



## Micro-Reactor Pilot | FAQs | *\*Last Updated May 2024*

### GENERAL PILOT INFORMATION

#### **Q: What is a micro-reactor?**

A: Micro-reactors have high energy output and typically produce between 1-20 megawatts (MW) of electrical and/or thermal energy. Micro-reactors can safely produce both electrical and thermal energy for long intervals between refueling and can operate independently from the grid. The technology includes inherent safety features to minimize risk of accidents and automatic features for accident response.

#### **Q: Why is the Department of the Air Force participating in the pilot?**

A: The Department of the Air Force strives to stay on the forefront of technology innovation and is always in search of cleaner, more effective energy assurance initiatives that reduce potential mission impacts due to power disruption. A pilot project is needed to determine the viability of micro-reactor technology implementation at Department of the Air Force locations.

#### **Q: Why is the Department of the Air Force considering micro-reactors?**

A: The Department of the Air Force views micro-reactors as a promising clean energy technology able to ensure energy resilience and reliability at its installations. Micro-reactors are capable of supplying energy to a wide range of Department of Defense installations and may be well suited to power and heat remote domestic military bases that are a critical to national security. Micro-reactors will allow the Department of the Air Force to continue to support mission assurance through energy assurance, while reducing greenhouse gas emissions

#### **Q: Where will the pilot project be located?**

A: In August 2018, the Department of the Air Force Office of Energy Assurance recommended Eielson Air Force Base for the micro-reactor pilot. The installation is the preferred location for the pilot due to the existing infrastructure, suitable climate, and critical mission resilience requirement. A micro-reactor could also assist in meeting the base's year-round energy needs for station heating.

#### **Q: How many pilot sites will there be?**

A: The Department of the Air Force is currently pursuing one pilot site. Additional sites may be considered in the future. During the Nuclear Regulatory Commission's (NRC) National Environmental Policy Act (NEPA) review, alternative sites for the Eielson pilot plant will be identified and evaluated, as required in the development of an environmental impact statement. Only one site will ultimately be chosen.

#### **Q: What is the scope of the pilot program?**

A: The micro-reactor will supplement the electricity produced by Eielson Air Force Base's combined heat and power plant by producing up to 5 MW of electrical energy and provide variable amounts of steam heating.

#### **Q: Who is paying for the project?**

A: The Department of the Air Force is partnered with the Defense Logistics Agency's energy office to execute a power purchase agreement with a third-party developer who will license, own, construct, and operate the micro-reactor, to deliver electricity and steam to Eielson Air Force Base property in exchange for Department of Air Force's long-term purchase of the energy it generates.

#### **Q: What is the status of the micro-reactor pilot project?**

A: The procurement process is currently paused, following a bid protest filed with the Government Accountability Office. The pause will allow for additional proposal review, which is anticipated to conclude by end of Summer 2024. Unanticipated milestone shifts have not halted our efforts and the department remains steadfast in our exploration of this innovative technology to assure resilience at mission critical locations and to meet the evolving challenges of Great Power Competition. Further questions about this ongoing and active procurement process should be directed to DLA at [DLAEnergyResilience@dla.mil](mailto:DLAEnergyResilience@dla.mil).



**Q: When will the reactor be online?**

A: The Department of the Air Force aims to have an operational reactor by 2027. The construction timeline is dependent on the vendor, and construction will begin only after the vendor meets siting and permitting requirements from the Nuclear Regulatory Commission.

## MICRO-REACTOR SAFETY

**Q: Are micro-reactors safe?**

A: Yes. Micro-reactors are self-adjusting – this means built-in safety features prevent conditions that could lead to the fuel overheating and causing a reactor meltdown. Micro-reactors have a low level of fuel compared to large traditional reactors, and their small size minimizes decay-heat generation after shutdown, preventing damage to the core.

**Q: Will the pilot be subject to Nuclear Regulatory Commission (NRC) safety standards and inspections?**

A: The pilot will be licensed by the NRC and the Department of the Air Force will cooperate with the NRC to ensure the pilot owner and operator strictly follows all safety standards imposed during the licensing process. The NRC oversees nuclear energy facilities from the time licensing applications are submitted, throughout the operation of the facility, and through the decommissioning process until the residual radioactivity at the facility site has been reduced to a level that permits termination of the NRC license. In addition to regulating reactor siting and construction, the NRC regulates reactor operations through a combination of regulatory requirements, licensing, and oversight, including inspections. For more details, see [NRC's FAQ](#).

**Q: Is the Department of the Air Force concerned about a nuclear disaster at its installation?**

A: Along with the nuclear industry, the Nuclear Regulatory Commission (NRC), and the Department of Energy, the Department of the Air Force is evaluating the safety of each potential reactor technology to ensure they adhere to strict safety standards. The system operators, NRC inspection team, and the Department of the Air Force, like any commercial nuclear power operator, will take every safety measure to ensure this highly unlikely event does not occur, and will have emergency procedures and trained personnel in place to respond to such an event.

**Q: Is this technology similar to that used in Fukushima?**

A: While a specific reactor technology has not yet been selected for the pilot, advanced reactor technology such as micro-reactors is different than the large-scale light water reactors used at Fukushima. The small size of micro-reactors minimizes decay-heat generation after shutdown, preventing it from reaching levels that can damage the core, which was the point of failure at Fukushima.

**Q: Is there a risk to installation staff or occupants?**

A: The Nuclear Regulatory Commission (NRC) has developed standards for acceptable occupational and public exposure to radiation from licensed nuclear facilities. The Department of the Air Force will strictly adhere to standards set by the NRC which have kept nuclear plant operators and communities safe in the U.S. for nearly 70 years.

**Q: Is there a risk to the community?**

A: Micro-reactors are designed to cool without the need for offsite power, without fuel damage. This significantly reduces the potential for accidents and risk to surrounding communities. As with all nuclear energy facilities in the U.S., the pilot micro-reactor owner will be required to develop and test detailed emergency response plans to protect the public, which will be reviewed and approved by the Department of the Air Force and the Nuclear Regulatory Commission.

## COMMUNITY ENGAGEMENT AND IMPACTS

**Q: Are you working with the nuclear experts in evaluating micro-reactors?**

A: Yes. For example, in October 2018, the Nuclear Energy Institute released a technical report titled, [Roadmap for the Deployment of Micro-reactors for Department of Defense Installations](#). The Department of the Air Force coordinated with the Nuclear Energy Institute during their development of the report and continue to reference it moving forward. The Department of the Air Force is also coordinating with the Department of Energy to obtain expertise from the National Laboratories in micro-reactor design and deployment.



### **Q: Have you engaged with industry for this pilot project?**

A: The Department of the Air Force participated in reviewing two Requests for Information released by the Department of Energy (2018) and the Defense Logistics Agency's Energy Office (DLA Energy) (2020) to gather information about technical and financial data points and project development concepts from industry.

In 2022, the Department of the Air Force released its request for proposal (RFP) for a nuclear micro-reactor and hosted a two-day pre-proposal conference and site visit at Eielson Air Force Base with the help of DLA Energy. Industry representatives were able to ask questions about the RFP and tour relevant sites at the installation. Answers to questions are available as amendments to the RFP, which was closed on 31 January 2023.

The Department of the Air Force continues to engage with industry throughout the pilot project. In December 2023, industry representatives from Radiant, Oklo Inc., Ultra Safe Nuclear Corporation, and Westinghouse Electric Company presented at a stakeholder meeting for pilot project partners and community leaders.

### **Q: Will this project create jobs for the surrounding community?**

A: Thorough socioeconomic impact studies will be conducted as part of the pilot evaluation process in compliance with National Environmental Policy Act requirements.

### **Q: How will this project impact the coal industry?**

A: This project is not designed to disrupt the coal industry in the area. This is a new generation asset, not a replacement asset. Its relatively small scale (5 MW) will also not disrupt coal plant demand should the asset ever be connected to the grid. The Department of the Air Force recognizes the importance of the industry to the community.

### **Q: What will the environmental impacts be of this pilot project?**

A: Thorough environmental studies will be conducted as part of the pilot evaluation process in compliance with National Environmental Policy Act (NEPA) requirements. The Department of the Air Force is coordinating closely with the Nuclear Regulatory Commission (NRC), Department of Energy, Air Force Civil Engineering Center/Environmental Directorate, and the Under Secretary of Defense for Acquisition and Sustainment to ensure environmental impacts are evaluated prior to a decision to proceed with the pilot. The NRC-led NEPA process will involve public meetings and coordination, and the NEPA document will be available for the public to review.

### **Q: Will the project have disproportionate negative environmental impacts on Tribal and Black, Indigenous, and People of Color (BIPOC) communities? What environmental justice aspects are being considered?**

A: The Nuclear Regulatory Commission must evaluate the impacts to public health and safety, the environment, and environmental justice as part of their licensing process, which will include opportunities for public and Tribal input. The Department of the Air Force will not pursue a micro-reactor pilot on any site that will result in significant negative impacts to communities or Tribal Nations or disproportionately affect minority communities.

### **Q: How will the Department of the Air Force communicate program updates to the public?**

A: The Department of the Air Force is committed to frequent, clear, and transparent communication with local stakeholders, and has already engaged with Fairbanks North Star Borough, Tanana Chiefs Conference, and University of Alaska, among many other community groups throughout the pilot project. The Department of the Air Force utilizes the following channels to disseminate updated project information:

- **Eielson Micro-reactor Webpage:** The micro-reactor webpage is the “one-stop-shop” for everything related to the pilot. The Department of the Air Force will regularly release updates and helpful materials on this webpage.
- **Council for the Alaska Micro-reactor Program (CAMP) Meetings:** These quarterly meetings allow Department of the Air Force to interact and strengthen relationships with key community stakeholders. Example stakeholders include local government leaders (Governor’s office, State Legislature, Alaska Department of Environmental Conservation, local Mayors) Tanana Chiefs Conference, and the University of Alaska, among many other local leaders and community groups.
- **Town Halls:** In August 2023, the Department of the Air Force, in partnership with the Nuclear Regulatory Commission (NRC), Department of Energy, Idaho National Laboratory, and Fairbanks North Star Borough held an inaugural Town Hall open to all community members. The Department of the Air Force will hold more opportunities for public engagement in the future.

For more information about the Micro-Reactor Pilot and other Department of the Air Force Installation Energy initiatives, visit <https://www.eielson.af.mil/microreactor/> or contact [SAF.IEE.Micro-ReactorPilot@us.af.mil](mailto:SAF.IEE.Micro-ReactorPilot@us.af.mil).



- **Educational Outreach Videos:** The Department of the Air Force will publish at least 4 educational videos, linked to the micro-reactor webpage, that will inform viewers on key project topics. There are two educational videos, now available on the webpage, that explain the purpose and need for the micro-reactor pilot at the preferred location, Eielson Air Force Base, and how the micro-reactor pilot will contribute to Department of the Air Force's energy resilience goals.
- **Newsletter:** The quarterly newsletter will continue to directly communicate project updates. All newsletters are posted to the webpage as well.
- **Media Engagements:** The Department of the Air Force plans to identify key media engagements to participate in to reach a wider audience with pilot project information.

### OPERATIONS AND LOGISTICS

**Q: Has the type of reactor been selected yet?**

A: No, the reactor technology has not yet been determined. The Department of the Air Force will continue to update the website and host community meetings to share pilot updates, when available.

**Q: Will the reactor be connected to the commercial grid?**

A: No, the reactor will only serve the installation and will not be connected to the grid.

**Q: Who will operate the reactor?**

A: Well-trained, highly capable operators from the utility owner and licensed by the Nuclear Regulatory Commission. These operators complete extensive training before being certified and continue training throughout the life of their license. Reactor operators will follow detailed written procedures and ensure safe operation of the reactor.

**Q: What will the Department of the Air Force do with the nuclear waste?**

A: Nuclear waste will not be stored at the installation. The vendor will be responsible for nuclear waste and subject to the same rigorous storage and control requirements of the commercial nuclear industry under license by the Nuclear Regulatory Commission.

**Q: Is micro-reactor technology cost-effective?**

A: Alaska has high energy costs, and the Department of the Air Force is looking to change that by looking into all energy avenues that alleviate high costs. Micro-reactors are just one item on the Department's "menu" of energy options, which also includes wind, solar, etc. The Department of the Air Force must first demonstrate the effectiveness of micro-reactor technology through this pilot before it can be scaled to potentially provide lower-cost energy across Alaska. This pilot program is an important pathfinder for regulatory and siting processes: successful completion of the pilot program will create lessons learned and best management practices, paving the way for similar future projects throughout Alaska and beyond.