Demonstration Platforms & Test Beds

Ashley Finan
U.S. NIC Advanced Reactors Technical Summit III
Oak Ridge National Laboratory
February 11, 2016
NIA Mission & Modes of Operation

The NIA leads advanced nuclear energy innovation.

• We assemble companies, investors, experts, and stakeholders to advance nuclear energy innovation and enable innovative reactor commercialization through favorable energy policy and funding.

• We research, develop, and advocate policies that enable the efficient licensing and timely early-stage demonstration of advanced reactor technologies.
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- Sam Thernstrom, Energy Innovation Reform Project
- Third Way
- Ed Wallace, GNBC Associates
- Kevan Weaver, TerraPower
- Aditi Verma, Massachusetts Institute of Technology

People in bold have been at the summit
NIA Strategic Priorities

• Top priorities:
  – A staged, and ultimately more technology-neutral licensing process based upon risk-informed principles.
  – A test bed & demonstration platform where nuclear innovators in the private sector can demonstrate advanced technologies.

• Next tier priorities:
  – Cooperation to provide for international commercial testing, demonstration, and deployment of advanced technologies.
  – Financial support for early stage technology development and early commercial deployment.
Why these top two priorities?

• There is substantial private capital interested in advanced nuclear energy ($1.6 Billion invested so far), but more investment is needed to bring it to market.

• But NIA’s advisory committee was unanimous that this capital will not be substantially grown until there is a clear, predictable and affordable path to demonstration and licensing.
Activities to date

• Advanced Reactor Licensing Initiative
• Test Bed & Innovation Center Initiative
• Outreach to DOE, NRC, and lawmakers
• NIA Fundraising and Organization
Test Bed & Innovation Center Initiative

January 2016
Goals

• An incubator to accelerate current efforts and increase the number and diversity of efforts

• A test bed & demonstration platform where nuclear innovators in the private sector can partner with labs and DOE to demonstrate advanced technologies
Innovation Center and Test Bed Roles

- Idea Creation & Incubation
- Early R&D
- Non-nuclear testing
- Research and Development
- Systems Demo Testing
- Demonstration Prototype
- Commercialization
Test Bed & Demonstration Platform

Purpose

- Provide a place for advanced nuclear companies to prototype/demonstrate their designs
- Provide facilities for materials testing, fuel qualification, and other critical R&D
What Would a Test Bed & Demonstration Platform Provide?

• Much covered yesterday in DOE slides (irradiation, PIE, reconfigurable zero-power reactors, other fabrication and testing, well-characterized site, safeguards & security, load connections, civil engineering, utilities)

• Other items not mentioned yesterday:
  – Fuel Fabrication (and entire fuel cycle support)
  – Containment Structure/seismic isolation
  – Personnel: machinists, technicians, health physicists

• Other considerations
  – Various locations – not just Idaho
  – Liability – may be clarified soon
  – IP
  – Contracting arrangements
  – Licensing, NRC participation
  – Qualification process (but not necessarily down-selection)
Next Steps

• Organizing stakeholders to provide ongoing input to the process
• Development of necessary specifications for design and funding
• Advocating for funding and policy support
Thank you
BACKUP SLIDES
Innovation Center
Innovation Center Purpose

• An incubator for nuclear energy startup companies and supporting organizations to:
  – Foster collaboration
  – Provide networking opportunities with investors and strategic partners
  – Maximize efficient sharing of resources
  – Accelerate progress
  – Increase the number & diversity of efforts
What would an Innovation Center Provide? (1 of 2)

• Physical Resources
  – Shared office space & presentation space
  – Computing resources

• Partnerships
  – With nearby Universities for some experimental work and idea creation
  – With national labs for additional experimental and expert resources
  – With international innovation centers

• Link to regulatory experts & NRC
What would an Innovation Center Provide? (2 of 2)

• Training & Mentoring
• Networking with:
  – Investors
  – Strategic Partners, future customers
  – DOE, government, other potential supporters
  – International innovation centers like InnovateUK, Dalton Nuclear Institute, Innovation Saskatchewan, etc.
NIA Activities to Date

• Interviews of entrepreneurs, investors, existing incubators, academics; NIA working group session.

• Discussions with INL and others about the link between an Innovation Center, the GAIN initiative, and the later stages of the innovation process.