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Advanced Reactor Demonstration Projects

Background



Nuclear power is one of the few energy sources able to produce the large amounts of energy necessary to reliably meet our nation's growing energy needs. Designed with a variety of capabilities, sizes, and deployment scenarios in mind, small modular reactors (SMRs) can be used for power generation, process heat, desalination, and more. SMRs offer the potential for greater modularity, more factory-style construction, and the ability to be matched with loads and scaled to meet demand.

Program Overview



The Advanced Reactor Demonstrations Program (ARDP) helps to support the demonstration of advanced reactors through cost-shared partnerships with U.S. industry. The goal of this program is to support the deployment of these advanced reactors, addressing the licensing, construction, and operational risks that come with building a first-of-its-kind technology. Through this support, the program aims to build confidence in the technology and ultimately encourage follow-on orders for similar reactor designs.

Projects



X-energy – Xe-100 Reactor

- **Location:** Seadrift, Texas at Dow UCC Seadrift Operations
- **Size:** Four-unit, 320 MWe-net plant
- **Technology:** The high-temperature gas-cooled design leverages decades of development and a robust fuel form.
- **Benefits:** Advanced design provides flexible electricity output well suited for integration in a renewable-heavy grid. The Xe-100 reactor can also meet the process heat needs for a wide range of industrial heat applications that are difficult to decarbonize.

TerraPower – Sodium Reactor

- **Location:** Kemmerer, Wyoming near the retiring Naughton coal plant
- **Size:** Single-unit, 345 MWe-net plant
- **Technology:** Sodium is a sodium-cooled fast reactor design that leverages decades of reactor technology and fuel development.
- **Benefits:** This high temperature reactor, coupled with thermal energy storage for flexible electricity output, is well suited for a renewable-heavy grid.

Announcement Archive



Resources

- View the [ARDP fact sheet](#) .
- For questions about the projects, contact OCED_ARDP@hq.doe.gov.
- For media inquiries, contact OCEDNewsroom@hq.doe.gov.

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