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Accelerating Microreactor Development and Deployment Through Joint Public Testbeds and Private Advanced Reactor Development

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ABSTRACT

The United States Department of Energy (DOE) has funded the National Reactor Innovation Center (NRIC) to build two strategic assets at the Idaho National Laboratory (INL) to facilitate public-private partnerships for the development and testing of advanced nuclear reactors. One testbed provides a safe, secure, and affordable location for High-Assay Low Enriched Uranium (HALEU) fueled reactors and a second for Highly Enriched Uranium (HEU) fueled reactors. Together, these testbeds fill a nuclear testing infrastructure gap by retrofitting existing infrastructure, accounting for design considerations most useful to facilitate technical cooperation with industry partners.

The availability of comprehensive testing facilities eliminates the significant financial and operational burdens associated with each developer building and licensing their own test facilities. This approach not only accelerates technological innovation and reduces time-to-market for advanced nuclear solutions but also underscores DOE's commitment to fostering an ecosystem where nuclear energy can thrive as a clean, reliable, and efficient source of power.

The Demonstration of Microreactor Experiments (DOME) and Laboratory for Operations and Testing in the United States (LOTUS) have planned availability in 2026, and 2027 respectively. The availability of these testbeds and the associated ecosystem of facilities and subject matter expertise are critical to microreactor deployment and commercialization.

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