Nuclear Science User Facilities (NSUF)

Rapid Turnaround Experiments (RTEs)

October 15, 2024

NSUF
Nuclear Science
User Facilities

Contents

What are Rapid Turnaround Experiments (RTEs)?

Mission

- To facilitate the advancement of nuclear science and technology by providing researchers with access to world-class capabilities at **no cost** to the researcher
  - Irradiation testing
  - Post irradiation examination
  - Idaho National Laboratory (INL) high performance computing
  - Technical and scientific assistance for the design and execution of projects

Objective

- Offer an avenue for researchers to perform irradiation effects studies of limited scope on nuclear fuels and materials utilizing Nuclear Science User Facilities (NSUF)
- Access to NSUF capabilities is granted through competitive RTE and CINR proposal processes

Limitation

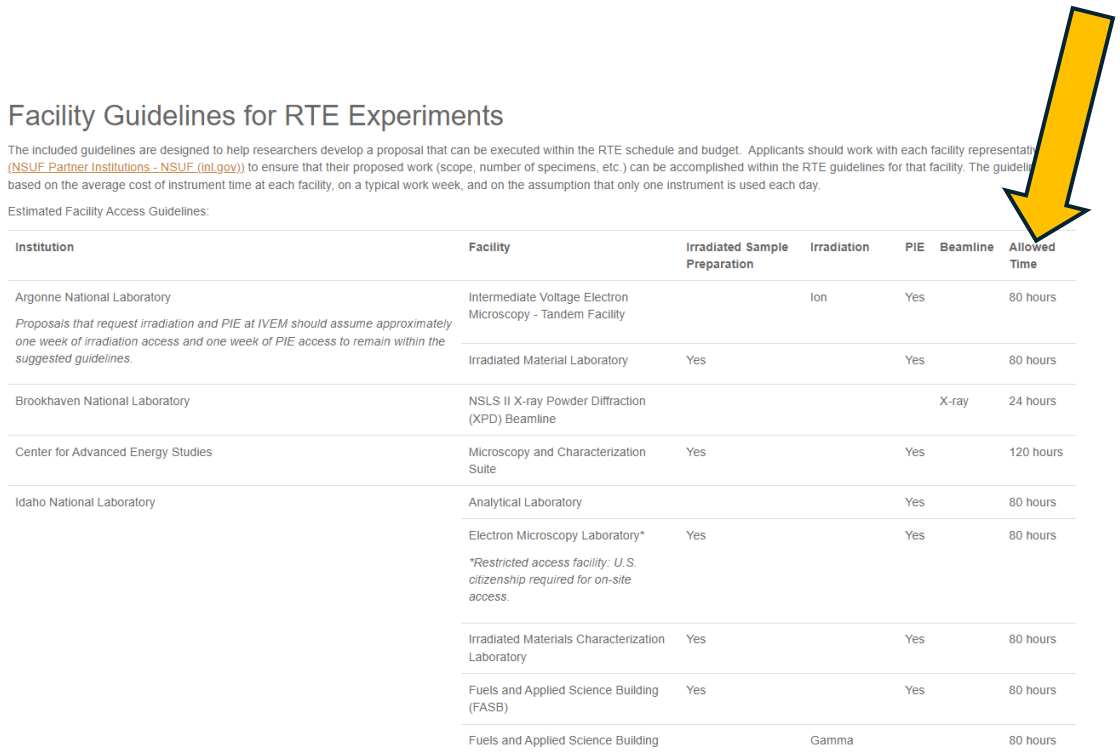
- RTE calls opened 3 times per year
- 9-month project duration

Research Areas of Interest

- Directly support Office of Nuclear Energy (NE) research and development programs
  - Light Water Reactor Sustainability Program
  - Fuel Cycle R&D, Advanced Modeling and Simulation
  - Next Generation Nuclear Program
  - Generation IV Nuclear Energy Systems Initiative
  - https://www.energy.gov/ne/office-nuclear-energy
- Perform quick analysis of a small number of irradiated or radioactive materials or nuclear fuels, including *in situ* sensor performance characterization
  - Neutron, charged particle, actinide, nuclear fuel

Facility Guidelines for RTE Experiments

- Guidelines are designed to help researchers develop a proposal that can be executed within the RTE schedule and budget.
- Adhere to the allowable number of hours listed for the facility and, if in doubt, contact the facility representative.
    - *Neutron irradiation experiments that require the use of ATR, TREAT, HFIR or MITR in core positions do not qualify.*
- **PIs should work with each facility representative, prior to proposal submission, to ensure proposed work (scope, number of specimens, cost, etc.) can be accomplished within the RTE guidelines for that facility, and the project scope can be completed within 9 months from award.**



Facility Guidelines for RTE Experiments

The included guidelines are designed to help researchers develop a proposal that can be executed within the RTE schedule and budget. Applicants should work with each facility representati
(NSUF Partner Institutions - NSUF (inl.gov)) to ensure that their proposed work (scope, number of specimens, etc.) can be accomplished within the RTE guidelines for that facility. The guideli
based on the average cost of instrument time at each facility, on a typical work week, and on the assumption that only one instrument is used each day.

Estimated Facility Access Guidelines:

Institution	Facility	Irradiated Sample Preparation	Irradiation	PIE	Beamline	Allowed Time
Argonne National Laboratory *Proposals that request irradiation and PIE at IVEM should assume approximately one week of irradiation access and one week of PIE access to remain within the suggested guidelines.*	Intermediate Voltage Electron Microscopy - Tandem Facility		Ion	Yes		80 hours
	Irradiated Material Laboratory	Yes		Yes		80 hours
Brookhaven National Laboratory	NSLS II X-ray Powder Diffraction (XPD) Beamline				X-ray	24 hours
Center for Advanced Energy Studies	Microscopy and Characterization Suite	Yes		Yes		120 hours
Idaho National Laboratory	Analytical Laboratory			Yes		80 hours
	Electron Microscopy Laboratory* **Restricted access facility: U.S. citizenship required for on-site access.*	Yes		Yes		80 hours
	Irradiated Materials Characterization Laboratory	Yes		Yes		80 hours
	Fuels and Applied Science Building (FASB)	Yes		Yes		80 hours
	Fuels and Applied Science Building		Gamma			80 hours

https://nsuf.inl.gov/Page/rte

Rules for Proposal Submission

PI Expectations:

- A PI may submit no more than one proposal per RTE call.
- Proposals from PIs not from a U.S. institution must include a collaborator who is from the U.S. and this collaborator must have a significant role in the experiment or project that supports the RTE.
  - The roles and responsibilities for each U.S. collaborator must be clearly identified in the technical narrative.
- All proposals must include a **2**-page technical narrative, curriculum vitae for the PI and all team members. (*Use of the NSF CV template is recommended*.)
- Proposals must include all publications the PI and co-PIs have produced as a result of any and all previous NSUF funded experiments or projects (RTE and CINR).
- Data generated from the work must be made available to the research community in a timely manner. The PI is responsible for the collection, management, and sharing of the research data through a data management plan (e.g., NRDS).
- Any NSUF-funded research should be properly acknowledged.

Failure to meet any of the above rules will result in disqualification of the proposal.

Acknowledging the NSUF

NSUF projects: This work was supported by the U.S. Department of Energy, Office of Nuclear Energy under DOE Idaho Operations Office Contract DE-AC07- 05ID14517 as part of Nuclear Science User Facilities award #_____.

HPC work: This research made use of Idaho National Laboratory's High Performance Computing systems located at the Collaborative Computing Center and supported by the Office of Nuclear Energy of the U.S. Department of Energy and the Nuclear Science User Facilities under Contract No. DE-AC07-05ID14517.

Rules for Proposal Submission

A PI is limited to TWO active RTE projects at any given time. While a third proposal can be created, it cannot be submitted.

If a PI has 2 active RTE projects, a completion report for one of the active projects must be submitted at least 2 weeks before the call closes to be eligible to submit a new RTE proposal.

A project is considered active until a completion report is submitted and approved.

Completion reports must be submitted within 4 months of any completed RTE project.

Completion Report Criteria

Provide a summary of both the work completed and the data obtained.

Describe the potential impact to the state-of-knowledge.

Rules for Proposal Submission

Content

Must be **original** and shall not duplicate any work currently funded by a DOE, or other Federal, program or project, including Laboratory Directed Research and Development.

Scope must be **unique** and not overlap with any past, current or proposed scope in an open funding call.

Produced data will lead to a scientific or engineering outcome that are suitable for **publication** and will be attributed to the NSUF.

Must focus on irradiated or radioactive materials or nuclear fuels research, including in situ sensor performance characterization. (Proposals can include limited non-irradiated structural or cladding reference samples, as appropriate.)

Facility

Use NSUF capabilities at **up to three partner institutions:**

- One partner for sample preparation/shipping (Consider the location of your samples and **include a request for sample shipping** if they need transferred between two NSUF partner facilities.)
- One partner for irradiation
- One partner for PIE

No requests for irradiation only.

No requests for sample preparation/shipping only.

Proposals that request irradiation and PIE should remain within the suggested RTE guidelines.

Funding

Only supports activities at NSUF facilities and shipping between them.

No funding to the PI to support salaries, tuition, travel, or other costs typically supported via R&D funds.

Funded RTEs must be completed no more than **9-months** from the date of award.

Review Process

Program Relevance

- Support, advance, and/or demonstrate recognizable ties to the NE mission and relevant topics.
- Build on synergies with ongoing direct- or competitively-funded projects and/or meet a critical mission need.

Feasibility

- Ensure proposed work (scope, number of specimens, etc.) can be accomplished within the RTE guidelines for that facility, and the projects can be completed within 9 months from award.

Technical/Scientific Merit

- Scientific merit (50%)
- Technical approach (30%)
- Capability of the team (20%)

Panel Review

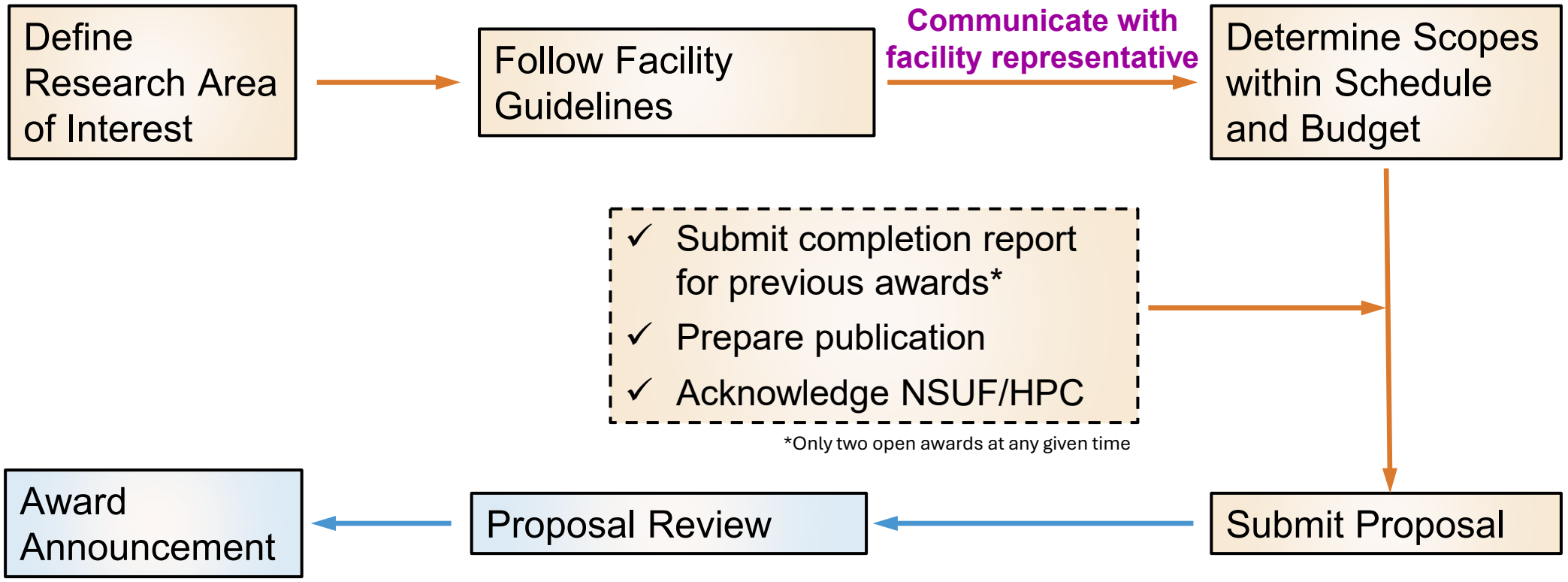
- Reviews technical comments and scores to ensure consistency across reviews.
- Balances the distribution of funds in a single call to impact a broad group of researchers.
- Declines proposals with very large budgets out of proportion with the guidelines.
- Restricts awards to applicants who have a poor record of completing awarded RTEs within the 9-month period and/or have a poor record of timely publication and/or acknowledgment of NSUF-funded research.
- Grants additional points to proposals with a PI from a MSI.
- Provides a ranked list to the NSUF Director.
- NSUF Director makes the final award recommendation to NE.

Minority Serving Institutions (MSIs)

If the PI is from an institution listed in the United States Department of Education MSI directory, **5-points** will be manually added to the average technical score and noted in the recommendation provided to the NSUF Federal Program Manager.

https://cmsi.gse.rutgers.edu/msi-directory

RTE Proposal Preparation and Review

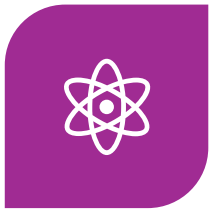


RTE Proposal Tips

PLAN AHEAD

WORK WITH FACILITY REPRESENTATIVE *BEFORE* SUBMITTING PROPOSAL

ENSURE SAMPLE READINESS

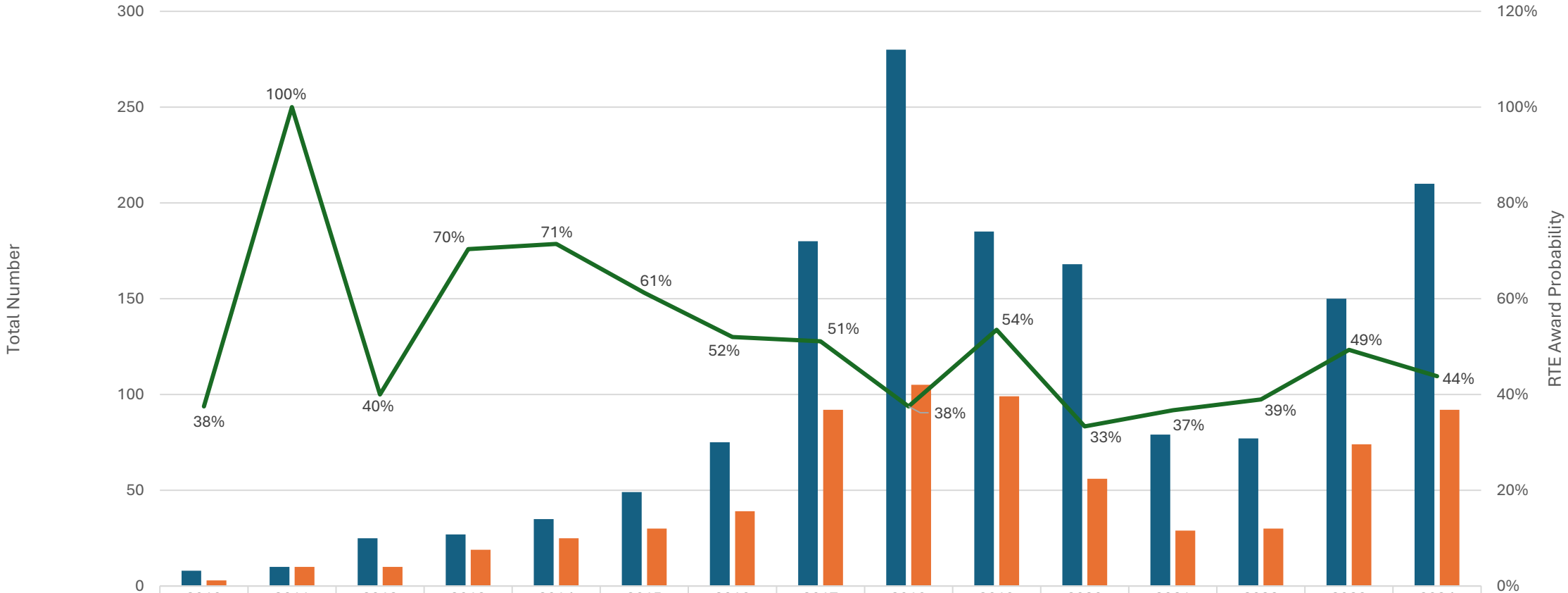


REQUEST SAMPLES FROM THE NSUF NUCLEAR FUELS AND MATERIALS LIBRARY WHEN POSSIBLE

READ RTE RULES FOR PROPOSAL SUBMISSION (HTTPS://NSUF.INL.GOV/PAGE/RTE)

SEEK FEEDBACK

RTE Awards FY 2010 – FY 2024



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Proposals	8	10	25	27	35	49	75	180	280	185	168	79	77	150	210
Awards	3	10	10	19	25	30	39	92	105	99	56	29	30	74	92
Success Rate	38%	100%	40%	70%	71%	61%	52%	51%	38%	54%	33%	37%	39%	49%	44%

RTE FY 2025
1st Call
Schedule

Proposal Submittal & Review Schedule	
Solicitation period opens	10/1/24
Call announcement seminar	10/15/24
Individual Q&A sessions *(must be scheduled in advance by contacting the RTE Administrator)*	10/21/24
Proposal due date	10/31/24 at 4 p.m. Mountain Time
Selection review	Estimated 12/1/24
Proposals awarded	Estimated 2/1/25

RTE Program Administration

Brenden Heidrich, *Director*

Collin Knight, *Deputy Director*

Keith Jewell, *Chief Scientist*

Rongjie Song, *Chief Scientist*

Anna Podgorney, *RTE Administrator*

- *(208) 526-2123*
- *anna.podgorney@inl.gov*

Questions?