X-energy Begins Commercial Qualification Testing for TRISO-X Fuel at Idaho National Laboratory

November 6, 2025

IDAHO FALLS, Id., November 6, 2025 – X-energy Reactor Company, LLC, ("X-energy" or the "Company") today announced the start of confirmatory irradiation testing at Idaho National Laboratory ("INL") to qualify the Company's proprietary TRISO-X fuel pebbles for commercial use in the Xe-100 Small Modular Reactor ("SMR"). Conducted in collaboration with the U.S. Department of Energy ("DOE") and National Reactor Innovation Center ("NRIC"), the 13-month testing program will evaluate fuel performance across virtually all foreseeable operating scenarios. TRISO-X is the first commercially-produced SMR fuel to undergo testing of this rigor, marking a significant milestone in the Company's efforts to support U.S. energy security through the establishment of a secure, domestic supply of high-quality advanced nuclear fuel.

The X-energy Pebble Reactor Test ("XPeRT") allows DOE to independently evaluate how TRISO-X fuel performs under various power levels, temperatures, and burnup conditions relevant to the Xe-100 SMR design. While largely confirmatory in nature, the testing will gather critical performance data to fulfill key requirements by the U.S. Nuclear Regulatory Commission ("NRC") for all advanced reactor designs seeking commercial deployment, as well as milestones established under the Advanced Reactor Demonstration Program.

Testing will take place at INL's Advanced Test Reactor ("ATR"), the largest and most powerful research reactor in the world, and a critical proving ground for nuclear fuels historically. Follow-on post-irradiation examination at INL and Oak Ridge National Laboratory will measure the fuel's fission-product retention and structural stability under the full range of expected commercial operating conditions. Further, this qualification testing builds upon the substantial foundation of validated performance already documented through previous work in the United States and around the world, including DOE's Advanced Gas Reactor program.

> What began in Oak Ridge as a pioneering effort to advance TRISO manufacturing is now leading the way in qualifying the fuel that will power the next generation of reactors. TRISO-X embodies decades of U.S. innovation in fuel design, and this testing program brings us one step closer to our goal of redefining the standard for safety and reliability in nuclear energy.
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> *J. Clay Sell, CEO of X-energy*

Tri-structural isotropic ("TRISO") fuel is an advanced nuclear fuel form described by DOE as, "the most robust nuclear fuel on earth." Building on six decades of operational experience and research, X-energy has systematically refined and enhanced the established TRISO manufacturing process to develop TRISO-X, the Company's proprietary commercial fuel product. The Company's TX-1 fuel fabrication facility, currently under construction in Oak Ridge, Tennessee, is positioned to become the first NRC-licensed Category II nuclear fuel fabrication facility licensed in over fifty years.

X-energy's initial deployment is planned for Dow's UCC Seadrift Operations Center on the Texas Gulf Coast and is supported by the U.S. Department of Energy's Advanced Reactor Demonstration Program. In addition, X-energy and Amazon have committed to the goal of more than 5 GW of new nuclear by 2039, beginning in Washington state with Energy Northwest's Cascade Advanced Energy Facility. The Company also recently signed a Joint Development Agreement with Centrica to deploy 6 GW of new nuclear capacity and the United Kingdom's first advanced reactor fleet. Together, X-energy's portfolio aims to offer a grid-scale solution for utilities, industrial customers, and hyperscalers and is designed to deliver safer, more reliable, power at full commercial scale.

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About X-Energy Reactor Company, LLC

X-Energy Reactor Company, LLC, is a leading developer of advanced small modular nuclear reactors and fuel technology for clean energy generation that is redefining the nuclear energy industry through its development of safer and more efficient advanced small modular nuclear reactors and proprietary fuel to deliver reliable, zero-carbon and affordable energy to people around the world. X-energy's simplified, modular, and intrinsically safe SMR design expands applications and markets for deployment of nuclear technology and drives enhanced safety, lower cost and faster construction timelines when compared with other SMRs and conventional nuclear. For more information, visit X-energy.com or connect with us on Twitter or LinkedIn.