Advanced Reactor Demonstrations & the National Reactor Innovation Center

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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
National Reactor Innovation Center

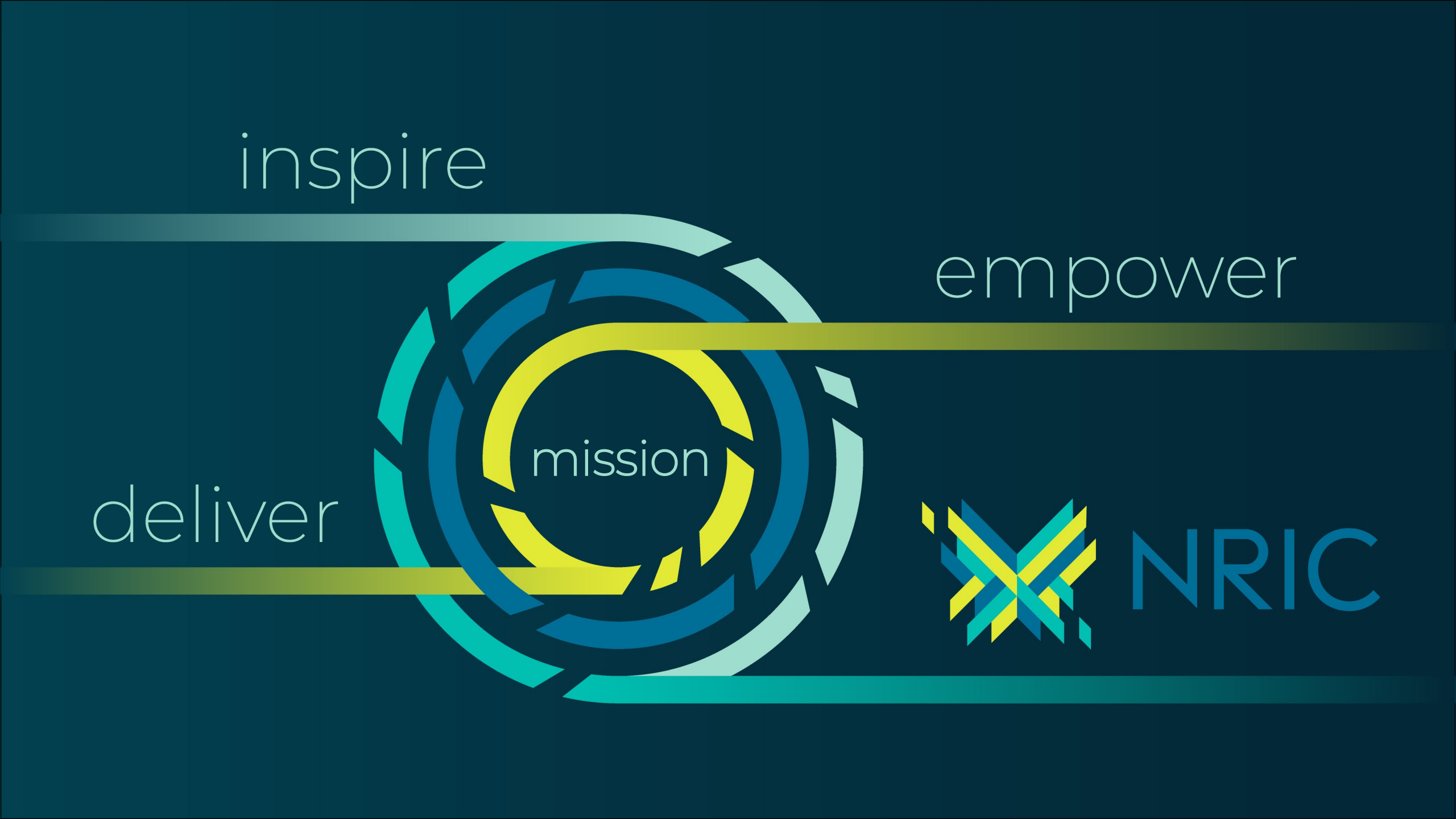
NRIC Accelerates Nuclear Reactor Demonstrations

- 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 INL

NRIC Vision

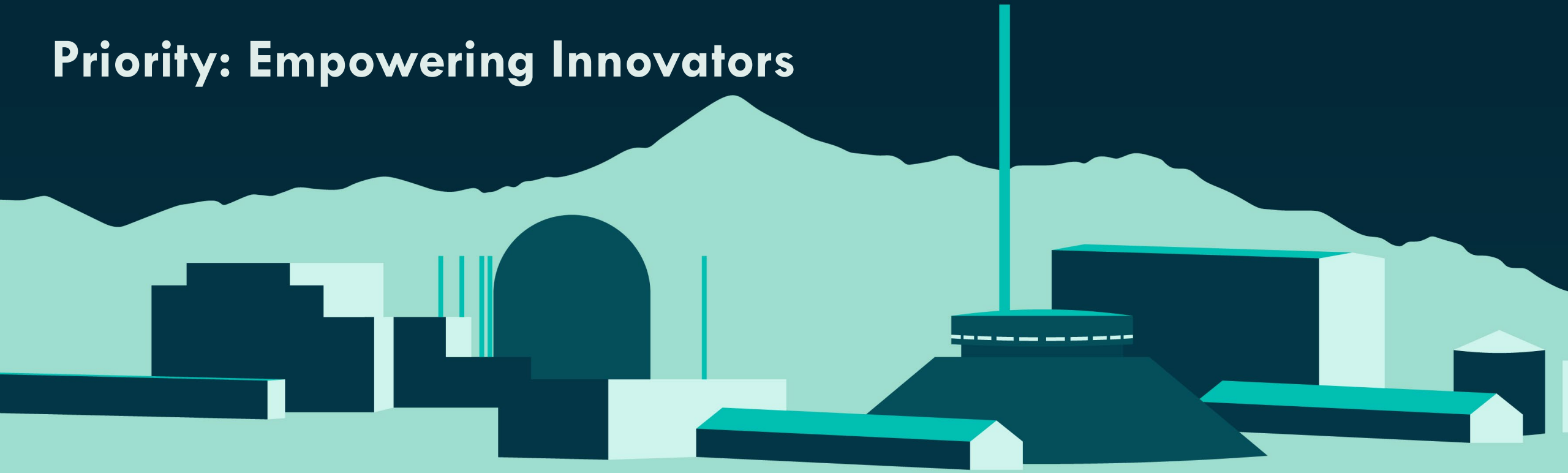
Commercial Advanced Nuclear by 2030


inspire
empower
mission
deliver
NRIC

NRIC is partnering regionally and nationally to support demonstrations

NRIC INL

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

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NRIC-DOME Test Bed

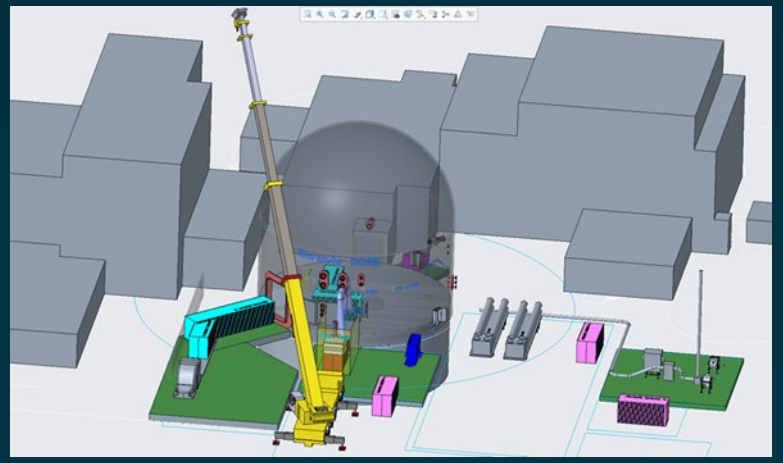
(Demonstration of Microreactor Experiments)

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

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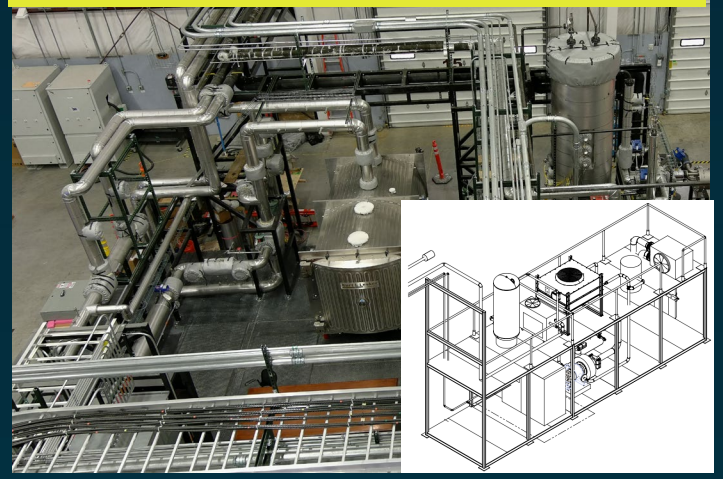
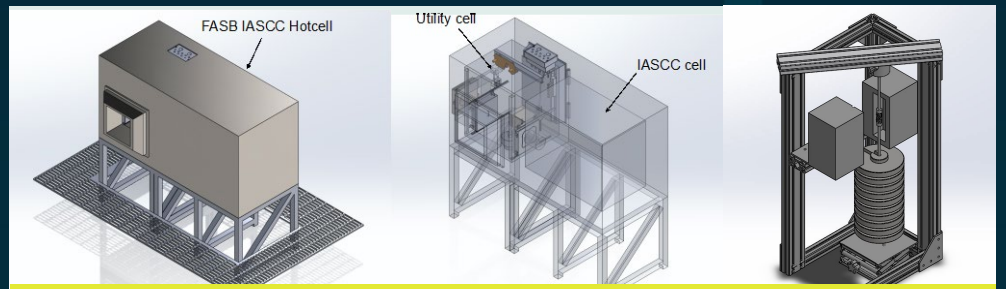
NRIC Experimental Test Beds

Helium Component Test Facility [*2022*]

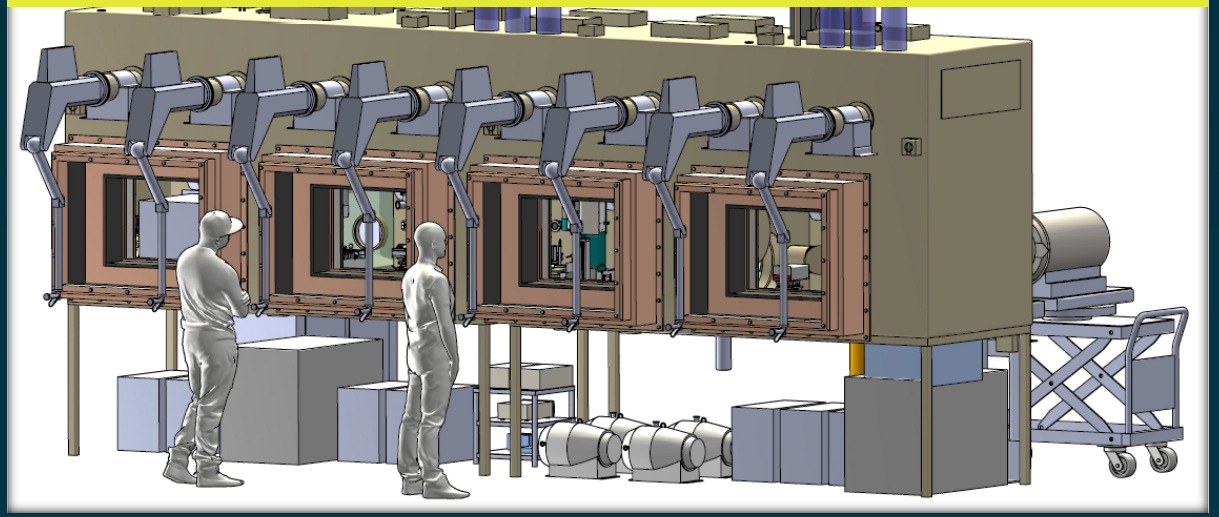


In-HotCell Thermal Creep Frame [*2022*]

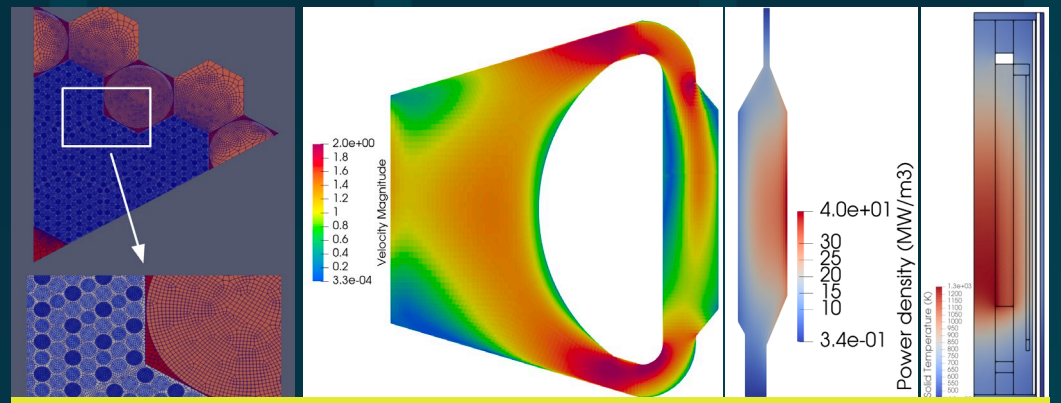


Mechanisms Engineering Test Lab (METL) [Operating]

Molten Salt Thermophysical Examination Capabilities (MSTEC) [*2024*]

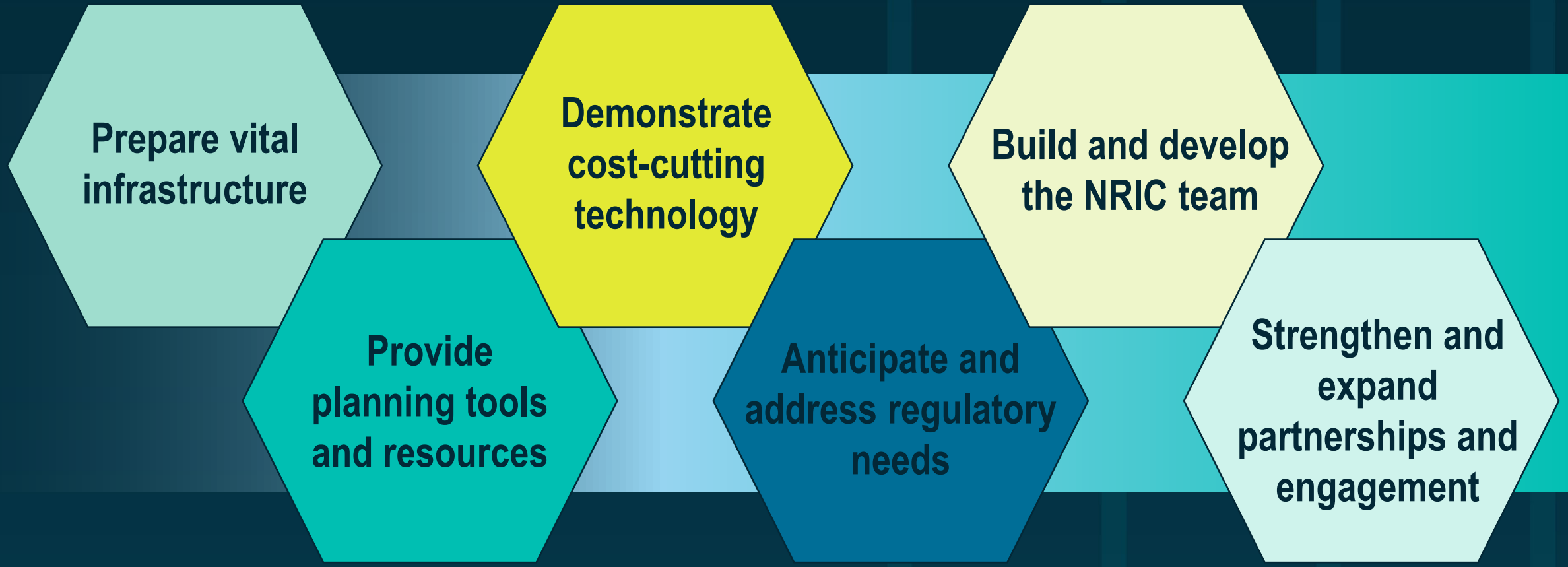


Virtual Test Bed [Launched 2020]



Goals for FY22

Maintain progress to support demonstrations by the end of 2025 and sustained innovation



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WE'VE DONE THIS BEFORE

WE'RE GOING TO DO IT AGAIN

WITH SOME *refinements*

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Thank you!

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