

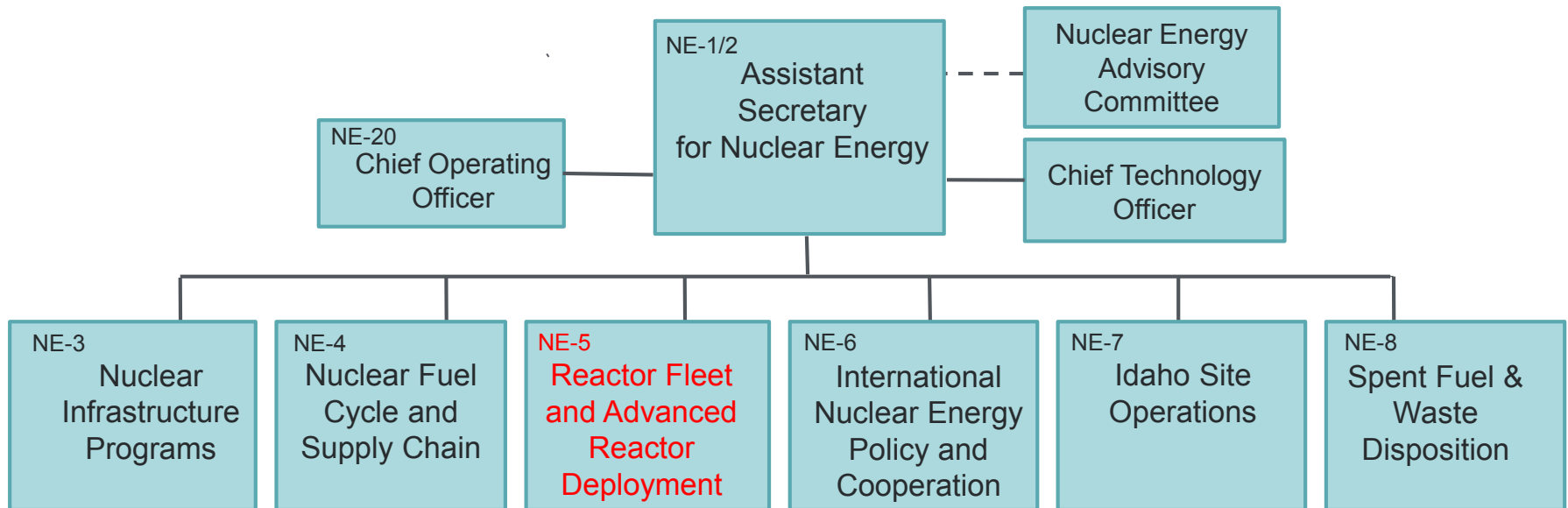


Nuclear Science User Facilities (NSUF)

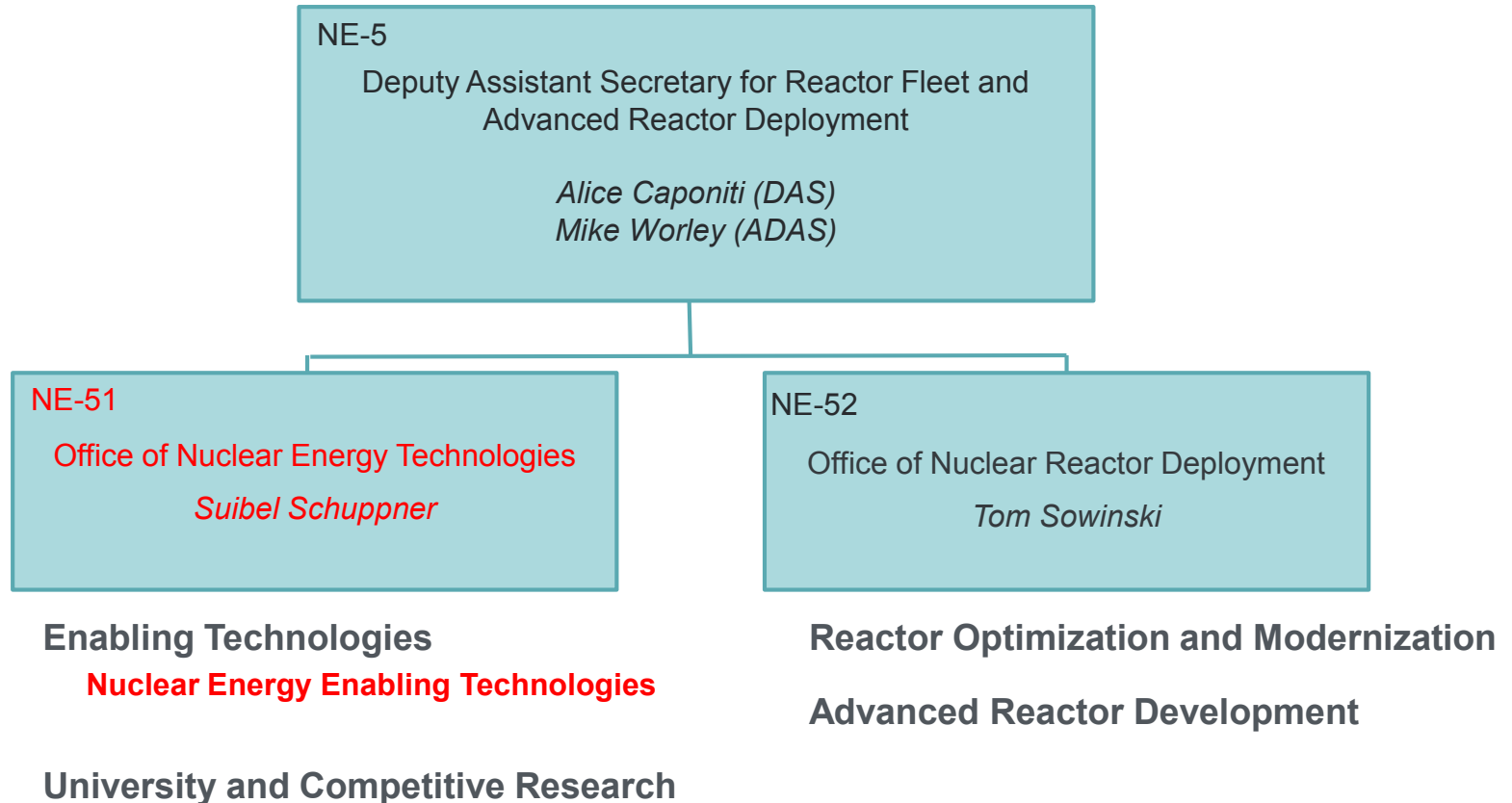
Tansel Selekler
Office Of Nuclear Energy Technologies
Office of Nuclear Energy

November 2020

Office of Nuclear Energy



Reactor Fleet and Advanced Reactor Deployment



NE-51 - Office of Nuclear Energy Technologies

Nuclear Energy Enabling Technologies (NEET)

NEET

Conducts research and development (R&D) and makes strategic investments in research capabilities to develop innovative and crosscutting nuclear energy technologies to resolve U.S. industry nuclear technology development issues

Program Elements

- [Crosscutting Technology Development:](#)
 - Advanced Sensors and Instrumentation
 - Advanced Methods for Manufacturing
- [Advanced Modeling and Simulation](#)
- [**Nuclear Science User Facilities**](#)
- [Transformational Challenge Reactor](#)

Nuclear Science User Facilities (NSUF)

Mission:

- Operate the NSUF as a consortium of institutions that provides access to world-class capabilities and expertise to perform high impact research that will advance nuclear energy technologies.

Objectives:

- To produce the highest quality research results that will impact and increase understanding of advanced nuclear energy technologies important to NE and support national priorities by adapting to the needs of NE programs, industry, and new innovative concepts.

Program Leadership and Participating National Laboratories

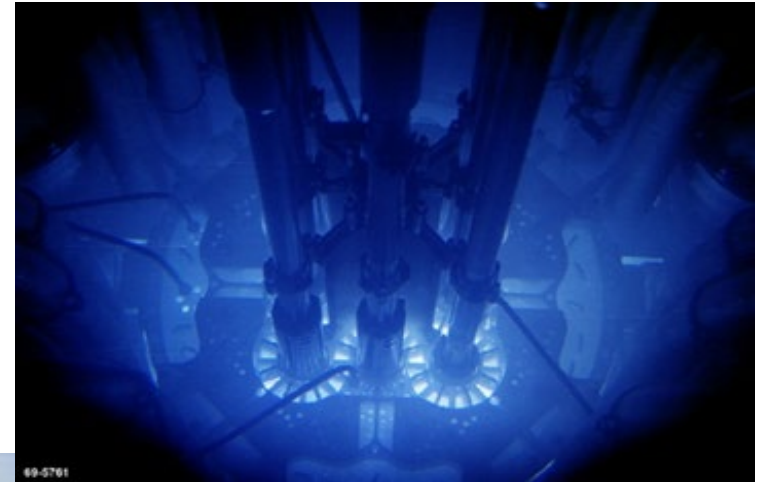
Program Leadership

- Federal Program Manager: Tansel Selekler, DOE-NE
- NSUF Director: Dr. J. Rory Kennedy, INL
- NSUF Deputy Director: Dan Ogden, INL
- High Performance Computing Director: Eric Whiting, INL
- Nuclear Materials Discovery and Qualification Initiative Director: Dr. Allen Roach, INL



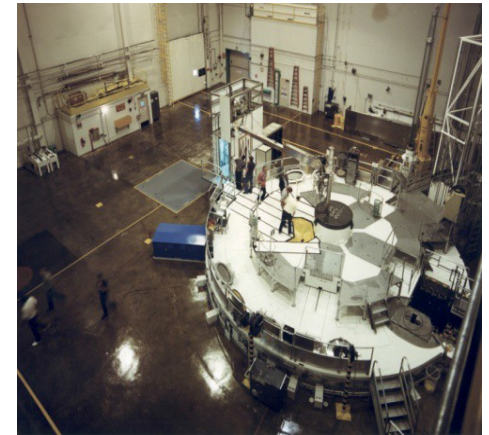
Participating National Laboratories

- Idaho National Laboratory (Lead Laboratory)
- Argonne National Laboratory
- Brookhaven National Laboratory
- Lawrence Livermore National Laboratory
- Los Alamos National Laboratory
- Oak Ridge National Laboratory
- Pacific Northwest National Laboratory
- Sandia National Laboratory



NSUF - Competitive Awards

- **Consolidated Innovative Nuclear Research (CINR) FOA, 1 call/year**
 - Irradiation + Post Irradiation Examination (PIE) (\$500K to \$4.0M, up to 7 years) includes design, analyses, fabrication, transport, irradiation, disassembly, PIE, disposition
 - Irradiation only (\$500K to \$1.5M)
 - Beamline or PIE Only (\$50K to \$750K)
 - Possibility to also receive user R&D funding on limited work scopes
- **Rapid Turnaround Experiments (RTE), 3 calls/year, \$50K target, executed within 9 months**
 - Ion Beam Irradiation
 - Sample Preparation
 - Post Irradiation Examination
- **Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR), 1 call/year**



NSUF Awards History

2018: NSUF awarded 9 CINR projects and 105 RTEs
- NSUF also awarded one SBIR project

2019: NSUF awarded 9 CINR projects and 99 RTEs
- NSUF had no SBIR/STTR work scope

2020: NSUF awarded 8 CINR projects and 56 RTEs
- NSUF had no SBIR/STTR awards

2021: NSUF has received 81 CINR pre-applications – currently under review
- NSUF has a work scope in FY 2021 SBIR/STTR call

NSUF Budget Overview

FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 House Mark
\$44,000K*	\$30,000K**	\$28,000K	\$30,000K***

* \$44.0M total FY 2019 Budget, including:

- \$8M for High Performance Computing (HPC)

** \$30M total FY 2020 Budget, including:

- \$10M for HPC
- \$3M for Nuclear Materials Discovery and Qualification Initiative (NMDQi)
- \$3M for Nuclear Fuels and Materials Library (NFML)

*** \$30M FY 2021 House Mark, including:

- \$10M for HPC
- \$3M for NMDQi

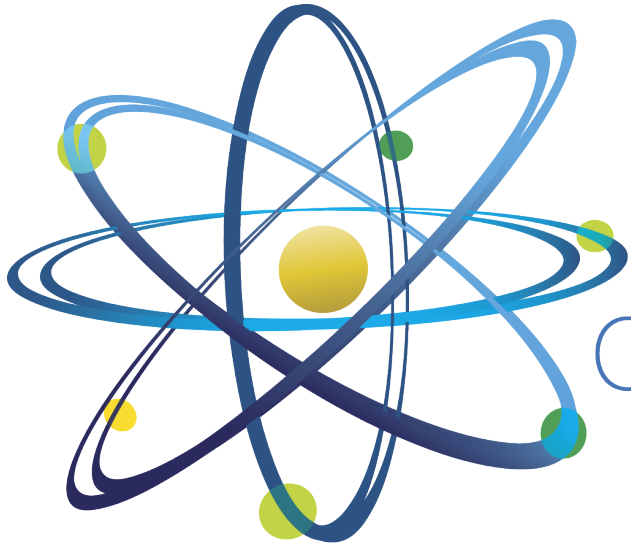
Major Accomplishments – FY 2020

- Awarded 8 CINR projects and 56 RTEs.
- Provided funding for construction of Activated Materials Laboratory complete and access to Advanced Photon Source (APS) High-Energy X-ray Microscope (HEXM) beamline through the NSUF (FY 2022).
- Started communication and coordination with Halden Reactor Project to add materials from Halden Reactor shutdown into the NFML.
- Conducted a NFML survey to identify materials to add to the library.
- Started communication with the industry to add materials from shutdown commercial nuclear power plants (i.e., Crystal River, Duane Arnold).
- Launched Nuclear Materials Discovery and Qualification (NMDQi) initiative.
- Enabled High Performance Computing (HPC) program access to more than 700 users at national laboratories, universities, and industry.
- Installed, commissioned, and turned over Sawtooth to users for full production use (INL).

FY 2021 and Beyond

- Continue to provide users with access to world class capabilities and expertise
- Continue to provide support to unique facilities and scientist and instrumentation support
- Maintain an integrated infrastructure enhancement program
- Maintain and expand the NFML
- Grow international relationships and collaboration towards international sharing of capabilities and materials

Questions?



Clean. **Reliable. Nuclear.**