee directs the Secretary of Defense to submit a report to the congressional defense committees not later than March 1, 2026, on the Department’s strategy to prototype and evaluate deployable nuclear energy systems for use in expeditionary and forward operating environments. The report should include the following:

- (1) identification of operational requirements and potential use cases across combatant commands for deployable nuclear energy systems;
- (2) a timeline and milestones for system prototyping, testing, and field evaluation;
- (3) an overview of coordination with the Secretary of Energy, the Nuclear Regulatory Commission, and other relevant federal agencies to ensure safe and secure development and deployment;
- (4) evaluation of commercial technologies available for potential testing and down-selection; and
- (5) identification of key performance characteristics and system attributes necessary to support Department missions in contested and logistics-constrained environments.

Small Modular Reactors in Guam

The committee is not aware of imminent plans to place small modular reactors in Guam, and notes that should such systems be placed in Guam it is in the interest of the public to know what systems would be present on the island. Therefore, the committee directs the Secretary of Defense to provide a report to the Senate Committee on Armed Services and the House Committee on Armed Services not later than March 1, 2026, on:

- (1) steps the Department would take to ensure information of public interest is not designated classified or controlled unclassified information;
- (2) how the Department would receive public feedback on any plans to place small modular reactors in Guam;

- (3) what steps would be taken to notify Congress and relevant political leadership in Guam; and
- (4) other matters deemed relevant by the Secretary.

Floating Nuclear Power Plants

The committee recognizes the importance of assured energy access in a contested logistics operating environment characterized by active enemy efforts to disrupt or hinder sustainment of U.S. military forces and operational commander command and control. Such disruptions are expected at both permanent installations and expeditionary locations. Given the wide geographic distribution of military forces, many of which are adjacent to navigable waters, the committee encourages the Department of Defense to explore the use of floating nuclear power plants (FNPPs) that incorporate microreactors and/or small modular reactors to meet its energy requirements. Therefore, the committee directs the Secretary of Defense, in coordination with the Contested Logistics Working Group outlined in section 2926 of title 10, United States Code, to provide a report to the House Committee on Armed Services by April 1, 2026, on the feasibility of deploying FNPPs for the Department of Defense's use. The report should include:

- (1) a summary of the adequacy of existing energy storage and distribution systems to meet mission requirements in a contested operating environment;
- (2) an overview of potential mission benefits related to the use of FNPPs;
- (3) a list of prioritized potential use cases for FNPPs to include, but not limited to, base electric power, desalination, synthetic fuel production, directed energy weapons, AI at the edge, defense support of civil authorities, humanitarian response, and 3D/additive manufacturing;
- (4) any potential challenges related to the sustainment and maintenance of FNPPs, including corrosion mitigation;
- (5) any potential concerns related to the security of FNPPs; and
- (6) any other recommendations deemed relevant.

Military Community Air Quality and Economic Development Impacts Brief from Adjacent Nuclear Energy Deployment

As the Department of Defense works to deploy advanced nuclear technology across bases in the continental United States and out- side of the continental United States (OCONUS), the committee is interested in the impact on air quality by particulate producing powerplants on or near installations compared with advanced nuclear technology.

Therefore, the committee directs the Assistant Secretary of Defense for Energy, Installations, and Environment, in coordination with the Secretary of Energy, Environmental Protection Agency Administrator, Assistant Secretary of Defense for International Security Affairs, Chief of Engineers of the Army Corps of Engineers, Director of the Office of Local Defense Community Cooperation and the Chair of the Nuclear Regulatory Commission, to provide a briefing to the House Committee on Armed Services not later than September 30, 2026, on the following:

- (1) a list of military installations currently operating particulate producing power plants;
- (2) a list of military installations currently operating near particulate producing power plants;
- (3) impacts of airborne particulate levels attributed to particulate producing power plants on or near military communities;
- (4) a list detailing the average electricity cost in all military communities over the past 10 years, broken out by type of particulate producing power plants on or near installations;
- (5) an assessment of potential impact on air quality by advanced nuclear reactors;
- (6) potential savings in electricity costs due to the use of advanced nuclear technology;
- (7) an assessment of the mechanisms available to the Department of Defense to establish energy off-take agreements or host the deployment of small modular reactors within the perimeter of OCONUS installations, considering host nation engagement is essential for power sales or shared infrastructure; and
- (8) an assessment of mechanisms available, including authorities needed, to the Department of Defense to export electrical power to the grid from small modular reactors, to enable consistent grid integration.

Mobile Small Reactors in a Maritime Theater

The committee notes the uniqueness of mobile small reactors for use in overseas contingency operations. Mobile small reactors could significantly reduce logistics for installations in remote locations, including islands, by eliminating single points of failure in the supply chain and reducing land use compared to traditional power delivery systems. As the United States shifts its focus to deterring conflict in the geographically dispersed Indo-Pacific region, these advancements could be critical to maintaining operational readiness in a maritime theater and supporting the Joint Force in a contested logistics environment.

Therefore, the committee directs the Secretary of Defense, in coordination with the executive agent designated under Executive Order 14299, to provide a briefing to the House Committee on Armed Services not later than March 1, 2026, on the utility of mobile small reactors to support expeditionary operations. This briefing should include the following:

- (1) which design considerations for nuclear energy delivery systems are most relevant to a geographically dispersed area of operations;
 - (2) how mobile small reactors will be utilized to meet operational energy needs in an Indo-Pacific contingency;
 - (3) which forward bases and units in the Indo-Pacific region should be prioritized for the deployment of mobile small reactors; and
 - (4) any outstanding technical or logistical challenges relating to the deployment of mobile small reactors to achieve these requirements.
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Senate Report 119–39 National Defense Authorization Act For Fiscal Year 2026 [To Accompany S. 2296]

Coordination of advanced nuclear efforts

The committee supports ongoing efforts by the Department of Defense (DOD) to invest in advanced nuclear capability and encourages endeavors to bring those efforts into strategic alignment.

The committee notes that adversaries, namely the People’s Republic of China and the Russian Federation, have recognized the criticality of civil nuclear energy. As a result, they are investing vast state resources in developing and deploying the next generation of nuclear reactors while actively pursuing long-term global contracts for nuclear energy. The committee believes it is critical that the DOD leads in the development and deployment of nuclear reactors to prevent our adversaries from monopolizing control of related supply chains, both to prevent adversaries from achieving such geopolitical leverage and to ensure that our own critical infrastructure is not dependent on adversary technology.

The DOD faces unprecedented power needs and will need civil nuclear technology to ensure agile, resilient, secure, and uninterrupted power to critical missions and to military installations and operations, in particular in austere and unique environments. The DOD must act swiftly both to secure its own military installations and to ensure the DOD leads in the development and deployment of civil nuclear technology.

Accordingly, the committee directs the Under Secretary of Defense for Acquisition and Sustainment, in coordination with the Under Secretary of Defense for Research and Engineering and the Vice Chairman of the Joint Chiefs of Staff, not later than November 1, 2026, to brief the congressional defense committees on options for establishing and executing an advanced nuclear energy technical project support program of record. At a minimum, the briefing should include:

- (1) The likely use cases for advanced nuclear energy, including micro-reactors, with coordinated input from combatant commands to establish operational and installation needs, including the support of force electrification, base sustainment, elimination of fuel supply vulnerabilities, addressing climate threats, enabling multi-domain operations, and advanced weaponry, at the secret level;
 - (2) The process for establishing requirements for a program of record;
 - (3) The estimated minimum number of units needed to establish a cost-effective program and minimize the time to Initial Operational Capability;
 - (4) The maximum number of units with assumptions on which operational plans are in effect;
 - (5) The process for establishing a comprehensive regulatory framework for DOD-managed advanced reactors and the deployment of pilot nuclear reactors for installations;
 - (6) Estimates on fuel requirements to support deployment models; and
 - (7) The expected annual budget required to transition the Project Pele demonstration, as well as programmatic budget needs for the program of record through 2030 or through the first 5 years in which advanced nuclear energy, including micro-reactors, is deployed for operational and installation energy, whichever is longer.
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FY2025 NDAA Directives

Joint Explanatory Statement to Accompany the Servicemember Quality of Life Improvement, and National Defense Authorization Act for Fiscal Year 2025 (P.L. 118-159)

Briefing on a second pilot program for advanced reactors

A proposed amendment (amendment number 3290) to the Senate committee-reported bill contained a provision (sec. 6047) that would require the Secretary of Defense to provide a briefing on a pilot program to provide resilience for critical infrastructure at Department of Defense facilities with high energy intensity requirements through a contract with a

commercial entity to site, construct, and operate at least one licensed reactor, capable of producing at least 60 megawatts of power—at a facility selected for purposes of the pilot program by December 31, 2029.

The House bill contained no similar provision.

The agreement does not include the Senate provision.

We direct the Secretary of Defense to provide a briefing, not later than June 1, 2025, to the Committees on Armed Services of the Senate and the House of Representatives describing the requirements for, and components of, a pilot program to provide resilience for critical national security infrastructure at Department of Defense (DOD) facilities with high energy intensity requirements by contracting with a commercial entity to site, construct, and operate at least one licensed reactor, capable of producing at least 60 megawatts of power—at a facility selected for purposes of the pilot program by December 31, 2029.

In regards to such a briefing, the Secretary of Defense should: (1) Consult with the Secretary of Energy, the Nuclear Regulatory Commission, and the Administrator of the General Services Administration; and (2) Submit the briefing in unclassified form, but may include a classified appendix.

The briefing should address how to explore a public-private partnership for the reactor to reduce ratepayer costs and avoid financial risk to DOD's mission. The briefing should also include:

- (1) Identification of potential locations to site, construct, and operate a reactor—either at a commercial site that serves DOD's critical mission interests, or at a DOD facility that contains critical national security infrastructure that the Secretary determines may not be energy resilient;
- (2) Assessments of different nuclear technologies—including technologies capable of producing at least 60 megawatts of power—to provide energy resiliency for critical national security infrastructure;
- (3) A survey of potential commercial stakeholders with which to enter into a contract under the pilot program to construct and operate a licensed micro-reactor and, if appropriate, share offtake needs;
- (4) Options to enter into long-term contracting—including various financial mechanisms for such purpose;
- (5) Identification of requirements for reactors to provide energy resilience to mission-critical functions at facilities;
- (6) An estimate of the costs of the pilot program;
- (7) A timeline with milestones for the pilot program;
- (8) An analysis of the existing authority of DOD to permit the siting, construction, and operation of a reactor;
- (9) Recommendations for any legislative changes necessary for DOD to permit the siting, construction, or operation of a reactor;
- (10) A strategy for deploying additional reactors at other sites— including through public-private partnerships; and
- (11) A plan for implementing the pilot program—to begin implementation not later than 3 months after submission of the briefing.

H. Rept. 118-529 - SERVICEMEMBER QUALITY OF LIFE IMPROVEMENT AND NATIONAL DEFENSE AUTHORIZATION ACT FOR FISCAL YEAR 2025

Potential maritime applications for small modular reactor technology

Recent advancements in small modular reactor (SMR) technologies have created new opportunities for bolstering energy resilience across various applications. Maritime operations in particular may be poised to benefit from these advancements. SMRs offer a promising solution due to their compact size, modularity, and ability to provide uninterrupted power. The committee seeks additional information about how SMRs and lessons learned from their development may be relevant for maritime applications.

Therefore, the committee directs the Secretary of the Navy, to provide a briefing to the House Committee on Armed Services not later than February 1, 2025, on the potential marine or shore-based applications for SMR technology. The briefing shall include an assessment of the following elements:

- (1) how SMR advancements may inform current or future reactor design efforts for naval vessels;
- (2) whether SMR technologies could support shore based energy requirements for fleet support; and
- (3) an assessment of previous nuclear powered non-combatant vessels and whether SMR technology may be relevant to the future non-combatant fleet.

Mobile Nuclear Reactor Program

The committee continues to support the design maturation efforts of multiple sources for the mobile micro-reactor to ensure a strong industrial base and competition for any future follow-on production activities. The committee notes the cost overruns in the Mobile Nuclear Reactor Program and believes funding a second source through design and prototype will create competitive pressure to drive down overall costs. Therefore, the committee encourages continued investment in the design and subsystem testing of a viable second source for the micro-reactor.

Reliable Power Source for Data Centers

The committee recognizes the critical national importance of data centers in facilitating the advancement of artificial intelligence as well as the storage, processing, and dissemination of vast amounts of data crucial to our nation's security. Recognizing the strategic significance of the Tahoe Reno Industrial Center (TRIC) as a hub for technological innovation critical to national security, the committee emphasizes the economic and national security benefits linked to expanding data centers both within TRIC and across the United States.

The committee is concerned with the lack of available data center space and an adequate and reliable power supply to data centers nationwide. Therefore, the committee directs the Assistant Secretary of Defense for Energy, Installations, and Environment to provide a briefing to the House Committee on Armed Services not later than April 1, 2025, including the following information:

- (1) ways the Department of Defense can collaborate with local municipalities, utilities, and the private sector to ensure robust and reliable access to data center space as well as reliable power supplies; and
- (2) power transmission, distribution, and all other necessary infrastructure needed to facilitate the expansion of those data centers.

Report on increasing small and micro nuclear reactors in operational and installation energy consumption

The committee is concerned that the Department of Defense is not utilizing the full extent of its authorities to expedite the energy transition needed to meet goals set forth in section 2920 of title 10 United States Code, Energy Resilience and Energy Security Measures on Military Installations. This is of particular concern with respect to small and micro nuclear reactors and their applications for installation energy and operations in austere environments. The committee acknowledges the Department of the Air Force's microreactor pilot program at Eielson Air Force Base; however, given the benefits nuclear energy offers for installation energy resilience and security, the committee believes that the Department of Defense is not doing enough to utilize small and micro nuclear reactors as a reliable, clean source of energy.

The committee directs the Assistant Secretary of Defense for Energy, Installations, and Environment, to provide a report to the House Committee on Armed Services, not later than February 1, 2025, that outlines its plans to increase the use of nuclear power with small and micro nuclear reactors in the Department of Defense's installation and operational energy consumption. The report should include:

- (1) ongoing efforts to procure nuclear power for installation and operational energy, specifically from small and micro nuclear reactors;
- (2) future plans to procure nuclear power for installation and operational energy, specifically from small and micro nuclear reactors;
- (3) existing authorities and resources under consideration to expedite the procurement of nuclear power for operational and installation energy;
- (4) additional authorities and resources needed to expedite the procurement of nuclear power for operational and installation energy;
- (5) an explanation of how nuclear power fits into the Department of Defense's plan to meet FY2030 energy resilience and carbon pollution-free energy goals;
- (6) the expected number of reactors the department would utilize; and
- (7) the cost of deploying microreactors, the benefits of utilizing this technology, and any risks associated with the deployment of microreactors to austere environments.

Senate Report 118–188 To Accompany S. 4638 National Defense Authorization Act for Fiscal Year 2025

Advanced reactors

The Secretary of Defense shall provide a briefing to the Committees on Armed Services of the Senate and the House of Representatives, not later January 1, 2026, describing the requirements for, and components of, a second pilot program to provide resilience for critical national security infrastructure at Department of Defense (DOD) facilities with high energy intensity by contracting with a commercial entity to site, construct, and operate at least one licensed reactor at a facility identified by December 31, 2029. The briefing shall include how to explore a public-private partnership for the reactor to reduce ratepayer costs and avoid financial risk to DOD's mission. As necessary to develop the briefing, the Secretary shall consult with the Secretary of Energy, the Nuclear Regulatory Commission, and the Administrator of the General Services Administration.

The briefing shall also include:

- (1) Identification of potential locations to site, construct, and operate a reactor, either at a commercial site that serves DOD's critical mission interests, or at a DOD facility that contains critical national security infrastructure that the Secretary determines may not be energy resilient;
- (2) Assessments of different nuclear technologies to provide energy resiliency for critical national security infrastructure;
- (3) A survey of potential commercial stakeholders with which to enter into a contract under the pilot program to construct and operate a licensed micro-reactor and, if appropriate, share offtake needs;
- (4) Options to enter into long-term contracting, including various financial mechanisms for such purpose;
- (5) Identification of requirements for reactors to provide energy resilience to mission-critical functions at facilities;
- (6) An estimate of the costs of the pilot program;
- (7) A timeline with milestones for the pilot program;
- (8) An analysis of the existing authority of DOD to permit the siting, construction, and operation of a reactor; and
- (9) Recommendations for any legislative changes necessary for DOD to permit the siting, construction, or operation of a reactor.

The briefing shall be submitted in unclassified form, but may include a classified appendix.