



The Department of the Air Force is piloting the development of a nuclear microreactor to provide cost-effective, efficient, and resilient energy supply for critical national security infrastructure. The pilot will help determine the technology's viability for future energy resilience initiatives.

Key Policy Drivers

Jul 2018 FY2019 National Defense Authorization Act required identification of potential locations to site, construct, and operate a microreactor by the end of 2027.

Jul 2020 SAF/IE developed Arctic-region investment plan, with energy resilience targets for Alaskan bases.

Jan 2021 EO 13972 directed demonstration of a microreactor at a domestic military installation.

Jul 2024 ADVANCE Act directed the NRC to develop guidance to license and regulate microreactor designs within 18 months.

Jan 2025 EO 14153 and EO 14154 both expanded access to federal lands and waters for energy exploration. EO 14153 expedited the permitting and leasing of energy and natural resource projects in Alaska.

Microreactor Pilot

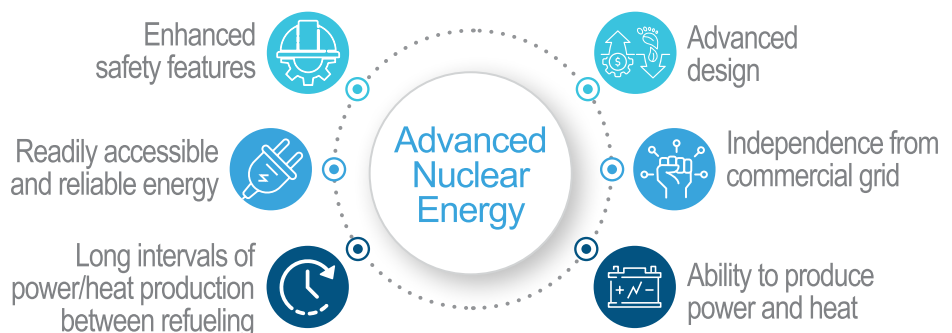
Why it Matters

Identifying innovative solutions that maximize operational capacity and ruggedize Department of the Air Force (DAF) installations against a full spectrum of threats is critical. Advanced nuclear microreactor technology can provide reliable baseload and thermal power to support critical national security infrastructure, mission readiness, and maintain dominance in all warfighting domains to include air, space and cyber.

What's a Microreactor?

Microreactors are a compact and reliable form of nuclear energy capable of producing between 1 and 50 megawatts of energy consisting of electricity and heat. The output of a microreactor is characterized by stable and efficient energy production, designed to operate independently in remote or off-grid locations with minimal maintenance requirements.

Microreactors are defined by their smaller size enabling a range of potential benefits, including fewer components, smaller plant footprints, and reduced construction schedules. They are equipped with passive safety systems, self-regulating operational adjustment designs, are both compact and self-contained, and hold a long operational life between refueling and safe transportation to and from a site for deployment and decommissioning. The combination of these innovations presents potential benefits for safety, operational and deployment flexibility, and scalability.



Microreactor Pilot Program

Eielson Air Force Base in Alaska was chosen as the preferred location to pilot the first U.S. commercial advanced nuclear microreactor, on a DoD Installation, due to the base's existing infrastructure, geographic location, and critical mission resilience requirement. The microreactor will supplement electricity produced by the existing combined heat and power plant by producing 5 MW of electrical energy and variable amounts of steam heating.

To facilitate a successful pilot program, the Office of the Deputy Assistant Secretary of the Air Force for Infrastructure, Energy, and Environment is working with Alaskan Tribal Communities, stakeholders (state and local government, the University of Alaska and installation leadership, among others) and federal partners. Federal partners include: the Defense Logistics Agency (DLA) Energy Office; Air Force Civil Engineer Center Energy Directorate; Office of the Deputy Assistant Secretary of Defense for Energy Resilience and Optimization; Department of Energy Nuclear Energy Office; Idaho National Laboratory (INL); and the Nuclear Regulatory Commission (NRC).

Successful pilot program completion will inform an enterprise framework for future advanced nuclear reactor projects and pave the way for similar future projects throughout Alaska and beyond.

Pilot Execution Timeline

The DAF is partnering with DLA to execute a power purchase agreement with a third-party developer. The developer will own and operate the microreactor licensed by the NRC to deliver electricity and steam to Eielson in exchange for DAF's long-term purchase of the energy it generates. Major timeline milestones are reflected below:

Sep 2022 Request for Proposal for Pilot Project at Eielson Air Force Base Released

Jan 2023 Request for Proposal Closed

Sep 2023 Defense Logistics Agency Energy Office issued, and rescinded due to protest, a Notice of Intent to Award for the siting, design, construction, ownership and operation of a microreactor facility at Eielson Air Force Base in August 2023.

Mar 2025 The procurement process is in the proposal review phase after being paused due to protest. Further questions about this ongoing and active procurement process should be directed to the Defense Logistics Agency.

Program Information and Updates

DAF is committed to frequent, clear, and transparent communication with all Tribal, federal, state, and local stakeholders to ensure this project benefits both the installation and broader local community.

Pilot project updates will be shared on <https://www.eielson.af.mil/microreactor/>. For more information, contact SAF.IEE.MicroreactorPilot@us.af.mil



Image credit: U.S. Department of Energy.

The Department of the Air Force Installation Energy Program is committed to developing and deploying policies and guidance to ensure the enterprise is prepared to deliver energy and water when and where needed.

For more information:

 safie.hq.af.mil/InstallationEnergy



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