Advanced Reactor Demonstrations & the National Reactor Innovation Center

March 10, 2022
NRC Regulatory Information Conference
Brad Tomer, Chief Operating Officer
Brad.Tomer@inl.gov
nric.inl.gov
NRIC is a DOE-NE program, launched in FY2020

NRIC Accelerates Nuclear Reactor Demonstrations

- Authorized by the Nuclear Energy Innovation Capabilities Act (NEICA)
- Partner with industry to bridge the gap between research and commercial deployment
- Leverage national lab expertise and infrastructure
- Manage demonstrations to success
NRIC Vision

Two by 2025

Commercial Advanced Nuclear by 2030

Abundant clean energy
U.S. nuclear energy leadership
inspire
mission
deliver
empower
NRIC
NRIC is partnering regionally and nationally to support demonstrations.
Priority: Empowering Innovators

• Demonstration Test Beds
• Experimental Facilities
• Virtual Test Bed
• Regulatory Risk Reduction

• Planning Tools
  • NRIC Resource Team
  • NEPA guidance
  • Demonstration Resource Network (https://nricmapping.inl.gov/)
  • Siting Tool for Advanced Nuclear Development
NRIC-DOME Test Bed
(Demonstration of Microreactor Experiments)

**Strategy:**
- Enable continuing innovation by refurbishing and leveraging existing infrastructure for multiple demonstration projects
- Repurpose EBR II which operated from 1964 – 1994
- Establish a minimum viable test bed that is just flexible enough to test 4-5 known small modular reactors such as high temperature gas reactors

**Capabilities:**
- Small Modular Reactors (SMR) up to 20MW thermal power
- High-Assay Low-Enriched Uranium (HALEU) fuels < 20% enrichment
- Safety-Significant confinement for reactors to go critical for first time

**Total estimated cost of Construction for DOME minimum viable test bed:**
- $33M Range: $27M - $49M

Interested Companies: 5
NRIC Experimental Test Beds

Helium Component Test Facility [2022]

In-HotCell Thermal Creep Frame [2022]

Molten Salt Thermophysical Examination Capabilities (MSTEC) [2024]

Mechanisms Engineering Test Lab (METL) [Operating]

Virtual Test Bed [Launched 2020]
Goals for FY22
Maintain progress to support demonstrations by the end of 2025 and sustained innovation

- Prepare vital infrastructure
- Demonstrate cost-cutting technology
- Build and develop the NRIC team
- Provide planning tools and resources
- Anticipate and address regulatory needs
- Strengthen and expand partnerships and engagement
WE’VE DONE THIS BEFORE
WE’RE GOING TO DO IT AGAIN
WITH SOME refinements
Thank you!