

**Idaho National Laboratory**

www.inl.gov

**INL**  
Idaho National Laboratory

**Mark Peters, PhD**  
Director, Idaho National Laboratory

**February 6, 2020**  
Boise, Idaho

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**The Idaho National Laboratory – 70 Years of Groundbreaking Nuclear Energy R&D**

**1949**  
National Reactor Testing Station

**1974**  
**INEL**  
Energy Mission – Reactor Science, Safety and Sustainability Solutions

**1997**  
**INEEL**  
Environmental Management Mission

**2005**  
**INL**  
Idaho National Laboratory  
INEEL & ANL-W combined to create the new Idaho National Laboratory

**2020**  
**INL** Idaho National Laboratory

**Building a Laboratory**

- Nuclear Energy
- National and Homeland Security
- Energy and Environment

**International Intellectual Leadership**

- Advancing Nuclear Energy
- Securing & Modernizing Critical Infrastructure
- Enabling Clean Energy Systems

**Argonne NATIONAL LABORATORY**

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## National Reactor Innovation Center

[www.inl.gov](http://www.inl.gov)

**INL** Idaho National Laboratory

**Ashley E. Finan, Ph.D.**  
Director, NRIC

**February 6, 2020**  
Boise, Idaho

COMMUNITY EXCELLENCE

OPERATIONAL EXCELLENCE

SCIENTIFIC AND TECHNICAL EXCELLENCE

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### DOE Launched NRIC on August 15th, 2019



- Authorized by the Nuclear Energy Innovation Capabilities Act to provide innovators with necessary support to test and demonstrate their reactor concepts and assess their performance.
- NRIC will be led by INL, coordinating with other national labs

NRIC provides capabilities to accelerate technology readiness from proof of concept through proof of operations

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### NRIC and GAIN are Complementary and Coordinated Efforts to Support the Nuclear Energy Industry



#### GAIN

- Established in 2015 as a resource for accelerated development of nuclear innovations with lab partners
  - Comprehensive resource to entire nuclear innovation ecosystem at all development stages
  - Provides streamlined access to testing, MASL, experimental facilities, lab expertise, and legacy data
  - Regulatory expertise (e.g. NRC advanced reactor licensing strategy support)
  - Financial support

#### NRIC

- Provides a capability for building and demonstrating reactor concepts
  - Focused program to enable innovators nearing demonstration stage
  - Provides access to sites, required upgrades, site services, and demonstration process support
  - Provides access to fuel material and fabrication facilities
  - Provides regulatory assistance related to demonstration
  - Facilitates NRC observation/learning

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### **NRIC Mission**

**MISSION**

**NRIC will accelerate deployment of advanced reactors by:**

- **Inspiring stakeholders** and the global public with our vision, commitment, and plan to change the world's energy future;
- **Empowering innovators** to test and demonstrate reactors by enabling access to facilities, materials, and expertise; and
- **Delivering successful outcomes for the nation** through efficient coordination of partners and resources.



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### **Preliminary Strategy**

<h4><b>Inspire</b></h4> <p><b><i>With Action, Urgency, and Results</i></b></p> <ul style="list-style-type: none"><li>• Outreach/Showcase/Events</li><li>• Convening space</li><li>• Practical aesthetic design</li><li>• Visualization, augmented reality, etc.</li><li>• Test groundbreaking and cost-cutting techniques</li><li>• Center for developers including ARPA-E and GAIN recipients</li></ul>	<h4><b>Empower</b></h4> <p><b><i>With Preparation, Teamwork, and Leadership</i></b></p> <ul style="list-style-type: none"><li>• Provide access to government resources, facilities, &amp; infrastructure</li><li>• Support permitting/regulatory needs</li><li>• Facilitate contracting and local engagement</li><li>• Collaborate with and support existing projects</li></ul>	<h4><b>Deliver</b></h4> <p><b><i>With Follow-Through and an Intense Focus on Outcomes</i></b></p> <ul style="list-style-type: none"><li>• Prepare sites</li><li>• Create demonstration pathways</li><li>• Provide navigation support from start to finish</li><li>• Core team for rapid demonstration excellence</li><li>• Understand private sector needs and meet them</li></ul>
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***FY20 Will Focus on Establishing NRIC and Initial Execution to Enable Advanced Reactor Demonstrations***

- **Team**
- **Program execution plan**
- **Documents, materials, and website**
- **Stakeholder and company outreach**
- **Gap assessment**
- **Develop the NRIC National Environmental Policy Act (NEPA) approach**
- **Establish resource allocation prioritization plan**
  - Including evaluation criteria to support project selection
  - Prioritization of upgrades
- **Begin addressing infrastructure needs**

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## ***NRIC and GAIN are Complementary and Coordinated Efforts to Support the Nuclear Energy Industry***

	<b><i>GAIN: A resource for accelerated development of nuclear innovations with lab partners</i></b>	<b><i>NRIC: A capability for building and demonstrating reactor concepts with lab partners</i></b>
<b>Description</b>	Single point of access to DOE National Laboratory complex and comprehensive resource for collaboration and access	Program to enable testing and demonstration of advanced reactor concepts and supporting technology
<b>Primary Partners</b>	Entire commercial nuclear innovation ecosystem	Innovators ready to test and demonstrate new concepts
<b>Facilitates access to</b>	<ul style="list-style-type: none"> <li>• Testing</li> <li>• Computational Capabilities</li> <li>• Modeling and Simulation</li> <li>• Experimental capabilities</li> <li>• Laboratory expertise</li> <li>• Legacy data</li> <li>• Funding</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstration sites and services</li> <li>• Fuel material and fabrication</li> <li>• Demonstration expertise</li> <li>• Demonstration-related testing</li> <li>• Other, based on stakeholder needs</li> </ul>
<b>Creates</b>	<ul style="list-style-type: none"> <li>• Enduring technical relationships</li> <li>• Efficient contracting structures</li> <li>• New regulatory resources</li> </ul>	<ul style="list-style-type: none"> <li>• Facilities and site upgrades needed for testing and demonstration</li> <li>• Innovative contracting approaches for demonstration</li> <li>• Successful demonstrations for collection of performance data</li> </ul>