Outline

- FOA Overview

- Preliminary Revitalization and Reactor Sharing FOAs

- NSUF Integration

- Reactor Upgrades

- General Scientific Infrastructure

- Best Practices

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FOA Highlights

- Funding Mechanism
  - Funding supplied by the Department of Energy's Office of Nuclear Energy (DOE-NE)
  - Grants issued by the Department of Energy Idaho (DOE-ID)

- Two Funding Opportunities for U.S. Universities
  - Reactor Upgrades
  - General Scientific Infrastructure

- Find the FOA (DE-FOA-0003040) at www.grants.gov

- Submit applications at www.neup.gov

Important Dates

- FOA release date: Week of June 5, 2023

- Applications due: August 24, 2023

- Anticipated award announcement: March 2024

<u>Preliminary</u> Infrastructure Revitalization FOA

- New infrastructure revitalization funding opportunity will support competitively awarded, consortium-led efforts to establish and/or enhance nuclear research capabilities at U.S. universities.

- Consortia or other partnerships to enhance regional or national impact of the investment and foster inclusion of disadvantaged communities

- ~$6M available for the funding opportunity

- Planned FOA release date: November 2023
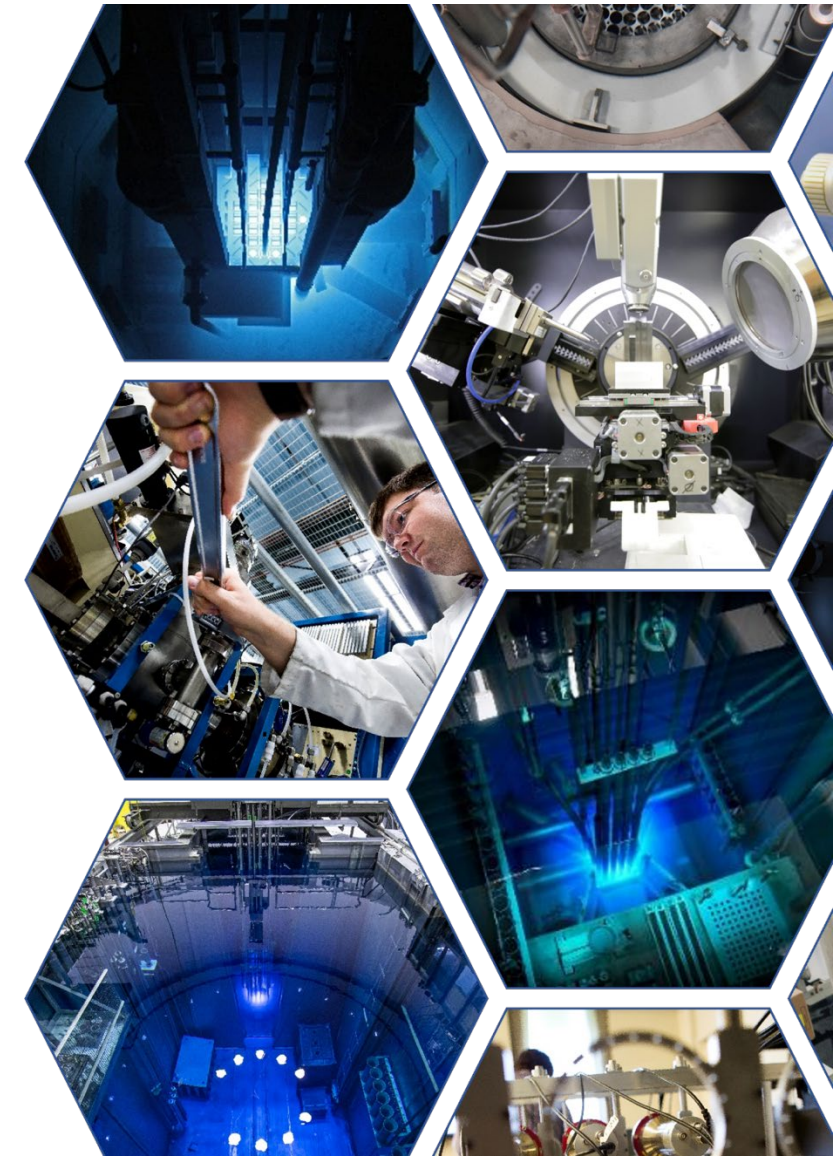
Preliminary Reactor Sharing and Outreach FOA

- Purpose is to encourage universities and colleges with nuclear research reactor facilities to share resources and capabilities with non-reactor educational institutions with an emphasis on supporting MSIs including HBCUs and TCUs

  1. Strengthen nuclear science and engineering (NS&E) programs at nonreactor owning colleges and universities
  2. Increase research opportunities and application of nuclear analytical techniques for faculty and students
  3. Improve public outreach with respect to nuclear sciences, engineering, and technology

- 5 awards, ~$200k each = ~$1M in total funding

- Planned FOA release date: November 2023

Nuclear Science User Facilities (NSUF)

- DOE-NE provides nuclear energy researchers access to world-class capabilities to facilitate the advancement of nuclear science and technology through NSUF

  - Access to NSUF and its partner facilities is granted through a separate competitive proposal process

- The applicant is recommended to demonstrate an <u>ability and willingness to join NSUF as a partner</u> if an offer is extended

- If NSUF determines the new equipment/capability adds significant value to DOE, the awarded institution <u>may be invited</u> to join NSUF, so the equipment is available to other researchers
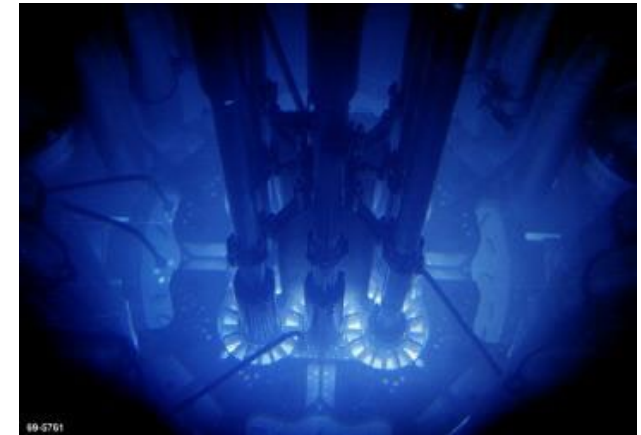
FOA Organization

Area 1
University Reactor Upgrades Infrastructure Support
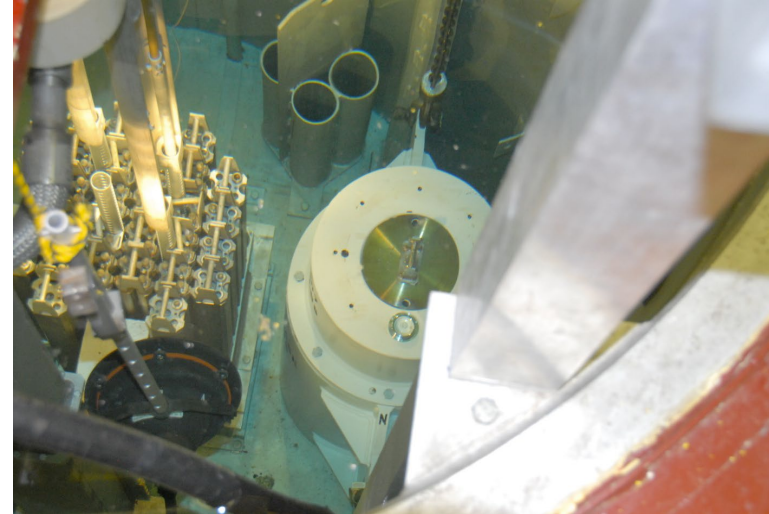
Area 2
University General Scientific Infrastructure Support

University Reactor Upgrades (RU)

- **Award Size**
  - Maximum individual award: $5,000,000
  - Expected award range: No more than $1,500,000
  - DOE anticipated to award several smaller awards

- **Estimated Funding Level**
  - Approximately $2.5 million

- **Period of Performance**
  - Typically, 1 year (if additional time is needed it may be requested and justified in application)

Only <u>educational reactors fueled by DOE</u> are eligible
  - List can be found in Part I.C.1.1 of FOA
  - Each institution is permitted to submit one application for each research reactor they operate.

RU Review Criteria

- Each application will receive a merit review by DOE, university peers, and NSUF reviewers
- **Review Criteria**
  - (**40%**) Safety and/or Security – Potential of the requested equipment, instrumentation, or modification to:
    - Enhance the safety, performance, control, or operational reliability of research reactor systems; or
    - Increase the quality, safety/security, or efficiency of the operation of the research reactor facility
  - (**20%**) Impact – Potential of the requested equipment, instrumentation, or modification to facilitate, improve, or expand ongoing DOE-NE research and training capabilities
  - (**20%**) Utilization – As a result of the proposed equipment, the amount of student and faculty usage of the research reactor facility, and the amount and variety of research and/or services provided by the facility
  - (**20%**) Execution – Capability to implement the full scope of the project, including timely project completion, personnel qualifications, budget, and feasibility.

RU Focus Area – Safety, Security, and Reliability

- A high priority for this FOA is the safety, security, and operational reliability of university research reactors

- Proposals to support continued long-term operation of the university research reactor by purchasing <u>spare parts and associated hardware</u> may be highly regarded

- Additional focus areas include:
  - Nuclear cyber-physical protection
  - Digital technologies that could be applied to advanced nuclear reactors
  - Capabilities for the development and safety assessments of SMRs

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General Scientific Infrastructure (GSI)
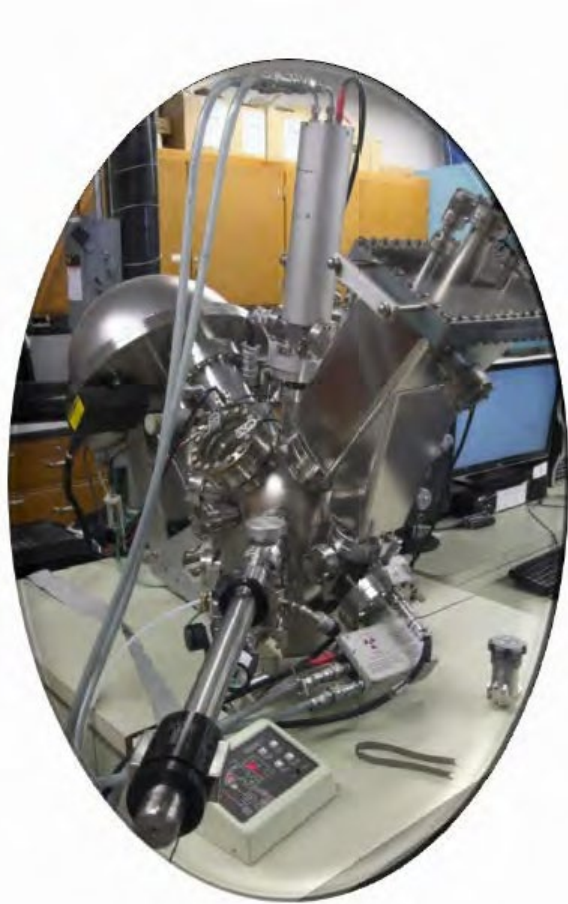
- Award Size
  - Maximum DOE funding per individual university award: $5,000,000
  - Anticipated award size $250,000

- Period of Performance
  - Typically, 1 year (if additional time is needed it may be requested and justified in application)

- Eligibility
  - US universities are eligible to submit applications
  - One application per institution can be submitted to the GSI area of this FOA.

- University cost match (1:1) required after $250,000

- Estimated Funding Level
  - Approximately $2.5 million.

GSI General Requirements

- Applications can be submitted for <u>equipment, software, instrumentation</u>, and associated non-reactor upgrade requests that support nuclear energy-related R&D or education.

- Funding requests may include, but are not limited to, equipment and instrumentation for <u>specialized facilities, classrooms and teaching laboratories, and non-reactor NS&E research</u>.

- Infrastructure requests that support the sharing and use of equipment and instrumentation by <u>multiple campuses of a university, multiple universities, or national laboratories are encouraged</u>.

FY 2024 GSI Focus Areas

- For FY24, specific focus areas of interest are:
  - Nuclear cyber-physical protection
  - Digital technologies that could be applied to advanced nuclear reactors
  - Capabilities for the development and safety assessments of SMRs
  - Capabilities to perform work on radioactive/irradiated materials

NSUF provides access to high-performance computational resources at INL at no cost to users.

- Applications requesting purchase of scientific computing equipment (such as institutional clusters, high-performance computing [HPC] nodes) will not be entertained.

- See **nsuf.inl.gov** or **hpc.inl.gov** for information on accessing HPC resources.

Courtesy of Eric Whiting, Director of Scientific Computing (INL)

GSI Review Criteria

Each application will receive a merit review by DOE, university peers, and NSUF reviewers.

Review Criteria

- (**25%**) **Impact** – Potential of the requested equipment, instrumentation, or modification to <u>facilitate, improve, or expand</u> ongoing DOE-NE research and training capabilities

- (**25%**) **Utilization** – As a result of the proposed equipment, the amount of student, faculty, or researcher <u>usage of the capabilities</u>, and the amount and variety of research or services provided by the facility

- (**25%**) **Execution** – <u>Capability to implement the full scope of the project</u> including timely project completion, personnel qualifications, budget, and feasibility

- (**25%**) **Educational Innovation** – Uses of equipment for <u>educational purposes</u>.

- (**BONUS**) **NSUF Priority** – <u>up to 3 bonus points</u> (constituting up to 3% of a maximum achievable technical rating based upon the merit ratings given) may be attributed if improving an existing NSUF partner facility or as a potential partner facility

GSI Cost Sharing & Cost Match

- **Cost match** is **required** on university **GSI projects** that exceed **$250,000**
  - Dollar for dollar matching requirement, up to the project ceiling of **$5,000,000**
  - For example, if the project's total cost was $350,000; the university would be responsible for $50,000 and DOE's share would be $300,000
  - Anticipated award range will be around **$250,000** for most applications

- **Cost sharing** is encouraged but not required in this FOA

- Contact the DOE-ID Contracting Office with questions

Pitfalls to Avoid

The infrastructure requested should be individual, discrete, and definable items or capabilities that will:

1. Support, maintain, or enhance the institution's capacities to attract and teach <u>high-quality students</u> interested in nuclear energy-related studies
2. Build the institution's <u>research or education capabilities</u>
3. Enhance the institution's capabilities to perform R&D relevant to DOE-NE's mission

Focus on a single, synergistic goal or capability:

- A proposal made of several uncorrelated equipment requests does not meet the goals of this FOA

Try not to duplicate existing capabilities:

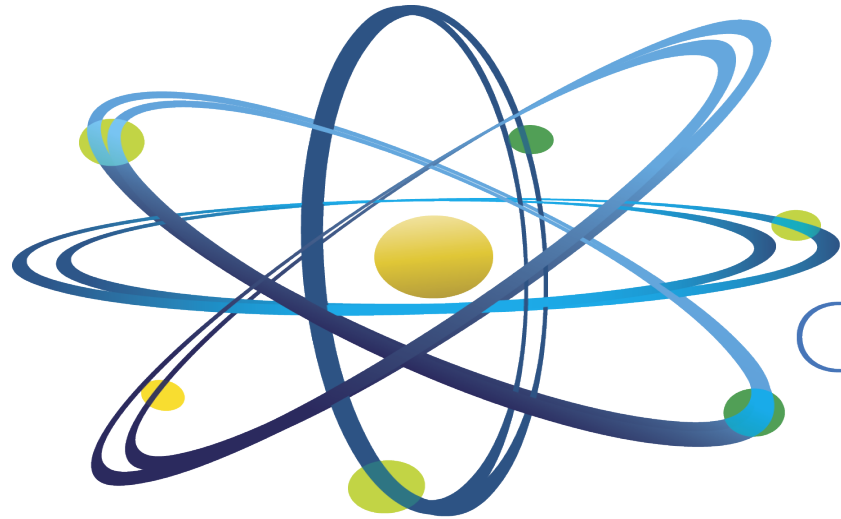- To see NE R&D capabilities in the U.S., review the Nuclear Energy Infrastructure Database (NEID) available at https://nsuf-infrastructure.inl.gov

Specifically list any DOE-NE R&D program relevance

Contact Information

- Technical questions can be submitted to:
  - Brenden Heidrich (TPOC)
    - Brenden.Heidrich@inl.gov

- Procurement questions can be submitted to:
  - Andrew Ford (DOE-ID Contract Specialist)
    - fordaj@id.doe.gov

- Application Site
  - www.neup.gov

- Infrastructure Q&A Section
  - https://neup.inl.gov/SitePages/FAQs.aspx

Clean. **Reliable.** **Nuclear.**