



The Department of the Air Force is piloting the development of an advanced nuclear microreactor to provide safe, secure, 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 Sec. 327 required identification of a contract 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.

May 2025 EO 14299 directed the expansion of advanced nuclear energy technology for national security.

Microreactor Pilot

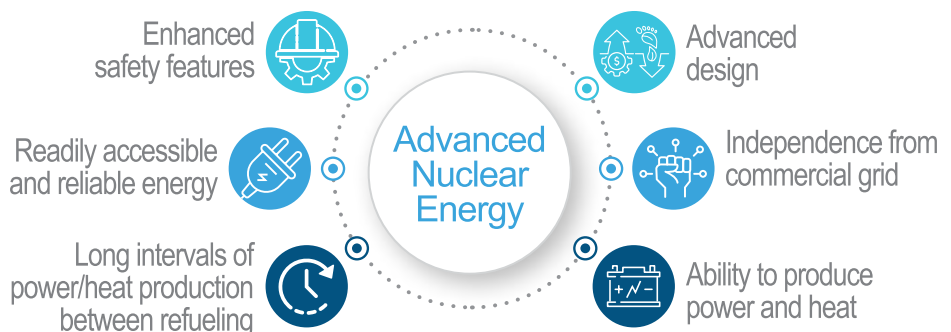
Why it Matters

Safe, secure, and reliable energy is essential to the Department of the Air Force (DAF) mission and always will be. As power demands surge and our energy systems become increasingly strained, DAF is focused on delivering more resilient, agile, and cost-effective energy resilience solutions that are tailored to each installation's unique needs. Advanced nuclear energy technologies, like microreactors, offer on-site electricity and thermal energy generation – including during potential commercial grid outages – which could provide unparalleled operational benefits for military installations and communities in austere locations and beyond.

What's a Microreactor?

Microreactors are a compact and reliable form of advanced nuclear energy capable of producing between 1 and 50 megawatts (MW) 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 shortened construction schedules. They are equipped with passive safety systems, self-regulating operational adjustment design, and are both compact and self-contained. Microreactors offer long operational lifetimes between refueling and can be safely transported to and from deployment sites for installation and decommissioning.



Microreactor Pilot

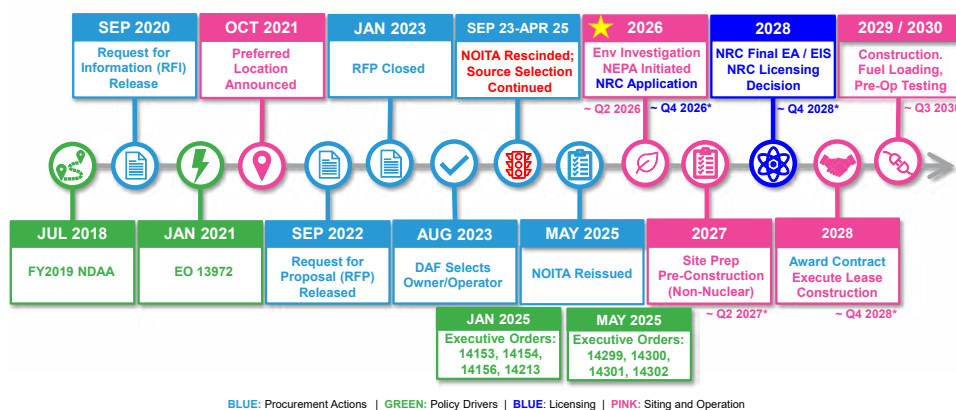
Eielson Air Force Base in Alaska was chosen as the preferred location to pilot the first Arctic commercial advanced nuclear microreactor on a DoD installation due to the base’s existing infrastructure, geographic location, and critical mission resilience requirement. The microreactor will supplement electricity produced by the existing coal-fired combined heat and power plant by producing electrical energy and steam heating.

To facilitate a successful pilot, the Office of the Deputy Assistant Secretary of the Air Force for Infrastructure, Energy, and Environment is working with Alaskan Tribal Communities, state and local partners, the University of Alaska and installation leadership, 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; and the Nuclear Regulatory Commission (NRC).

Successful pilot 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 30-year power purchase agreement with a third-party developer. The developer would 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:



Microreactor Pilot 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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