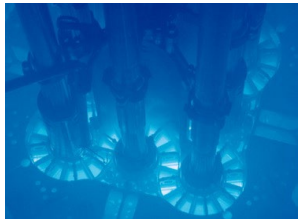
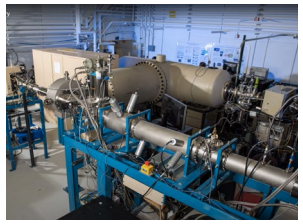
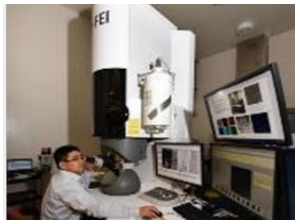
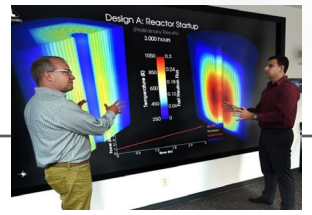
Nuclear Science User Facilities

User Organization Meeting – March 19, 2026

Christopher Barr

Nuclear Science User Facilities

Neutron Test Reactors		Reactor facilities at national laboratories and universities including the Advanced Test Reactor at INL
Gamma & Ion Irradiation		Gamma irradiation facilities and ion beam facilities at national laboratories and universities
Post-Irradiation Examination		Multiple hot cell and broad post-irradiation examination facilities including advanced characterization methods
Beamlines		Synchrotron and neutron beamlines for nuclear fuel and materials studies
Computational Resources		Scientific high-performance computing capabilities for advanced modeling, simulation, and AI at INL

Cutting-Edge Resources: Access to infrastructure and associated capabilities across 21 partner sites

Open access: Available to industry, academia, and national labs for non-proprietary R&D

Education and training: Workshops and hands-on skill development

Impact: Increase fundamental understanding to drive innovation across nuclear energy technologies

https://nsuf.inl.gov/

Key Program Elements

Awarded Research – User Projects

- Rapid Turnaround Experiment Awards
- Consolidated Innovative Nuclear Research NOFO
- Technical Expertise and Project Management

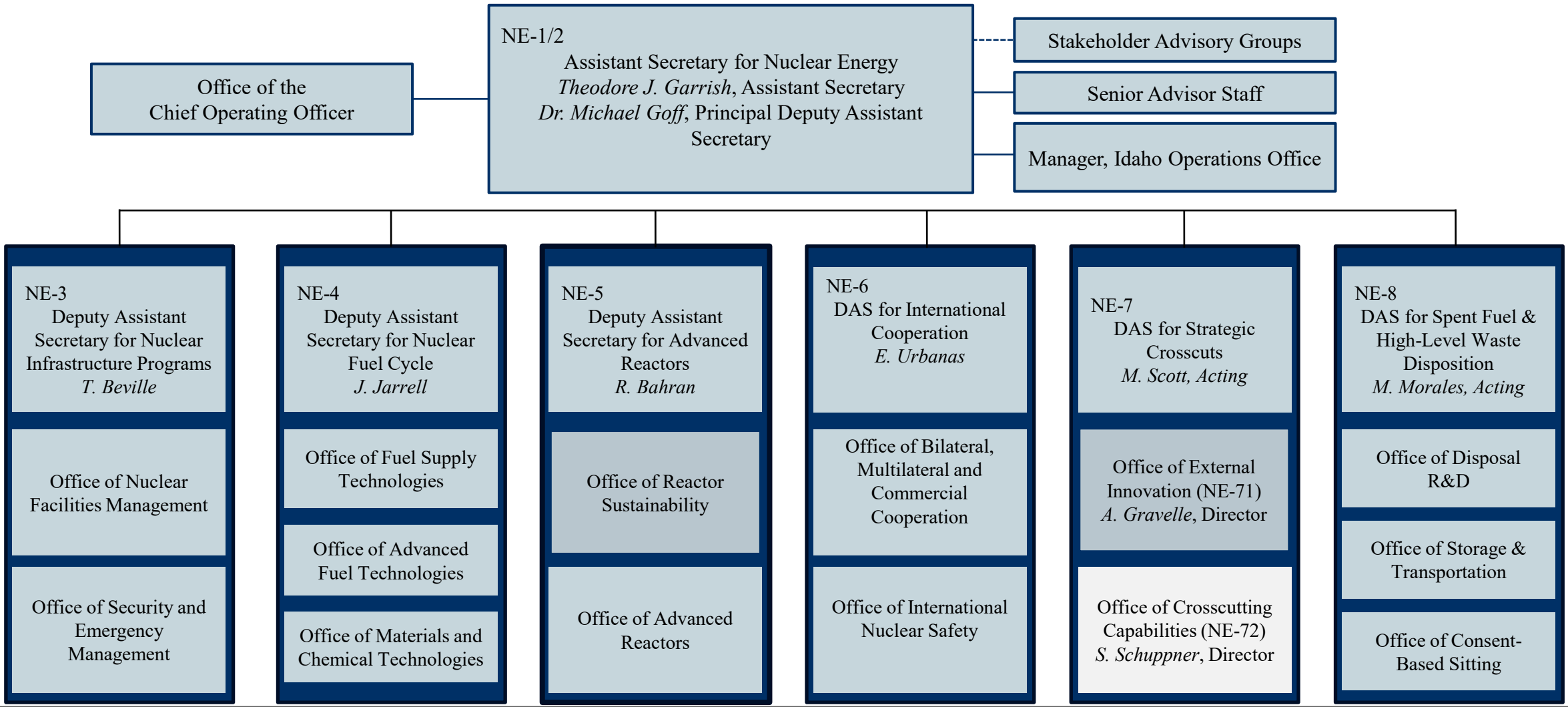
Capabilities and Library

- Nuclear Fuel and Materials Library
- Capability Improvements

High Performance Computing

- Computation Support at INL – NE's supercomputers
- Nuclear Research Data System

NSUF Program within DOE-Office of Nuclear Energy



Office of Strategic Crosscuts (NE-7)

NE-7
DAS for Strategic Crosscuts

NE-71
Office of External Innovation

NE-72
Office of Crosscutting Capabilities

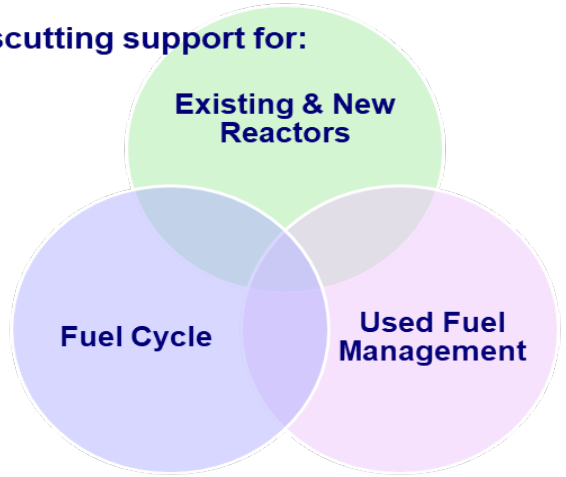
University Support

- Nuclear Energy University Program
- Distinguished Early Career Program
- University Nuclear Leadership Program (Scholarships, Fellowships)
- Workforce Development and Training

Industry and External Engagement Support

- Gateway for Accelerated Innovation in Nuclear
- Small Business Innovative Research (SBIR) / Small Business Technology Transfer (STTR)
- Technology Commercialization Fund (TCF)

Crosscutting support for:



Crosscutting Research and Development

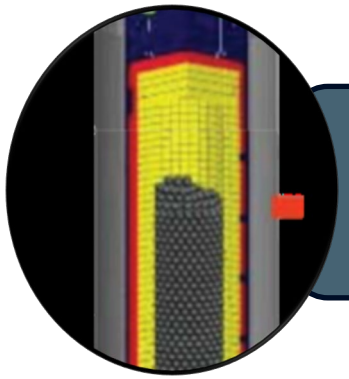
- Nuclear Energy Advanced Modeling and Simulation
- Advanced Materials and Manufacturing Technologies
- Advanced Sensors and Instrumentation

Crosscutting Research Capabilities

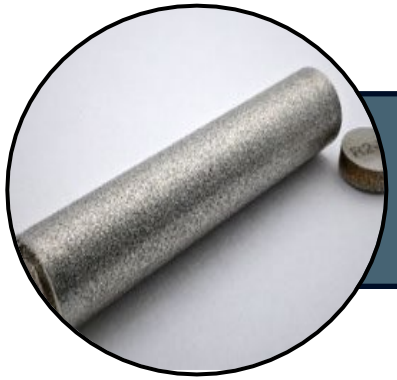
- Nuclear Science User Facilities
- High Performance Computing
- University Fuel Services

NE-72 – Office of Crosscutting Capabilities

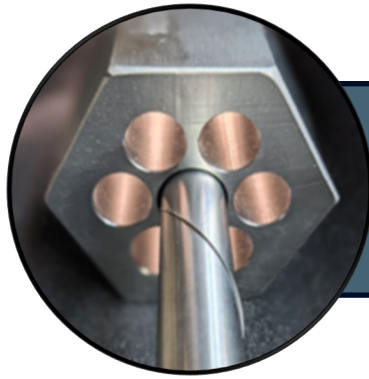
Strategic investments in research capabilities to develop innovative and **crosscutting technologies** that resolve nuclear technology development issues to enable continued operation of existing U.S. nuclear reactors, enable deployment of advanced nuclear reactors, and develop advanced nuclear fuel cycles.



Nuclear Energy Advanced Modeling and Simulation (NEAMS)

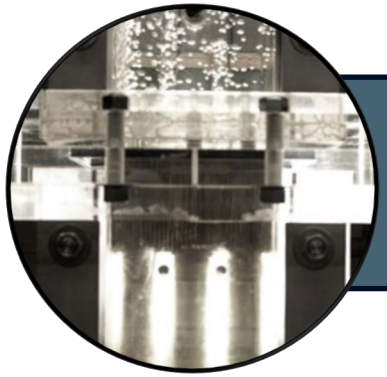


Advanced Materials and Manufacturing Technologies (AMMT)



Advanced Sensors and Instrumentation (ASI)

Nuclear Science User Facilities (NSUF)



University Fuel Services (UFS)

NSUF By the Numbers

$150 million

in direct user support to industry, labs, and academia

900 | Total projects including CINR and RTEs

Users Institutions | **107**

- 1,200 High Performance Computing users annually
- Greater than 100 publications per year from user access awards and high-performance computing access.
- Technical impact goes *beyond publications*: underlying user access and subsequent research has direct impact on advanced reactor development and long-term performance of the existing reactor fleet

NSUF Budget – Fiscal Year (FY) 2026

Prior Year Budget:

- FY 2025 Enacted: $34,500,000 total
  - $12,000,000 for computational support

Current Budget:

- FY 2026 Enacted: $45,500,000 total
  - up to $18,000,000 for computational support
  - up to $5,000,000 for artificial intelligence tools to expedite the development and deployment of advanced nuclear energy systems

NSUF Recent Accomplishments and Updates

Capabilities and Access:

- Activated Materials Laboratory successful first experiment (Fall 2025)
- NE flagship supercomputer Teton installed and ready for user access (Winter 2026); additional GPU-based system planned for later this FY
- Automated Mechanical Test System Installed at INL – accelerating radiological tensile testing by 5X (Summer 2025)
- Inaugural Foundations of Irradiation Testing Workshop hosted at INL (Summer 2025)

NSUF Perspective

Program maintains a focus on fundamental and applied R&D through user access awards to provide innovation to crosscutting nuclear energy technologies including fuel, materials, and sensors that advance the NE mission

To accomplish this and support Executive Order 14302 Reinvigorating the Industrial Base - Section 5, the program aims to:

- Maintain an emphasis on user access opportunities that drive innovation across NE portfolio
- Provide timely access to relevant capabilities at INL and partner sites
- Enhance stakeholder engagement – need to highlight user access projects and how these technical and workforce development contributions provide a direct impact to overarching DOE and NE mission
- Expand user access to national laboratory technical expertise through select workshops such as foundations of irradiation testing
- Expand internship opportunities at national laboratories – piloted in FY26 with 10 new internships
- Continued development and user engagement with the Nuclear Research Data System and INL High Performance Computing (HPC)

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