# U. S. Department of Energy
# Idaho Operations Office

## Fiscal Year 2025 Consolidated Innovative Nuclear Research

**Funding Opportunity Announcement: DE-FOA-0003309**
**Announcement Type: Initial – May 20, 2024**
**Amendment 001: June 17, 2024**
**Assistance Listings Number 81.121**

| | |
|---|---|
| **Informational Webinar**<br>**(Video links and presentations are available at www.NEUP.gov)** | **May 9, 2024** |
| **Issue Date** | **May 20, 2024** |
| **DOE Topic Area Program Manager Q&A**<br>**(Video links and presentations are available at www.NEUP.gov)** | **May 28-30, 2024** |
| **Letter of Intent (Mandatory only for NSUF-1 and NSUF-2 Applications) Due Date** | **June 5, 2024, at 5:00 p.m. ET** |
| **R&D/NSUF Pre-Applications (Mandatory except for IRPs)**<br>**Due Date** | **June 26, 2024, at 5:00 p.m. ET** |
| **NSUF Pre-application Statement of Work**<br>**Due Date** | **August 01, 2024, at 5:00 p.m. ET** |
| **NSUF Full Application Statement of Work**<br>**Due Date** | **October 30, 2024, at 5:00 p.m. ET** |
| **Full R&D/NSUF and IRP Applications**<br>**Due Date** | **November 13, 2024, at 5:00 p.m. ET** |
| **Planned Award Announcement Date** | **March 6, 2025** |

**NOTE: Deadlines are the dates/times by which DOE must receive the specified submittal.**

**Amendment 001:** This administrative amendment contains the following:

- Updated language to the Project/Performance Site Location form found in Part IV, Section E.12.4.
- Removed "Synergistic Activities" from Part IV, Sections D.4 and E.7
- Correct headers of the Appendix sections

## Registration Requirements

There are several one-time actions applicants must complete in order to submit an application in response to this funding opportunity announcement (FOA) (e.g., register with the System for Award Management (SAM), obtain a Unique Entity Identifier, and create an account on NEUP.gov. Applicants who are not registered with SAM should allow up to five weeks to complete this requirement. It is suggested that the process be started as soon as possible.

**If an applicant has not already done so, it must:**

1. Register with the SAM: https://www.sam.gov/SAM/.

2. Obtain the Unique Entity Identifier (UEI) number generated in SAM.gov.

3. Create an account on the NEUP.gov website at www.NEUP.gov using the 'Sign In' tab in the top right-hand corner. To create an account: 1) Click "Create a new account"; 2) Fill out the required information and click "Create User"; and 3) Fill out the information in the "My Information" section.

## Questions

Questions regarding the content of this FOA must be submitted using the contact information found in Part VII, Section B of this FOA. DOE will try to respond to a question within three business days unless a similar question and answer have already been posted on the website.

## Application Preparation

Applicants must prepare the application package and application forms from the NEUP.gov website: **https://neup.inl.gov/SitePages/Home.aspx**

Additional instructions are provided in Part IV of this FOA.

## Application Submission

Apply for this FOA at www.NEUP.gov. Electronic applications and instructions are available at the NEUP.gov website. To access these materials: (1) go to www.NEUP.gov; (2) select "Sign In" from the top right-hand corner of the screen; (3) enter your user credentials; (4) select "Applications" from the menu; and (5) click on "Create New Application" for the type of application you are creating.

If you have any questions about NEUP site registration, application processes, eligibility, or application document requirements contact the Innovative Nuclear Research (INR) Integration Office at 208-526-4854 or at neup@inl.gov.

## CHECKLIST FOR AVOIDING COMMON ERRORS

| Item | Issue |
|---|---|
| Page Limits | Strictly follow page and font limits throughout application documents, including but not limited to:<br>- Technical Abstract (use appropriate template)<br>- Technical Narrative (font must not be less than 11 pt for all, including tables, figures, and references)<br>- Research Experience for Undergraduates Plan<br>- Benefit of Collaboration<br>- Capabilities<br>- CVs |
| Protected Personally Identifiable Information | Ensure none are present in the application. (Do not include citizenship numbers in applications.) |
| Collaborators | - List all collaborators in the Collaborators section of the application form, including name, organization, funding amount, phone, email, U.S. Person status and citizenship, country, state, city, and zip code. This includes any individual appearing in the technical abstract, technical narrative, benefit of collaboration, coordination and management plan, or budget documents.<br>- NSUF support staff at specified facilities should be listed as "Other Collaborators or Personnel", including NSUF Technical Leads. |
| Budget | - Use current negotiated indirect cost and fringe benefit rates.<br>- Include separate subaward budgets, if applicable. |
| Budget Justification | - Justify all requested costs.<br>- Include separate subaward budget justifications, if applicable. |
| Current and Pending Support | - Ensure complete disclosures of current and pending support for the PI and all Senior and Key Personnel named in the application, even if no funds are allocated. (This form is not required for national laboratory participants.)<br>- Ensure the certification wording from Part IV Section E.11.1 is included in the template. |
| Certifications and Assurances | Ensure that signatures are completed for both sections of the Certifications and Assurances documentation. |
| R&R Other Project Information | - If marking proprietary information, clearly mark the sections where proprietary information is in the narrative or other documents using the procedure outlined in the FOA.<br>- If marking 'yes' to international collaboration, list all institutions and countries. |
| Readiness for NSUF access | Refer to Part IX Appendix D Accessing Nuclear Science User Facilities. Ensure all actions as they pertain to your proposal are provided. |
| Program Concurrence for NSUF topic areas | For fuels or materials coming from other DOE programs (not NSUF), attach a statement of program concurrence. |

| Item | Issue |
|---|---|
| | |
| Commitment Letter for NSUF topic areas | Applicants for NSUF Access Only topic areas are responsible for costs similar to travel costs to NSUF facilities for facility access training, technical meetings, examinations, experiment loading, etc.; applicant salary support; graduate student support; post-doctoral or other researcher support; and materials and supplies support at the PI's work location. If invited to submit a Full Application, a letter of commitment is required that explains how the applicant will pay for these types of costs. |

## LIST OF ACRONYMS

| | |
|---|---|
| **CFDA** | Catalog of Federal Domestic Assistance |
| **CFA** | Call for Full Applications |
| **CFR** | Code of Federal Regulations |
| **CINR** | Consolidated Innovative Nuclear Research |
| **COI** | Conflict of Interest |
| **DE** | Department of Energy unique identifier FOA Number prefix |
| **DMP** | Data Management Plan |
| **DOE** | Department of Energy |
| **FFATA** | Federal Funding and Transparency Act of 2006 |
| **FFRDC** | Federally Funded Research and Development Center |
| **FOA** | Funding Opportunity Announcement |
| **FSRS** | FFATA Subaward Reporting System |
| **FWP** | Field Work Proposal |
| **FY** | Fiscal Year |
| **GAIN** | Gateway for Accelerated Innovation in Nuclear |
| **HBCU** | Historically Black Colleges and Universities |
| **ID** | Identifier |
| **IHE** | Institute of Higher Education |
| **IRP** | Integrated Research Project |
| **LOI** | Letter of Intent |
| **M&O** | Management and Operating |
| **M&TE** | Measuring and Test Equipment |
| **MSI** | Minority Serving Institution |
| **NCE** | No Cost Time Extension |
| **NE** | Office of Nuclear Energy |
| **NEUP** | Nuclear Energy University Program |
| **NFML** | NSUF Nuclear Fuels and Materials Library |
| **NSUF** | Nuclear Science User Facilities |
| **NNSA** | National Nuclear Security Administration |
| **OMI** | Other Minority Institutions |
| **PDF** | Adobe Portable Document Format |
| **PIE** | Post-Irradiation Examination |
| **PI** | Principal Investigator |

| | |
|---|---|
| **POC** | Point of Contact |
| **QA** | Quality Assurance |
| **R&D** | Research and Development |
| **REU** | Research Experiences for Undergraduates |
| **RPA** | Request for Pre-Applications |
| **SAM** | System for Award Management |
| **SOW** | Statement of Work |
| **TCU** | Tribal Colleges and Universities |
| **U.S.** | United States |

# PART I – FUNDING OPPORTUNITY DESCRIPTIONS

## A. STATEMENT OF OBJECTIVES

This FOA is for Consolidated Innovative Nuclear Research (CINR) and is thus referred to in this document as the "CINR FOA."

### A.1 Background and Objectives

The Office of Nuclear Energy (NE) mission is to advance nuclear energy science and technology to meet U.S. energy, environmental, and economic needs. NE has identified the following goals to address challenges in the nuclear energy sector, help realize the potential of advanced technology, and leverage the unique role of the government in spurring innovation:

- Keep existing U.S. nuclear reactors operating.
- Deploy new nuclear reactors.
- Secure and sustain our nuclear fuel cycle.
- Expand international nuclear energy cooperation.

NE strives to promote integrated and collaborative research conducted by national laboratory, university, industry, and international partners under the direction of NE's programs, and to deploy innovative nuclear energy technologies to the market and to optimize the benefits of nuclear energy.

All applications submitted under this CINR FOA must demonstrate a strong tie to at least one of the four mission priorities and highlight how it supports the DOE priorities. Applications focused specifically in areas not of interest to the NE mission, such as fusion energy, medical physics, nuclear forensics, or environmental management, will not be reviewed or considered.

This CINR FOA provides competitive R&D opportunities through the Nuclear Energy University Program (NEUP) and the Nuclear Science User Facilities (NSUF). NEUP supports university-led infrastructure and R&D projects relevant to the NE mission. NSUF provides access to material test reactors, beamlines, and post-irradiation examination facilities to researchers from U.S. universities, industry, and national laboratories.

NE reserves the right to respond to potential shifts in R&D priorities during Fiscal Year (FY) 2025 that may be driven by events, policy developments, or Congressional/budget direction. Further, NE reserves the right to fund all or part of an application to this CINR FOA.

### A.2 Statutory Authority

The activities to be supported under this FOA are authorized under § 951 (a) of the Energy Policy Act of 2005, as codified at 42 U.S.C. § 16271(a). Additionally, 42 U.S.C. § 16274 and 31 U.S.C. § 6304 applies.

### A.3 NE Program Resources

For more information on current NE programs, please visit the following links provided in the sections below.

- **Fuel Cycle Technologies**: https://www.energy.gov/ne/initiatives/fuel-cycle-technologies
- **Reactor Technologies**: https://www.energy.gov/ne/nuclear-reactor-technologies
- **NEET Crosscutting Technologies**: https://www.energy.gov/ne/nuclear-energy-enabling-technologies-neet
- **Nuclear Energy University Program (NEUP)**: https://neup.inl.gov
- **Spent Fuel and Waste Disposition:** https://www.energy.gov/ne/spent-fuel-and-waste-disposition
- **Consent-Based Siting:** https://www.energy.gov/ne/consent-based-siting
- **Gateway for Accelerated Innovation in Nuclear (GAIN)**: https://gain.inl.gov/
- **Nuclear Science User Facilities (NSUF)**: https://nsuf.inl.gov/

## B. FUNDING OPPORTUNITIES

NE is seeking applications from U.S. universities, national laboratories, and industry to conduct nuclear energy-related research to help meet the objectives of the major NE funded research areas.

All research must be non-proprietary and awarded projects must publish their results at the DOE, Office of Scientific and Technical Information (OSTI) website for public access (https://www.osti.gov).

Specifically, this CINR FOA contains the following three separate funding opportunity areas:

1) U.S. University-led R&D Projects and NSUF Access with R&D (NSUF-1) Projects
    - Optional Research Experiences for Undergraduates Supplement available (as described in Part I, Section B.4)
2) U.S. University-led Integrated Research Projects (IRPs)
    - Optional Research Experiences for Undergraduates Supplement available (as described in Part I, Section B.4)
3) U.S. University-, National Laboratory-, or Industry-led Nuclear Science User Facilities (NSUF) Access Only (NSUF-2) Projects

These three funding opportunity areas are described in detail in Part I, Sections B.1, B.2, and B.3 below, with the Research Experience for Undergraduates Supplement described in Part I, Section B.4.

### B.1 U.S. University-led R&D Projects

The U.S. University-led R&D Projects funding opportunity area is available to U.S. university-led teams. In general, R&D is defined by the statement of objectives defined in the topic areas in

Appendix A. R&D work must be directly tied to the NE mission. U.S. university Principal Investigators (PIs) are invited to propose research projects in response to this area of the CINR FOA and the associated topic areas in Part IX, Appendix A of this CINR FOA.

### B.1.1. Note for U.S. University-led Nuclear Science User Facilities (NSUF-1) Access Projects

R&D Projects with joint NSUF Access applications require a Letter of Intent (LOI) in addition to the Pre-Application and, if invited (see Part V, Section B.1 of this CINR FOA), a Full Application. R&D Projects with NSUF Access applications will also require a feasibility review and readiness review in addition to the relevancy and technical reviews. Important aspects of NSUF Access applications including NSUF readiness are described in Part IX, Appendix D of this CINR FOA and should be considered when preparing applications. It is strongly recommended that all potential proposers review the contents of the NSUF website for user access and capability information. U.S. University-led IRPs

IRPs comprise a significant element of NE's innovative nuclear research objectives and represent significant needs to support the NE mission objectives. IRPs are significant projects within specific research areas. IRPs are intended to develop a capability within each area to address specific needs, problems, or capability gaps identified by NE. These projects are multidisciplinary and require multi-institutional partners. IRPs may include a combination of evaluation capability development, research program development, experimental work, and computer simulations. IRPs are intended to integrate several disciplinary skills to present solutions to complex systems design problems that cannot be addressed by a less comprehensive team.

A university PI must lead the proposing team and include at least one additional university collaborator outside of their organization. The proposed project team may include multiple universities and non-university partners (e.g., industry/utility, minority-serving institutions (MSIs), national laboratories, and international partners).

U.S. university PIs are invited to propose research projects in response to this area of the CINR FOA and the associated topic areas contained in Part IX, Appendix B of this CINR FOA.

## B.2 U.S. University-, National Laboratory-, or Industry-led NSUF Access Projects

NSUF Access project applications require a Letter of Intent (LOI) in addition to the Pre-Application and, if invited (see Part V, Section B.1 of this CINR FOA), a Full Application. NSUF Access project applications will also require a feasibility review and readiness review in addition to the relevancy and technical reviews. Important aspects of NSUF Access applications including NSUF readiness are described in Part IX, Appendix D of this CINR FOA and should be considered when preparing applications. It is strongly recommended that all potential proposers review the contents of the NSUF website NSUF.inl.gov/ for user access and capability information.

DOE intends to fully fund all awarded NSUF Access projects for the entire duration of the project, subject to any conditions or limitations contained in the award instruments. NSUF Access project attributes include:

- U.S. university PIs may apply for NSUF access with a joint request for R&D (NSUF-1) financial support and by-way-of the associated topic area in Part IX, Appendix A of this CINR FOA. Applications must comply with the provisions of Part IX, Appendix D of this CINR FOA.

- U.S. university, national laboratory, and industry PIs may apply for NSUF Access Only (NSUF-2) funding and by-way-of the associated topic area in Part IX, Appendix C of this CINR FOA. Applications must comply with the provisions of Part IX, Appendix D of this CINR FOA.

While NSUF will strive to implement the full scope detailed in the statement of work (SOW), NSUF does not guarantee results but only access to NSUF capabilities. The extent of an NSUF Access project will be described in the SOW. Deviations from the SOW are limited and must be approved by the NSUF Program Office. NSUF does not provide funding to the PI to support salaries, tuition, travel, or other costs typically supported via NE Program funds.

### B.2.1 NSUF Readiness

Applicants must demonstrate that their project is ready for NSUF access. All preparatory work should be completed so the remaining effort is the actual irradiation testing or post-irradiation examination. Only limited development work is allowed in an NSUF application.

- ***In the NSUF Pre-Application, a summary (one or two paragraphs) of readiness is required.***
- ***In the Full Application, a detailed description (up to one page) of readiness is required.***

Applications that do not adequately demonstrate readiness will not be considered for selection. Awarded projects that are found to not be ready for NSUF access may be discontinued. Applicants should clearly state any testing or conditions that would fall under NSUF readiness.

Questions about NSUF readiness should be directed to the NSUF Program Office or the assigned NSUF Technical Lead for the applicant's project.

Additional information on the NSUF process and a detailed description of the readiness criteria are included in Part IX, Appendix D.

## B.3 Research Experiences for Undergraduates Supplement

The goal of a Research Experiences for Undergraduates Program (REU) is to promote undergraduate university-based research opportunities in nuclear energy research and development by incentivizing CINR projects to include both on campus and off campus students in research activities. This program is intended to promote nuclear energy as a viable undergraduate option and provide students with knowledge, research experience, and connections with faculty interested in nuclear energy related research. The REU Supplement is not intended to be used for internships at a national laboratory. The REU Supplement is limited

to $100,000.

Based on the competitive nature of CINR projects, REU components of CINR projects will be proposed as part of the research proposal. Applicants should provide as many details as possible about their plan, including how they would structure the opportunity, how they would recruit and evaluate students, and how undergraduates would be incorporated into the research. Additional details about how the REU program will be conducted will be left for the project execution phase to allow for adjustments to the plan during project execution.

Applicants will indicate their intention for supplementing their application with an REU by selecting that they are 'participating in an REU supplement' during the pre- and full-application phases. If REU funds are requested, an REU plan will be required as part of the full application. If an applicant selects that they are "participating in an REU supplement" during the pre-application, they are not required to make that same selection during the full application.

Applicants may split the REU portion between the prime applicant and any proposed subrecipients.

The REU supplement portion of the award is expected to fall under participant support costs as defined by 2 CFR 200:

> Participant support costs means direct costs for items such as stipends or subsistence allowances, travel allowances, and registration fees paid to or on behalf of participants or trainees (but not employees) in connection with conferences, or training projects.

Participant support costs are typically excluded from the allocation base of the indirect cost calculations unless explicitly provided for in the awardee's or subawardee's Negotiated Indirect Cost Rate Agreement.

This program will be split into two different focus areas:

1. REU funds may be provided to support on-campus undergraduate students. The experience would need to be structured, for a specific duration (e.g., a semester) and be focused on an active NEUP project. The undergraduate would be paid on an 'on-effort basis' (pro-rata). Although any eligible student can qualify, the focus is for faculty to identify high performing, underserved students for these opportunities.
2. REU summer programs to support an undergraduate summer research program for students from other universities. Selection of students should focus on underserved communities and students from MSIs as a selection factor.

The REU is a research training experience paid via a stipend, not employment (work) paid with a salary or wage. In the REU program, the student's training consists of closely mentored independent research. The funds received by students may be taxable income under the Internal Revenue Code of 1986 and may also be subject to state or local taxes.

**Note:** REU supplements will be considered as part of the overall technical approach and will receive consideration based on how well students are integrated into the project in Criterion 3 of the full application review.

Topic areas for the respective CINR FOA areas, with the indicated funding opportunities described above, may be found in the Part IX Appendices of this CINR FOA as follows:

- Appendix A: "Topic areas for U.S. University-led R&D Projects or NSUF Access with R&D (NSUF-1) Projects"
- Appendix B: "Topic areas for U.S. University-led IRPs"
- Appendix C: "Topic areas for U.S. University-, National Laboratory-, or Industry-led NSUF Access Only (NSUF-2) Projects"

**Table 1. FY 2025 Topic Area Overview**

| Topic Area | Appendix | NSUF Access | Led by: | | |
|---|---|---|---|---|---|
| | | | University | National Laboratory | Industry |
| **Topic Area 1** – Reactor Development and Plant Optimization | A | No | X | | |
| **Topic Area 2** – Existing Plant Optimization | A | No | X | | |
| **Topic Area** 3 – Nuclear Fuel Recycle Technologies | A | No | X | | |
| **Topic Area 4** – Fuels | A | No | X | | |
| **Topic Area 5** – Disposal Research | A | No | X | | |
| **Topic Area 6** – Storage and Transportation Research | A | No | X | | |
| **Topic Area 7** – Public Perceptions of an Integrated Waste Management System | A | No | X | | |
| **Topic Area 8** – Modeling and Simulation | A | No | X | | |
| **Topic Area 9** – Measuring, Monitoring, and Controls | A | No | X | | |
| **Topic Area 10** – Licensing, Safety, Security and Safeguards | A | No | X | | |
| **Topic Area 11** – Advanced Nuclear Materials and Manufacturing Technologies | A | No | X | | |
| **Topic Area 12** – Strategic Needs Blue Sky | A | No | X | | |
| **NSUF-1**: Nuclear Science User Facilities (NSUF) Joint R&D and Access | A | Yes | X | | |
| **IRP-1**: Grand Challenge IRP – Accelerating Reactor Development | B | No | X | | |
| **IRP-2:** Grand Challenge IRP – Advanced Reactor SNF Disposition | B | No | X | | |
| **IRP-3**: Grand Challenge Research and Development at Minority Serving Institutions (MSIs)* | B | No | X | | |
| **NSUF-2**: Nuclear Science User Facilities (NSUF) Access Only | C | Yes | X | X | X |

*University-led and collaboration with minority serving institutions (MSIs), including historically black colleges and universities (HBCUs) and tribal colleges and universities (TCUs), is required. Please refer to Part III, Section A for more information on and identification of MSIs.

# PART II – AWARD INFORMATION

## A. TYPE OF AWARD INSTRUMENT

DOE anticipates awarding grants under this CINR FOA with the exception of awards to national laboratories, which will be funded through field work proposals (FWPs), and NSUF Access Awards, which will be funded through an NSUF User Agreement.

## B. ESTIMATED FUNDING

The estimated amounts identified for each of the CINR FOA areas are specified in Sections B.1-B.3 below with ceilings and floors specified in Section C below. Funding for all awards is contingent upon the availability of funds appropriated by Congress for the purpose of this program.

DOE is under no obligation to pay for any costs associated with preparation or submission of applications. DOE reserves the right to fund, in whole or in part, any, all, or none of the applications submitted in response to this FOA.

### B.1 U.S. University-led R&D Projects and NSUF Access with R&D (NSUF-1) Projects

NE currently estimates that it will fund approximately $60 million in awards for the U.S. University-led R&D Projects CINR FOA area.

#### B.1.1 Research Experiences for Undergraduates Supplement

NE currently estimates that it will fund approximately $2 million total across both U.S. University-led R&D or IRP project supplements.

### B.2 U.S. University-led IRPs

NE currently estimates that it will fund approximately $6 million in awards for the U.S. University-led IRP Projects CINR FOA area.

#### B.2.1 Research Experiences for Undergraduates Supplement

NE currently estimates that it will fund approximately $2 million total across both U.S. University-led R&D or IRP project supplements.

### B.3 U.S. University-, National Laboratory-, or Industry-led NSUF Access Only (NSUF-2) Projects

NE currently estimates that it will fund approximately $6 million in award value for the U.S. University-, National Laboratory-, or Industry-led Nuclear Science User Facilities Access Projects (NSUF Access Only) CINR FOA area.

## C. MAXIMUM AND MINIMUM AWARD SIZE

The ceiling (i.e., the maximum amount for an individual award made under each area) and floor (i.e., the minimum amount for an individual award made under each area) for each of the three CINR FOA areas are identified in Part II, Sections C.1-C.3 below.

### C.1 U.S. University-led R&D Projects and NSUF Access with R&D (NSUF-1) Projects

- Ceiling: up to $1,000,000 (3-year project) for non-REU supplemented project. Up to $1,100,000 for REU supplemented project, except as explicitly noted in individual topic areas. NSUF Access with R&D (NSUF-1) may have up to a 7-year duration.
- Floor: None.

### C.1.1 Research Experiences for Undergraduates Supplement

- Ceiling: up to $100,000 (3-year project), as supplement total across both U.S. university-led R&D or IRP supplements.
- Floor: None.

### C.2 U.S. University-led IRPs

- Ceiling: up to $3,000,000 (3-year project) for non-REU supplemented project. Up to $3,100,000 for REU supplemented project, except as explicitly noted in individual topic areas.
- Floor: None.

### C.2.1 Research Experiences for Undergraduates Supplement

- Ceiling: up to $100,000 (3-year project), as supplement total across both U.S. university-led R&D or IRP supplements.
- Floor: None.

### C.3 U.S. University-, National Laboratory-, or Industry-led NSUF Access Only (NSUF-2) Projects

- Ceiling: Irradiation/PIE Project: $4,000,000 NSUF Access Only Value (up to a 7-year project).
- Floor: None.

## D. EXPECTED NUMBER OF AWARDS

The number of awards for each of the three CINR FOA areas are identified in Part II, Sections D.1-D.3 below. The number of awards is dependent on the size of the awards. DOE reserves the right to make more or fewer (or even no awards) depending on funding availability and/or the quality of the applications.

### D.1 U.S. University-led R&D Projects and NSUF Access with R&D (NSUF-1) Projects

NE anticipates making approximately 55 awards under the U.S. University-led R&D Projects CINR FOA area.

### D.1.1 Research Experiences for Undergraduates Supplement

NE anticipates making up to 20 awards to supplement awarded U.S. University-led R&D and IRP projects.

### D.2 U.S. University-led IRPs

NE anticipates making approximately 2 awards under the U.S. University-led IRPs CINR FOA area.

#### D.2.1 Research Experiences for Undergraduates Supplement

NE anticipates making up to 20 awards to supplement awarded U.S. University-led R&D and IRP projects.

### D.3 U.S. University-, National Laboratory-, or Industry-led NSUF Access Only (NSUF-2) Projects

NE anticipates making approximately 3 awards under the U.S. University-, National Laboratory-, or Industry-led NSUF Access Only (NSUF-2) CINR FOA area.

## E. ANTICIPATED AWARD SIZE

The anticipated award size for each of the three CINR FOA areas are identified in Part II, Sections E.1-E.3 below. Amounts represent anticipated maximum per award.

### E.1 U.S. University-led R&D Projects and NSUF Access with R&D (NSUF-1) Projects

DOE anticipates that awards will be up to $1,000,000 per award (except as explicitly stated in individual topic areas).

#### E.1.1 Research Experiences for Undergraduates Supplement

NE anticipates that awards will be up to $100,000 per award to supplement proposed U.S. University-led R&D and U.S. University-led IRP projects.

### E.2 U.S. University-led IRPs

NE anticipates that awards will be up to $3,000,000 for the U.S. University-led IRPs CINR FOA area, except as stated in individual topic areas.

#### E.2.1 Research Experiences for Undergraduates Supplement

NE anticipates that awards will be up to $100,000 per award to supplement proposed U.S. University-led R&D and U.S. University-led IRP projects.

### E.3 U.S. University-, National Laboratory-, or Industry-led NSUF Access Only (NSUF-2) Projects

Access value of these awards (funds not provided to the PI) will be defined by a final cost estimate provided by the NSUF office.

## F. PERIOD OF PERFORMANCE

NE anticipates making awards for up to three years for each of the CINR FOA areas with the exception of awards involving NSUF access***, which may take up to seven years if neutron irradiation and PIE is requested.*** Assuming NE makes awards under this CINR FOA by March 2025, funded projects shall begin no later than August 1, 2025. Proposing different start dates for

the project and budget periods may make the application ineligible for award. If a different project start date, other than August 1, 2025, is necessary for the successful performance of the project, it must be fully documented and justified in the application for consideration by NE.

## G. TYPE OF APPLICATION

DOE will accept only new applications for each of the three CINR FOA areas defined in Part I, Section B of this FOA. Applications made to previous FOAs will not be considered. Previous applications can be resubmitted as a new application to this CINR FOA.

# PART III – ELIGIBILITY INFORMATION

## A. ELIGIBLE APPLICANTS

DOE has restricted eligibility for award in accordance with the Code of Federal Regulations, 2 CFR 910.126(b). This eligibility restriction does not apply to subrecipients, subawards, vendors, or team members of the prime/lead applicant. This CINR FOA is open to only U.S. universities, national laboratories, and U.S. industry entities. The eligibility of this FOA is restricted to support U.S. universities and colleges for topics in Appendix A and B, and NSUF user access eligibility is restricted to U.S. industry, U.S. universities and colleges, and national laboratories in Appendix C that are pursuing fundamental and applied research in the nuclear sciences pursuant to 42 USC 16274.

Restricting eligibility ensures the Nuclear Energy University Program supports university research, collaborations with industry and national laboratories, and training and educating the next generation nuclear workforce. Pursuant to the Nuclear Science User Facilities mission, access to user facilities is open to a broader range of applicants in Appendix C.

To support the goal of building a clean and equitable energy economy, NE strives to contribute to the President's goal that 40% of the overall benefits of certain Federal investments flow to Disadvantaged Communities (DAC) (the Justice40 Initiative)[1]. The goal is to spur economic development and job creation in DACs throughout the United States, through effective teams and/or partnerships with institutions, located in a disadvantaged community that may receive funding support from the project.

In support of the Justice40 Initiative, the White House has developed the Climate and Economic Justice Screening Tool (CEJST) tool to identify disadvantaged communities. CEJST can be found at https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5. Applicants are encouraged to use CEJST to illustrate how their project supports DACs.

NE also strives to ensure energy equity through effective teams and/or partnerships with MSIs, including Historically Black Colleges and Universities (HBCUs), and Tribal Colleges and Universities (TCUs).

Information on MSIs can be found at https://www2.ed.gov/about/offices/list/ope/idues/eligibility.html#tips. This information predominately covers institutions that have been awarded grants through the Department of Education and does not include all institutions that may meet the definition of an MSI. **This resource is not an exhaustive list of minority-serving institutions**. For purposes of identifying MSIs in NE's application system, NE is using a directory based on 2020 U.S. Department of Education data, compiled by Rutgers University's Center for MSIs, which can be found at: https://www2.ed.gov/about/offices/list/ope/idues/2023eligibilitymatrix.xlsx. This list is also not an exhaustive list of MSIs but will be used as a starting point for self-identifying MSIs. If applicants believe that their institution qualifies as an MSI and is not listed, please contact neup@inl.gov with an explanation for how the university meets the conditions of being considered an MSI.

The application must originate from the lead institution. All lead PIs must have an active account in the NEUP.gov website submittal system. Research consortiums may be composed of diverse institutions including academia, national laboratories, non-profit research institutes, industry/utilities, and international partners. Research teams should strive to achieve the synergies that arise when individuals with forefront expertise in different methodologies, technologies, disciplines, and areas of content knowledge approach a problem together, overcoming impasses by considering the issue from fresh angles and discovering novel solutions.

While international partners are encouraged to participate, no U.S. Government funding will be provided to entities incorporated outside of the U.S. or to a foreign government or any entity owned or controlled by a foreign government. Foreign government ownership means direct ownership of the applicant entity, its parent organization (e.g., trust, holding company, corporation, etc.), and any and all other entities in the corporate structure regardless of the applicant entity's place of incorporation and operation. NE will evaluate the benefit and contribution of any such proposed partnerships as part of its evaluation of the relevancy to the NE mission. A collaborator is an individual that makes a defined, material contribution that is critical to the success of the project and/or contributing to joint publications. Any individual appearing in the project summary, technical narrative, benefit of collaboration, coordination and management plan, or budget documents should be listed directly as collaborators on the application form. All collaborators must be added to the application form with complete information. Any individuals that do not meet these criteria should not be listed as collaborators on the application. NE has two designations for collaborators and personnel: 1) senior/key personnel and 2) 'other personnel'. Document requirements will vary depending on whether an individual is designated as 'senior/key personnel' or as a 'other collaborator'. Senior/key personnel should be listed in the first "collaborators" section on the application form. Other collaborators or personnel should be listed on the second "collaborators" section of the application form. Refer to the application requirements to provide needed information for all key/senior personnel. Applicants must have the full consent of each collaborator prior to listing them on an application form. Non-university collaborators and personnel, in composite, can have no more than 20% of the total funds provided by the Government. An employee with a joint appointment between a university and a DOE national laboratory can apply through the institute of higher education (IHE) if the institution pays his or her salary and provides his or her benefits.

Research consortiums may be composed of diverse institutions including academia, national laboratories, non-profit research institutes, industry/utilities, and international partners. Research teams should strive to achieve the synergies that arise when individuals with forefront expertise in different methodologies, technologies, disciplines, and areas of content knowledge approach a problem together, overcoming impasses by considering the issue from fresh angles and discovering novel solutions.

This CINR FOA provides award opportunities to U.S. owned entities as defined in 2 CFR 910.124.

While international partners are encouraged to participate, no U.S. Government funding will be provided to entities incorporated outside of the United States or to a foreign government or any

entity owned or controlled by a foreign government. Foreign government ownership means direct ownership of the applicant entity, its parent organization (e.g., trust, holding company, corporation, etc.), and any and all other entities in the corporate structure regardless of the applicant entity's place of incorporation and operation. NE will evaluate the benefit and contribution of any such proposed partnerships as part of its evaluation of the relevancy to the NE mission.

A collaborator is an individual that makes a defined, material contribution that is critical to the success of the project and/or contributing to joint publications. Any individual appearing in the project summary, technical narrative, benefit of collaboration, coordination and management plan, or budget documents should be listed directly as collaborators on the application form. All collaborators must be added to the application form with complete information. **Any individuals that do not meet these criteria should not be listed as collaborators on the application.**

NE has two designations for collaborators and personnel: 1) senior/key personnel and 2) other personnel'. Document requirements will vary depending on whether an individual is designated as 'senior/key personnel' or as a general collaborator. **Senior/key personnel should be listed in the first "collaborators" section on the application form. Other collaborators or personnel including NSUF Technical Leads should be listed on the second "collaborators" section of the application form.**

Refer to each required area of the pre- and full-application requirements to provide needed information for all Senior/key personnel.

Applicants must have the full consent of each collaborator prior to listing them on an application form. Non-university collaborators and personnel (except in NSUF Access Only CINR FOA areas), in composite, can have no more than 20% of the total funds provided by the Government. An employee with a joint appointment between a university and a DOE national laboratory can apply through the institute of higher education (IHE) if the institution pays his or her salary and provides his or her benefits.

Part IV, Section I of this CINR FOA outlines funding restrictions for this CINR FOA.

### A.1 Domestic Entities

For-profit entities, educational institutions, and nonprofits[1] that are organized, chartered or incorporated (or otherwise formed) under the laws of a particular state or territory of the United States; have majority domestic ownership and control; and have a physical place of business in the United States are eligible to apply for funding as a prime or subrecipient (only educational institutions may apply as a prime recipient for U.S. university-led projects).

[1] Nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 2005, are not eligible to apply for funding.

State, local, and tribal government entities are eligible to apply for funding as a subrecipient (for U.S. university-, national laboratory-, or industry-led projects only).

DOE/National Nuclear Security Administration (NNSA) Federally Funded Research and Development Centers (FFRDC) and DOE Government-Owned Government-Operated laboratories are eligible to apply for funding as a prime recipient, team member, or subrecipient in the NSUF Access Only CINR FOA area. If an FFRDC is proposed as a team member or subrecipient, the requirements contained in Part III, Section C, apply.

Non-DOE/NNSA FFRDCs and non-DOE Government-Operated Government-Owned laboratories are eligible to apply for funding as a subrecipient but are not eligible to apply as a prime recipient.

Federal agencies and instrumentalities (other than DOE) are eligible to apply for funding as a subrecipient but are not eligible to apply as a prime recipient.

Entities banned from doing business with the U.S. government such as entities debarred, suspended, or otherwise excluded from or ineligible for participating in federal programs are not eligible.

Nonprofit organizations described in Section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995, are not eligible to apply for funding.

### A.2 U.S. Incorporated Foreign Entities

U.S. incorporated foreign entities, whether for-profit or otherwise, are eligible to apply for funding under this CINR FOA as either a prime recipient or subrecipient subject to the requirements in 2 CFR 910.124.

### A.3 Incorporated Consortia

Incorporated consortia, which may include domestic and/or foreign entities, are eligible to apply for funding as a prime recipient (U.S. university- or national laboratory-led projects only) or subrecipient. For consortia incorporated (or otherwise formed) under the laws of a State or territory of the United States, please refer to "Domestic Entities" in Part III, Section A.1 above. For consortia incorporated in foreign countries, please refer to the requirements in "U.S. Incorporated Foreign Entities" Part III, Section A.2 above.

### A.4 Unincorporated Consortia

Unincorporated consortia, which may include domestic and foreign entities, must designate one member of the consortium to serve as the prime recipient/consortium representative (U.S. university- or national laboratory-led projects only). The prime recipient/consortium representative must be incorporated (or otherwise formed) under the laws of a State or territory of the U.S. The eligibility of the consortium will be determined by the eligibility of the prime recipient/consortium representative.

## B. APPLICATION RESTRICTIONS

U.S. university PIs may submit up to six Pre-Applications (three of those applications may be as lead PI).

A PI may have no more than one IRP, or three R&D projects (excluding NSUF Access Only projects) funded at any time and may not submit more Full Applications than would be allowed by these restrictions.

PIs cannot submit the same application to multiple topic areas, including the NSUF Access areas.

Individuals serving in an advisory capacity to DOE may not participate in any portion of this FOA, including the NSUF Access Only CINR FOA area.

NSUF Access Only projects are not bound by these eligibility restrictions, unless specified above.

**NOTE:** Applications submitted to this CINR FOA will be awarded to the applicant entity listed and will typically not be transferred to another institution if a lead PI changes institutions. However, DOE may consider PI requests for transferring or subawarding an award from the original institution to the PI's new institution. In the event a PI changes institutions, the PI must contact the Contract Specialist for approval prior to the award being transferred.

**NOTE:** Due to the COVID-19 pandemic, FY 2017-2019 active projects will not be counted toward eligibility restrictions.

The following application restrictions apply to lead PIs:

### B.1 R&D Application Restrictions

Applicants are ineligible to submit an R&D application to this CINR FOA as a lead PI under any of the following circumstances:

- The PI has a currently funded IRP that will be active after December 31, 2025.
- The PI has three or more R&D projects that will still be active after December 31, 2025, excluding NSUF Access Only projects and any NSUF project with a duration greater than 3 years.
- The PI has a no-cost time extension on any NE funded project (excluding Infrastructure) that will still be active beyond December 31, 2025, excluding extensions caused by NSUF.

### B.2 IRP Application Restrictions

Applicants are ineligible to submit an IRP application to this CINR FOA as a lead PI under any of the following circumstances:

- The PI has a currently funded IRP that will be active after December 31, 2025.
- The PI has a no-cost time extension on any NE funded project (excluding Infrastructure) that will still be active beyond December 31, 2025, excluding extensions caused by NSUF.
- The applicant is designated as PI for more than one currently funded NE project that will be active beyond December 31, 2025. Applicants with only one currently funded R&D project are eligible to apply for an IRP.
- If a PI chooses to submit an IRP application to this CINR FOA and has no currently funded R&D projects that will still be active after December 31, 2025, excluding

NSUF Access Only projects, that PI is allowed to submit up to one R&D application as the lead. In the event that both the IRP and R&D applications are successful, only one award will be made with priority given to the IRP project.

### B.3 Research Experiences for Undergraduates Supplement Eligibility

All R&D and IRP applications can request an REU supplement as part of their application with the following restrictions:

- REU activities should not exceed $100,000.
- The term of the REU supplement cannot exceed that of the associated award.
- Student stipends should be comparable to other REU programs per student per week.
    - Amounts for academic-year projects should be comparable to this number on a pro rata basis. Typically, students working during the academic year are paid on a per hour basis.
- Total costs for a summer REU program—including all allowable direct (student) costs (e.g., stipend, travel, housing, etc.)—should be comparable to other REU programs. However, exceptional circumstances may exceed comparable programs and would need to be approved by DOE.

Students can participate in a funded REU supplement under the following circumstances:

- Student eligibility is restricted to U.S. citizens, U.S. nationals, or permanent residents of the United States.
- An undergraduate student is a student who is enrolled in a degree program (part-time or full-time) leading to a baccalaureate or associate degree.
- Students transferring from one college to another and are enrolled in neither institution during the intervening summer are eligible to participate.
- High school graduates who have been accepted at an undergraduate institution who have not yet started their studies are eligible.
- Students who have received their bachelor's degree and are no longer enrolled as an undergraduate are not eligible.

## C. COST SHARING

For applications led by universities, cost sharing is not required, but may be proposed. Cost sharing is not required for institutions of higher education and nonprofit organizations. This waiver is granted per Section 10725 of the Research and Development, Competition, and Innovation Act, P.L. 117-167, which extends the cost share waiver pilot program enacted by Section 108 of the Department of Energy Research and Innovation Act, Public Law 115–246 (Innovation Act) and provides an exemption for institutions of higher education and nonprofit organizations from the 20% cost share requirement for R&D activities. The exemption is available for the two-year period beginning on August 9, 2022. Codified at 42 U.S.C. 16352. If cost sharing is provided, see 2 CFR part 200 for the applicable cost sharing guidance and Part VIII, Section G, of this CINR FOA below. Cost sharing is **NOT** a scored review criterion.

Cost sharing requirements do not apply to the value of the NSUF access.

## D. OTHER ELIGIBILITY REQUIREMENTS

### D.1 FFRDC Contractors

FFRDC contractors may be proposed as a lead institution (except as otherwise prohibited by this CINR FOA) or team member on another entity's application subject to the following guidelines:

**Authorization for non-DOE/NNSA FFRDCs**. The Federal agency sponsoring the FFRDC contractor must authorize in writing the use of the FFRDC contractor on the proposed project and this authorization must be submitted with the application. The use of an FFRDC contractor must be consistent with the contractor's authority under its award and must not place the FFRDC contractor in direct competition with the private sector.

**Authorization for DOE/NNSA FFRDCs**. The cognizant contracting officer for the FFRDC must authorize in writing the use of a DOE/NNSA FFRDC contractor on the proposed project and this authorization must be submitted with the application. The following wording is acceptable for this authorization:

> "Authorization is granted for the Fill-in 1: [Name] Laboratory to participate in the proposed project. The work proposed for the laboratory is consistent with or complimentary to the missions of the laboratory, will not adversely impact execution of the DOE/NNSA assigned programs at the laboratory, and will not place the laboratory in direct competition with the domestic private sector."

**NOTE:** Letter of Authorization for DOE/NNSA FFRDCs is required for all National Laboratory participants listed on the application regardless of funding level or tier.

**NOTE:** The FFRDC's participation in the proposed project is subject to the terms and conditions of its management and operating (M&O) contract with DOE. Participants requiring access to the FFRDC facilities are subject to the FFRDC's policy and DOE regulations.

**NOTE:** If all FFRDC/non-FFRDC management has been notified of all submissions and acknowledgment of all participants are identified, individual Letters of Authorization may be submitted or submitted as blanket permission Identification of participants by name is to be included in the body or as a separate list.

**NOTE:** Letter of Authorization is not required for NSUF Technical Leads unless the Technical Lead is designated as senior/key personnel on the application and is requesting R&D funding support under this CINR FOA.

- **Value/Funding**: The value of, and funding for, the FFRDC contractor portion of the work will not normally be included in the award to a successful applicant. Usually, DOE will fund a DOE FFRDC contractor through the DOE FWP system and other non-DOE FFRDC contractors through an interagency agreement with the sponsoring agency.
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- **FFRDC Contractor Effort** (except for project(s) in support of NSUF):

  - The scope of work to be performed by the FFRDC contractor may not be more significant than the scope of work to be performed by the prime applicant.
  - The FFRDC contractor effort, in aggregate, shall not exceed 20% of the total estimated costs of the projects.
- **Responsibility**: The applicant, if successful, will be the responsible authority regarding the settlement and satisfaction of all contractual and administrative issues, including but not limited to, disputes and claims arising out of any agreement between the applicant and the FFRDC contractor.

Table 2 provides a summary of Parts II and III of this CINR FOA.

**Table 2. Summary of Parts II and III**

| CINR FOA Areas | Applicable Topic Area Appendix | Estimated Available Budget | Maximum Award Size | Project Duration | Cost Share | Collaboration |
|---|---|---|---|---|---|---|
| R&D | Appendix A | $60,000,000 | $1,000,000 | Up to 3 years, unless otherwise noted | Permitted but not required | University, national laboratory, industry, and foreign collaborations are encouraged, but no U.S. funding can go to entities that are not incorporated in the U.S. |
| R&D with NSUF Access (NSUF-1)* | | | | Up to 7 years, unless otherwise noted. | | |
| IRPs | Appendix B | $6,000,000 | $3,000,000 | Up to 3 years, unless otherwise noted | | |
| Research Experiences for Undergraduates Supplement | N/A | $2,000,000 | $100,000 | Corresponds to associated project duration | | |
| NSUF Access Only (NSUF-2)* | Appendix C | $5,000,000 | No R&D Component | Refer to Part II, E.3 | | |

***NSUF Access will be used to support NSUF applications in NSUF-1 (Appendix A) and NSUF-2 (Appendix C) topic areas. Maximum award size excludes the NSUF access value.**

# PART IV – APPLICATION AND SUBMISSION INFORMATION

**NOTE:** The following requirements apply to all four areas defined in Part I, Section B, of this CINR FOA unless specific requirements are identified.

## A. ADDRESS TO REQUEST APPLICATION PACKAGE

Electronic applications and instructions are available at the NEUP.gov website. To access these materials: (1) go to www.NEUP.gov; (2) select "Sign In" from the top right-hand corner of the screen; (3) enter your user credentials; (4) select "Applications" from the menu; and (5) click on "Create New Application" for the type of application you are creating. Apply at: www.NEUP.gov.

Paper copies of the application package may be requested at:

INR Integration Office
Attn: Pamela Rich
PO Box 1625 MS 3730
Idaho Falls, ID 83415

Telephone: 208-526-4854
Fax: 208-526-1844

## B. DOCUMENT FORMAT REQUIREMENTS

All non-budget documentation (use templates where provided) is to be prepared using standard 8.5" × 11" paper with 1-inch margins (top, bottom, left, right) and a font size no smaller than Times New Roman 11 point. This is a requirement for all pages included in the document (i.e., table of contents, references, etc.). The preferred file format is Adobe Portable Document Format (PDF) for all documents except for spreadsheets. All spreadsheets are to be uploaded in Excel file format to the online application. Do **NOT** lock any cells in the spreadsheet.

Applicants must comply with all pertinent page limitations. Any text (including references and data tables) in a document that does not adhere to the requirements listed above (except graphics, graphs, charts, and equations) will be removed from the document and will not be reviewed. DOE reserves the right to dismiss applications that violate formatting requirements. Signature blocks must be signed by the designated official.

Documents should be saved using the document naming suggestion at the bottom of each document description. The tracking ID will automatically be generated by the application system and can be found at the top of the application form under "Tracking ID."

DOE reserves the right to dismiss applications which it deems, after initial review, to lack enough detail for reviewers to adequately judge technical merit. Applications submitted with corrupted, incomplete, or incorrect files may be dismissed without further review.

## C. NSUF APPLICATION SUBMITTAL INSTRUCTIONS

### C.1 Letter of Intent (LOI)

LOIs are a requirement for projects needing NSUF access. LOIs must be submitted by the date and time specified in Part IV, Section G.1.

#### C.1.1 LOI Submittal Instructions

Application forms and instructions are available at the NEUP.gov website. To access these materials: (1) go to www.NEUP.gov; (2) select "Login" from the top right hand corner of the screen; (3) enter your user credentials; (4) select "Applications" from the menu; and (5) find "FY 2025 NSUF Letter of Intent" and click on "Create New Application" for the type of application you are creating.

LOIs should include the following:

- Title of project;
- Applicable topic area;
  - NSUF-1 (have R&D funds available); and
  - NSUF-2 for NSUF Access Only (no R&D funds available);
- Identification of NSUF facilities;
- Proposing PI and associated institution, if known; and
- A brief project description covering only the NSUF scope of the project.
- A Letter of Intent template is available via this link: Letter of Intent Template

Points of contact (POCs) for the NSUF facilities, as well as facility descriptions, are provided on the NSUF website at NSUF.inl.gov/Page/Partners. NSUF Partner Institution contacts are also the Technical Leads. Idaho National Laboratory (INL) Technical Leads are assigned by the NSUF Program Office and provided to the applicant. For assistance in identifying a NSUF Technical Lead or facility POC, please contact NSUF staff members listed on the website NSUF.inl.gov.

  - 3-page limit, 11-point font.

Name File: 2025 LOI "Insert ID #"

#### C.1.2 Agreement Requirements

Access to NSUF capabilities will require agreement and final signature to the User Agreement (copy provided in Appendix E). **The terms and conditions of the User Agreement are non-negotiable and failure to accept the terms and conditions of the User Agreement will terminate processing and review of NSUF applications.** To ensure compliance throughout the application review process, applicants must indicate in the LOI that the User Agreement has been read, understood, and the terms and conditions are accepted. Further, submission of a Pre-Application and a Full Application indicates the applicant will comply and agree to the terms and conditions of the User Agreement. Upon award of an NSUF supported project, the User Agreement must be signed before activities can begin on the project. An applicant cannot submit

an LOI without checking the "I Agree" checkbox. Failure to sign the non-negotiable User Agreement within 30 days of receipt of the User Agreement may result in cancellation of an awarded project.

## C.2 Pre-Application

Refer to Part IV, Section D of this CINR FOA for Pre-Application requirements.

When completing the Pre-Application form via www.NEUP.gov, it is important that you link the LOI to the Pre-Application to retain the same tracking identification number. To link the LOI and Pre-Application, you must select your application from the Pre-Application drop-down list. Doing this assigns the same tracking identification number to the Pre-Application that is used for the LOI. The Pre-Application must be submitted from the same user account that the LOI was submitted under. **Do not start a new Pre-Application.**

NOTE: A summary of readiness is required in the Pre-Applications in accordance with Part IX, Appendix D Accessing Nuclear Science User Facilities of this CINR FOA.

## C.3 NSUF Pre-Application Statement of Work (Pre-Application SOW)

NSUF applicants are required to provide a Pre-Application SOW in support of their NSUF Pre-Application. The Pre-application SOW must be submitted at NEUP.gov using the provided Statement of Work Template.

The Pre-application SOW is necessary to inform the NSUF feasibility review. The document is not used for the merit or readiness reviews. The Pre-Application SOW will be appended to the already submitted Pre-Application. To append the Pre-Application SOW: 1) Find the submitted Pre-Application in the "My Applications" section of the submission website; 2) Open the submitted Pre-Application by using the 'pencil' icon; 3) Scroll to the bottom of the application form; and 4) Click "Attach File" on the "Post Submission Attachment" section and attach the Pre-application SOW.

Any submissions uploaded or altered after the deadline outlined in the CINR FOA will be disregarded. Do not make changes to the Pre-application SOW after the submission deadline, as the upload timestamp is used to confirm timely submission:

Name File: 2025 PreApp SOW "Insert ID #"

**NOTE:** Do not resubmit the Pre-Application. A timestamp will appear in the "File Upload Date" area, which is confirmation that the Pre-application SOW was appended correctly.

## C.4 NSUF Full Application Statement of Work (Final SOW)

If an NSUF applicant is invited to submit a Full Application, a Full Application SOW is required, prior to the submittal of their Full Application. Full Application SOW documents are submitted at NEUP.gov using the provided Statement of Work Template.

The Full Application SOW is necessary to complete the NSUF feasibility review and determine a value (cost) for NSUF access. The document is not used for merit or readiness reviews. Ensure that any required readiness discussion is included as described in Part IX, Appendix D Accessing Nuclear Science User Facilities. The Full Application SOW is not included in the technical peer review. Technical details that will inform a peer reviewer must be included in the 15-page technical narrative.

If an application is awarded, the applicant reviews the Full Application SOW and is allowed to make minor corrections (typographical errors, schedule adjustments and so forth). Changes to work scope are not allowed. This document becomes the Final SOW; it is the control document for work performed on a project. Once the project is complete, the Final SOW will be placed in NSUF's Nuclear Research Data System (NRDS) data repository. See Part IV, F.2 Data Management Plan for more on the NRDS.

The Full Application SOW must contain a summary of the proposed activity, suitable for dissemination to the public. It should be a self-contained document that identifies the following: the name of the applicant; the name of the PI(s); the project title; a list of major deliverables; the scope and objectives of the project; a description of the project, including major tasks (phases, planned approach, etc.) and methods to be employed; the potential impact of the project (i.e., benefits, outcomes); and the names of senior/key personnel (for collaborative projects). This document must not include any proprietary or sensitive business information as it will be available to the public after awards are made and the project is completed.

Full Application SOW documents are submitted by appending to the already submitted Pre-Application. To append the Full Application SOW: 1) find the submitted Pre-Application in the "My Applications" section of the submission website; 2) Open the submitted Pre-Application by using the 'pencil' icon; 3) Scroll to the bottom of the application form; and 4) Click "Attach File" on the "Post Submission Attachment" section and attach the Full Application SOW. Do not delete the Pre-application SOW. Applicants must submit a Full Application SOW even if there are no changes from the Pre-application SOW.

**NOTE:** A timestamp will appear in the "File Upload Date" area, which is confirmation that the Statement of Work was appended correctly.

Name File: 2025 Full App SOW "Insert ID #"

### C.5 Full Application

Refer to Part IV, Section E of this CINR FOA for Full Application requirements.

**NOTE:** A detailed summary of readiness is required in the Full Application in accordance with Part IX, Appendix D Accessing Nuclear Science User Facilities of this CINR FOA.

## D. CONTENT AND FORM OF ALL PRE-APPLICATIONS (Mandatory except for IRPs)

Pre-Applications are a mandatory requirement for R&D and NSUF Projects (in Appendices A and C of this CINR FOA) for U.S. University-, National Laboratory-, or Industry-led projects. Pre-Applications must be submitted by the date and time specified in Part IV, Section G.2 of this CINR FOA.

The PI and named collaborators identified in the Pre-Application may not be changed in the Full Application without adequate justification and consent of the Contracting Officer. If a change is necessary, the applicant shall provide this request and justification at least 7 calendar days prior to the full application due date.

The following information shall be provided for all Pre-Applications:

### D.1 Pre-Application Narrative

Applicant shall provide a narrative that addresses the specific information below:

- Title of project.
- Technical topic area identification (e.g., NM-1). The PI is responsible for selecting the appropriate topic area, and this may not be changed between the Pre-Application and Full Application.
- Name of PI(s) and associated organization(s).
- A summary of the proposed project, including a description of the project and a clear explanation of its importance and relevance to the objectives in Part I Section A.
- Major deliverables and outcomes the R&D will produce.
- Estimated cost of project (not including value of any NSUF access).
- Timeframe for execution of proposed project (specify the time period for R&D, one-, two, or three-year period or up to seven years for NSUF).
- Specific facilities and equipment access requirements (for the NSUF access portion only).
- A clear and concise summary of the readiness of the project for NSUF access (as described in Part IX, Appendix D Accessing Nuclear Science User Facilities of this CINR FOA).
- Proprietary data, such as chemical composition or physical properties of a material, that the applicant wishes to protect during the irradiation or PIE phase of the project. This may negatively impact the selection of the project.

**Pages outside the specified page limits and font size, including references, will be redacted and unavailable for evaluators to review.**

- 5-page limit, 11-point font.

Name File: 2025 Pre-Application Narrative “Insert ID #”

### D.2 Benefit of Collaboration

Applicant shall provide a narrative that includes an explanation of the contribution that will be made by the collaborating organizations and/or facilities to be utilized. It may contain brief

biographies of staff and descriptions of the facilities wherein the research will be conducted. Please indicate within this section whether the application has benefit or influence on other ongoing or proposed NE R&D projects (e.g., modeling and simulation in one application and effect validation in a separate application).

This document is required unless the application only has a single principal investigator.

**Pages outside the specified page limits and font size, including references, will be redacted and unavailable for evaluators to review.**

- 4-page limit, 11-point font.

Name File: 2025 RPA Benefit of Collaboration "Insert ID #"

### D.3 Publications

Applications must include a list of publications that resulted from previous NE (NEUP, NEET, NSUF) funded projects. A reference to the project that supported each publication should be included. If the PI has not led an NE (NEUP, NEET, NSUF) project, this document is not required.

- No page limit.

Name File: 2025 RPA NE Supported Publications "Insert ID #"

### D.4 Principal Investigator Vitae

The lead PI shall provide a brief curriculum vitae (CV) that lists the following:

- Provide a full biographical vitae for the PI listed in Section A of the R&R Budget form.
- Contact information.
- Education and Training: provide institution, major/area, degree, and year for undergraduate, graduate, and postdoctoral training. List all education and training, foreign or domestic, at the applicant institution or elsewhere, whether or not remuneration is received, and, whether full-time, part-time, or voluntary.
- Research and Professional Experience: beginning with the current position list, in chronological order (newest to oldest), professional/academic positions with a brief description. List all professional or institutional appointments, foreign or domestic, at the applicant institution or elsewhere, whether or not remuneration is received, and, whether full-time, part-time, or voluntary.
- Publications: Provide a list of up to 10 publications most closely related to the proposed project. For each publication, identify the names of all authors (in the same sequence in which they appear in the publication), the article title, book or journal title, volume number, page numbers, year of publication, and website address if available electronically.
- Patents, copyrights, and software systems developed may be provided in addition to or substituted for publications.

- There should be no lapses in time over the past 10 years or since age 18, whichever period is shorter.

**Pages outside the specified page limits and font size, including references, will be redacted and unavailable for evaluators to review.**

- 3-page limit, 11-point font.

Name File: 2025 RPA "Last Name of Individual" "Insert ID #"

### D.5 Collaborators

A collaborator is an individual who makes a defined, material contribution that is critical to the success of the project and/or contributing to joint publications. **Any individual appearing in the project summary, technical narrative, benefit of collaboration, coordination and management plan, or budget documents should be listed as a collaborator directly on the application form.** The applicant must have the full consent of all collaborators prior to submitting an application. **Any individuals that do not meet these criteria should not be listed as collaborators on the application.**

NE has two designations for collaborators: 1) senior/key personnel and 2) 'other collaborators. Document requirements will vary depending on whether an individual is designated as 'senior/key personnel' or as a general collaborator. **Senior/key personnel should be listed in the first collaborators section on the application form. Other collaborators should be listed on the second collaborators section of the application form.**

Refer to each required area of the pre- and full-application requirements to provide needed information for all senior/key personnel.

### D.6 Intention to include Research Experiences for Undergraduates Supplement

Applicants will indicate whether they intend to request an REU supplement as part of a CINR full application. If an applicant selects that they are "participating in an REU supplement" during the pre-application, they are not required to make that same selection during the full application.

### D.7 Agreement Requirements

Institutions will be expected to follow Quality Assurance (QA) principles and requirements in conducting R&D activities. If the application is successful, the integrity of R&D products and their usability by NE is predicated on meeting QA requirements, as they apply to a specific scope of work and associated deliverables. Further, each institution serving as a team member to the proposed project shall be identified in the Pre-Application with its commitment made to collaborate in the CINR FOA process.

If applicable, access to NSUF capabilities will require agreement and final signature to the User Agreement (copy provided in Part IX, Appendix E of this CINR FOA). **The terms and conditions of the User Agreement are non-negotiable, and failure to accept the terms and conditions of the User Agreement will terminate processing and review of NSUF applications.** To ensure compliance throughout the application review process, applicants must state, during the NSUF Access Only and Full Application submission processes, that the User

Agreement has been read, understood, and the terms and conditions are accepted. Further, submission of a NSUF supported Pre-Application and a Full Application indicates the applicant will comply and agree to the terms and conditions of the User Agreement. Upon award of an NSUF supported project, the User Agreement must be signed before activities will begin on the project. Failure to sign the non-negotiable User Agreement within 30 days of receipt of the User Agreement may result in cancellation of an awarded project.

## E. CONTENT AND FORM OF ALL FULL APPLICATIONS

Applicants must provide all information requested. Forms and optional templates may be used to provide the information in accordance with the instructions below. Files that are attached must be in PDF format, unless otherwise specified in this announcement. Optional document templates can be found on the NEUP.gov website by clicking the 'Documents' button at the bottom of the front page (https://neup.inl.gov/SitePages/Related_Documents.aspx).

You must save the Full Application before a tracking ID number will be generated.

### E.1 Conflict-of-Interest (COI) Acknowledgement

The DOE interim Conflict of Interest Policy for Financial Assistance (COI Policy) can be found at Financial Assistance Letter No. FAL 2022-02 | Department of Energy. This policy is applicable to all non-Federal entities applying for, or that receive, DOE funding by means of a financial assistance award (e.g., a grant, cooperative agreement, or technology investment agreement) and, through the implementation of this policy by the entity, to each Investigator who is planning on participating in, or is participating in, the project funded wholly or in part under the DOE financial assistance award. DOE's interim COI Policy establishes standards that provide a reasonable expectation that the design, conduct, and reporting of projects funded wholly or in part under DOE financial assistance awards will be free from bias resulting from financial conflicts of interest or organizational conflicts of interest. The applicant is subject to the requirements of the interim COI Policy and within each application for financial assistance, the applicant must certify that it is, or will be by the time of receiving any financial assistance award, compliant with all requirements in the interim COI Policy. The applicant must flow down the requirements of the interim COI Policy to any subrecipient non-Federal entities.

The applicant is required to disclose, manage, and report conflicts of interest as per the DOE interim COI Policy. Check the appropriate box on the application form certifying compliance with the COI Policy. If any disclosures need to be made, upload a COI document to the COI disclosure area of the application form.

Name File: 2025 CFA COI "Insert ID #"

### E.2 SF-424 Research and Related (R&R)

Applicants shall complete the SF-424, R&R form, available at www.NEUP.gov and upload a completed and signed PDF copy of the form with the application.

Name File: 2025 CFA SF424RR "Insert ID #"

### E.3 R&R Other Project Information

Applicants shall complete items 1–6 on the R&R Other Project Information form available at www.NEUP.gov, and upload a completed PDF copy of the form. Items 7-12 will be completed in the application form and do not need to be completed here.

Name File: 2025 CFA R&R Other Project Information "Insert ID #"

### E.4 Project Abstract

**(Use Provided Template on Application Site)**

The project summary/abstract must contain a summary of the proposed activity, suitable for dissemination to the public. It should be a self-contained document that identifies the following: the name of the applicant; the name of the PI(s); the project title; a list of major deliverables; the scope and objectives of the project; a description of the project, including major tasks (phases, planned approach, etc.) and methods to be employed; the potential impact of the project (i.e., benefits, outcomes); and the names of senior/key personnel (for collaborative projects). This document must not include any proprietary or sensitive business information as NE may make it available to the public after awards are made.

**Pages outside the specified page limits and font size, including references, will be redacted and unavailable for evaluators to review.**

- 1-page limit for R&D, including NSUF-1, 11-point font. (Appendix A Template)
- 1-page limit for NSUF Access Only (NSUF-2), 11-point font. (Appendix C Template)
- 2-page limit for IRPs, 11-point font. (Appendix B Template)

Name File: 2025 CFA Project Abstract "Insert ID #"

### E.5 Project Narrative

Applicant shall provide a written narrative addressing the strategy to execute R&D that supports the specified topic area. The documentation provided shall include the items specified below:

- Application title.
- Final Topic Area Identification (FL-1, IC-1, etc.).
- Project Objectives: Provide a clear, concise statement of specific objectives/aims of the proposed project in support of the NE mission.
- Proposed scope description.
- Logical path to accomplishing scope, including descriptions of tasks. This section will provide a clear, concise statement of the specific objectives/aims of the proposed project. This section should be formatted to address each of the merit review criterion and sub-criterion listed in Part V, Section A. Provide sufficient information so that reviewers will be able to evaluate the application in accordance with these merit review criteria. **DOE**

**has the right to evaluate and consider only those applications that separately address each of the merit review criteria**.

- Relevance and Outcomes/Impacts: This section will provide a clear explanation of its importance and relevance to the NE mission as described in the objectives in Part I Section A.
- Schedule: Define timelines for executing the specified topic area, including all important activities or phases of the project. Successful applicants must use this schedule when reporting project progress.
- Milestones and deliverables.
- Type/Description of facilities that will be used to execute the scope (if applicable).
- The roles and responsibilities of each partnering organization in the execution of the topic area. Describe the role and work to be performed by each participant/investigator, the business arrangements between the applicant and participants, and how the various efforts will be integrated and managed.
- Unique challenges to accomplishing the work and planned mitigations.
- Information, data, plans, or drawings necessary to explain the details of the application.
- Source, scope, and duration of R&D funding (i.e., support for the PI in the form of a Letter of Commitment), if applicable, associated with request for NSUF Access Only (NSUF-2 only).
- A stand-alone detailed description of the readiness of the project for NSUF Access (as described in Part IX, Appendix D Accessing Nuclear Science User Facilities) (NSUF-1 and NSUF-2 only)
- Proprietary data, such as chemical composition or physical properties of a material, that the applicant wishes to protect during the irradiation or PIE phase of the project. This may negatively impact the selection of the project (NSUF-1 and NSUF-2 only).

Page limits include cover page, table of contents, charts, graphs, maps, photographs, tables, references and other pictorial presentations while complying with the document format instructions in Part IV, Section B. **Pages outside the specified page limits and font size, including references, will be redacted and unavailable for evaluators to review.**

- All R&D Projects: 10-pages, 11-point font.
- All IRP Projects: 50-pages, 11-point font.
- All NSUF (NSUF-1 and NSUF-2) Projects: 15-pages, 11-point font.

Do not include any internet addresses (URLs) that provide information necessary to review the application; information contained in these sites will not be reviewed.

Name File: 2025 CFA Project Narrative “Insert ID #”

## E.6 Research Experiences for Undergraduates (REU) Plan

If supplemental REU funds are requested, the applicant shall provide details about the proposed REU activities including:

- Total amount of requested funds and anticipated number of supported students.
- Structure of the REU program (e.g., summer program, on-campus, etc.), including the process and criteria for selecting students.
- Nature of each prospective student's involvement in the research project, how the student will be managed including assessing status of work performed and mentorship.
- Plan to incorporate REU within the overall project schedule.
- Plan to involve participation of students from underserved communities or minority serving institutions.
- The experience of the PI (or other prospective research mentors) in involving undergraduates in research, including any other REU type support.

Applicants should provide sufficient detail to describe the impacts that an REU supplement could have for the project and the potential positive impacts to overall student development, workforce development, research outcomes, and underserved communities and minority serving institutions.

- 2-page limit, 11-point font.

Name File: 2025 REU "Insert ID #".pdf

## E.7 Vitae (Technical Expertise and Qualifications)

(Required: Lead PI, senior/key personnel)

Applicant shall name all teaming partners by name and organization, as well as their proposed roles and responsibilities. For collaborators (including senior/key personnel), who will contribute in a substantial, measurable way to the project (including for subrecipients and consultants), the applicant shall provide brief vitae that list the following:

- Contact information.
- Education and Training: provide institution, major/area, degree, and year for undergraduate, graduate, and postdoctoral training. List all current academic, professional, or institutional appointments (foreign or domestic), at the applicant institution or elsewhere, and whether or not remuneration is received, and if full-time, part-time, or voluntary.
- Research and Professional Experience: beginning with the current position list, in chronological order (newest to oldest), professional/academic positions with a brief description.
- Awards and honors.

- Publications: provide a list of up to 10 publications most closely related to the proposed project. For each publication, identify the names of all authors (in the same sequence in which they appear in the publication), the article title, book or journal title, volume number, page numbers, year of publication, and website address if available electronically.
- Patents, copyrights, and software systems developed may be provided in addition to or substituted for publications.

**Pages outside the specified page limits and font size, including references, will be redacted and unavailable for evaluators to review.**

- 3-page limit per Vitae, 11-point font.

Name File: 2025 CFA "Last Name of Individual" "Insert ID #"

Technical expertise and qualifications are to be provided for all senior/key personnel. All participants making a defined, material contribution that is critical to the success of the project must be listed as collaborators on the online application. Applicants must have the full consent of all collaborators prior to submitting the application.

**NOTE:** NSUF technical leads and other NSUF support staff are not required to provide a vitae if they are considered 'other collaborators or personnel'. NSUF support staff must not be listed on the application.

### E.8 Benefit of Collaboration

The applicant shall provide a narrative that includes an explanation of the contribution that will be made by the collaborating organizations and/or facilities to be utilized. Please indicate within this section whether the application has benefit or influence on other ongoing or proposed NE R&D projects (e.g., modeling and simulation in one application and effect validation in a separate application).

This document is required unless the application only has a single principal investigator.

**Pages outside the specified page limits and font size, including references, will be redacted and unavailable for evaluators to review.**

- 4-page limit, 11-point font.

Name File: 2025 CFA Benefit of Collaboration "Insert ID#"

### E.9 Capabilities

Provide information on the following, as applicable:

- Infrastructure Requirements: The applicant shall identify the infrastructure (e.g., facilities, equipment, instrumentation, and other resources) required to execute the proposed scope of work, including applicant's location, availability, capabilities, and how they will be used in the project. Describe the non-labor (e.g., facilities,

equipment, and instrumentation) resources that are available and accessible to the applicant and are required to execute the scope of work. Describe any unique equipment and facilities that are needed, are accessible, and will be used to execute the scope of work. Discuss the adequacy of these resources and identify any gaps and how these will be addressed.

- Adequate financial resources (if cost sharing).
- Ability to comply with the required or proposed performance schedule, taking into consideration all existing commercial and governmental business commitments.
- A satisfactory record of performance, integrity, and business ethics.
- Necessary organization, experience, accounting and operational controls, or the ability to obtain them (including, as appropriate, such elements as property control systems, quality assurance measures, and safety programs).

This CINR FOA allows the applicant to propose the purchase of any needed equipment to conduct the proposed work. If equipment purchases are proposed, describe comparable equipment, if any, already at the institution and explain why it cannot be used.

**Pages outside the specified page limits and font size, including references, will be redacted and unavailable for evaluators to review.**

- 2-page limit, 11-point font.

Name File: 2025 CFA Capabilities "Insert ID #"

### E.10 Letters of Support or Commitment

#### E.10.1 Letters of Support (IRPs only), if applicable

A letter of support from non-Federal, non-academic partners (industry/utility, international) is recommended to describe the level and type of support (e.g., financial or in-kind contributions) contemplated for the project. Letters of support must be on company stationery and signed by an authorized company official.

Letters of Support for applications in Appendix A and C will not be evaluated as part of the review process and should not be added to the application.

Name File: 2025 CFA Letter of Support "Insert ID #"

#### E.10.2 NSUF Letter of Commitment Funding (NSUF-2 Only)

Applicants for NSUF Access Only projects that do not have an R&D funding component are responsible for costs similar to:

- Travel costs to NSUF facilities for facility access training, technical meetings, examinations, experiment loading, etc.;
- Applicant salary support;

- Graduate student support;
- Post-doctoral or other researcher support; and,
- Materials and supplies support at the PI's work location.

A letter of commitment from an appropriate authority is required that explains how the applicant will pay for these types of costs. To append the Letter of Commitment: 1) Find the submitted Pre-Application in the "My Applications" section of the submission website; 2) Open the submitted Pre-Application by using the 'pencil' icon; 3) Scroll to the bottom of the application form; and 4) Click "Attach File" on the "Post Submission Attachment" section and attach the Letter of Commitment.

Name File: 2025 NSUF Letter of Commitment "Insert ID #"

### E.10.3 Program Commitment Letter, (NSUF-1 and NSUF-2 Only), if applicable

For fuels or materials coming from other DOE programs (not NSUF), a statement of program commitment is required. If invited to submit a Full Application, a statement that includes concurrence from the appropriate DOE federal program manager or national technical director must be provided.

Name File: 2025 Program Concurrence "Insert ID #"

### E.10.4 Project Commitment to Energy Justice and Energy Equity (Optional)

Applicants are encouraged to describe how their projects or project teams will advance energy justice and energy equity the Administration's objectives. Energy Justice objectives include project's or project team's contribution to the Justice40 Initiative (as described in Part III A of this FOA) Energy equity objectives include, for example, effective teams and/or partnerships with MSIs, including Historically Black Colleges and Universities (HBCUs) and Tribal Colleges and Universities (TCUs), or institutions located in a disadvantaged community.

**Justice40 Initiative.** Applicants may include information on how the projects supports the Justice40 Initiative, including for example:

- Extent to which the applicant identifies the following: specific and measurable benefits to disadvantaged communities; how the benefits will flow to disadvantaged communities; and how negative environmental impacts affecting disadvantaged communities would be mitigated. Benefits include (but are not limited to) measurable direct or indirect investments or positive project outcomes that achieve or contribute to the following in disadvantaged communities: (1) a decrease in energy burden; (2) a decrease in environmental exposure and burdens; (3) an increase in access to low-cost capital; (4) an increase in high-quality job creation, the clean energy job pipeline, and job training for individuals; (5) increases in clean energy enterprise creation and contracting (e.g., minority-owned or disadvantaged business enterprises); (6) increases in energy democracy, including community ownership; (7) increased parity in clean energy technology access and adoption; and (8) an increase in energy resilience.

- Extent to which the project would contribute to the Federal Government's goal that 40% of certain Federal climate and clean energy investments flow to disadvantaged communities.
- The degree to which the proposed project provides funding to disadvantaged communities;
- Whether the entity is located in a disadvantaged community. The onus is on the applicant to self-identify whether it is located in a disadvantaged community or partners with an entity, located in a disadvantaged community;
- The degree to which the proposed project incorporates applicant or team members from disadvantaged communities; and
- Whether the proposed project may directly or indirectly benefit disadvantaged communities or has team member participants from disadvantaged communities.

**Advance Energy Equity.** Energy equity centers the concerns of underserved and socially and economically disadvantaged communities and aims to make energy more accessible, affordable, clean, and democratically managed for all communities. Applicants are also encouraged to describe how their projects or project teams contribute to energy equity. Applicants may include a section on how the projects ensures energy equity, including for example: the degree to which the proposed project incorporates team member diversity with participants from Minority Serving Institutions (e.g., Historically Black Colleges and Universities (HBCUs)/Other Minority Serving Institutions); and/or partnerships with Minority Business Enterprises, Minority Owned Businesses, Woman Owned Businesses, Veteran Owned Businesses, or Tribal nations or seeks to address communities with environmental justice concerns that experience disproportionate and adverse human health or environmental burdens in accordance with Executive Order 14096.

**Advance Energy Equity**. Energy equity centers the concerns of disadvantaged communities and aims to make energy more accessible, affordable, clean, and democratically managed for all communities. Applicants are also encouraged to describe how their projects contribute to energy equity.

Name File: 2025 EEandJustice40 "Insert ID#"

### E.11 Budget Documents

#### E.11.1 SF-424 Research and Related (R&R) Lead Budget Form

**(Required for all lead institutions; Not required for NSUF-2 Access Only applications)**

Complete the Research and Related Budget (Total Fed & Non-Fed) form in accordance with the following instructions.

A separate budget must be completed for each year of requested support. The form will generate a cumulative budget for the total project period. Complete all the mandatory information on the form. Funds may be requested under any of the categories listed if the item and amount are necessary to perform the proposed work, meet all the criteria for allowability under the applicable Federal cost principles, and are not prohibited by the funding restrictions in this announcement (see Part IV, Section I of this CINR FOA).

If proposing an REU supplement, yearly project budgets for the REU portion of the project should be included in the R&R Lead Budget Form and R&R Subaward Budget Form (if applicable).

**NOTE:** Successful applicants may be requested to participate in an annual program review meeting and should budget travel accordingly.

**NOTE:** Do **NOT** lock the cells when saving this document. Applications containing budget forms with **locked cells** may not be evaluated further.

Name File: 2025 CFA Budget "Insert ID #".xls

### E.11.2 SF-424 Research and Related (R&R) Subaward Budget Form

**(Required for University and Industry collaborators; Not required for NSUF-2 Access Only applications)**

Budgets for subrecipients, other than DOE FFRDC Contractors. Applicant must provide a separate cumulative SF-424 budget for each subrecipient that is expected to perform work estimated to be more than $250,000 or 50% of the total work effort (whichever is less). Use up to 10 letters of the subrecipient institution's name as the file name.

**NOTE:** Do **NOT** lock the cells when saving this document. Applications containing budget forms with LOCKED CELLS may not be evaluated further.

Name File: 2025 CFA Subaward Budget "Insert ID #".xls

### E.11.3 Budget for DOE/NNSA Federally Funded Research and Development Center (FFRDC) Contractor

**(Required for National Laboratory participants; Not required for NSUF-2 Access Only applications)**

If using a DOE/NNSA FFRDC contractor, the FFRDC must provide a DOE Field Work Proposal in accordance with the requirements in DOE Order 412.1A, Administrative (Admin) Change 1, Work Authorization System dated 05/21/2014. FWPs can be obtained from respective laboratory financial administrators.

FFRDCs are permitted to propose costs in accordance with their established DOE contracts (e.g., overhead, fees, etc.).

NOTE: If no funds are to be subawarded to the FFRDC, the DOE Field Work Proposal is not required.

Name File: 2025 CFA FWP "Insert ID #"

### E.11.4 Budget Justification

**(Required for all University and Industry participants; Not required for NSUF-2 Access Only applications)**

The Budget Justification Supporting Documentation is available at NEUP.gov. Provide the required supporting information for all costs required to accomplish the project, including the following costs: labor; equipment; domestic and foreign travel; participant/trainees; material and supplies; publication; consultant services; automated data processing/computer services; subaward/consortium/contractual; equipment or facility rental/user fees; alterations and renovations; and indirect cost type. Provide any other information you wish to submit to justify the budget request.

If an REU supplement is requested, costs should be justified including itemized student costs.

The REU supplement portion of the award is expected to fall under participant support costs as defined by 2 CFR 200:

> Participant support costs means direct costs for items such as stipends or subsistence allowances, travel allowances, and registration fees paid to or on behalf of participants or trainees (but not employees) in connection with conferences, or training projects.

Participant support costs are typically excluded from the allocation base of the indirect cost calculations unless explicitly provided for in the awardee's or subawardee's Negotiated Indirect Cost Rate Agreement.

A budget justification is required for the lead applicant and all sub-awardees. The justification can be combined into one document or submitted as separate files.

**Foreign travel must be included in the budget justification request. Any foreign travel not added to the budget justification will not be approved upon issuance of the grant.**

If cost sharing is required or voluntarily proposed, provide an explanation of the source, nature, amount, and availability of any proposed cost sharing.

Third Parties Contributing to Cost Sharing Information (if applicable):

A letter from each third party (i.e., a party other than the organization submitting the application) contributing to the cost share, at the time the application is submitted. The letter must state that the third party is committed to providing a specific minimum dollar amount of cost sharing. Submitting the letters with the application provides assurance that the letters of commitment have been signed.

In an appendix to the Budget Justification, the following information for each third party contributing to cost sharing must be identified: (1) the name of the organization; (2) the proposed dollar amount to be provided; (3) the amount as a percentage of the total project cost; and (4) the proposed cost sharing - cash, services, or property. Successful applicants must provide the signed letters of commitment outlined in Part IV, Section F, Submission from Successful Applicants.

Name File: 2025 CFA Budget Justification "Insert ID #"

## E.12 Additional Attachments

### E.12.1 Current and Pending Support

**(Required for Lead PI and those listed as Senior/Key Personnel)**

Current and pending support is intended to allow the identification of potential duplication, overcommitment, potential conflicts of interest or commitment, and all other sources of support. As part of the application, the principal investigator and each senior/key person at the prime applicant and any proposed subaward level must provide a list of all sponsored activities, awards, and appointments, whether paid or unpaid; provided as a gift with terms or conditions or provided as a gift without terms or conditions; full-time, part-time, or voluntary; faculty, visiting, adjunct, or honorary; cash or in-kind; foreign or domestic; governmental or private-sector; directly supporting the individual's research or indirectly supporting the individual by supporting students, research staff, space, equipment, or other research expenses. All involvement in foreign government-sponsored talent recruitment programs must be identified in current and pending support.

For every activity, list the following items:

- The sponsor of the activity or the source of funding.
- The award or other identifying number.
- The title of the award or activity. If the title of the award or activity is not descriptive, add a brief description of the research being performed that would identify any overlaps or synergies with the proposed research.
- The total cost or value of the award or activity, including direct and indirect costs and cost share. For pending proposals, provide the total amount of requested funding.
- The award period (start date – end date).
- The person-months of effort per year being dedicated to the award or activity.

If required to identify overlap, duplication of effort, or synergistic efforts, append a description of the other award or activity to the current and pending support.

Details of any obligations, contractual or otherwise, to any program, entity, or organization sponsored by a foreign government must be provided on request to either the applicant institution or DOE. Supporting documents of any identified source of support must be provided to DOE on request, including certified translations of any document.

The information may be provided in the approved common disclosure format available at Common Form for Current and Pending (Other) Support (nsf.gov).

Each current and pending support disclosure must be signed and dated and include the following certification statement:

> I, [Full Name and Title], certify to the best of my knowledge and belief that the information contained in this Current and Pending Support Disclosure Statement is true, complete, and accurate. I understand that any false, fictitious, or fraudulent information, misrepresentations, half-truths, or omissions of any material fact, may subject me to criminal, civil or administrative penalties for fraud, false statements, false claims or otherwise. (18 U.S.C. §§ 1001 and 287, and 31 U.S.C. 3729-3733 and 3801-3812). I further understand and agree that (1) the statements and representations made herein are

material to DOE's funding decision, and (2) I have a responsibility to update the disclosures during the period of performance of the award should circumstances change which impact the responses provided above.

**If the fillable PDF NSF format is used, the individual must still include a signature, date, and a certification statement using the exact language included above.**

**Definitions:**

**Current and pending support** – (a) All resources made available, or expected to be made available, to an individual research, development and demonstration in support of the individual's RD&D efforts, regardless of (i) whether the source is foreign or domestic; (ii) whether the resource is made available through the entity applying for an award or directly to the individual; or (iii) whether the resource has monetary value; and (b) includes in-kind contributions requiring a commitment of time and directly supporting the individual's RD&D efforts, such as the provision of office or laboratory space, equipment, supplies, employees, or students. This term has the same meaning as the term Other Support as applied to researchers in National Security Presidential Memorandum - 33 (NSPM-33): For researchers, Other Support includes all resources made available to a researcher in support of and/or related to all of their professional RD&D efforts, including resources provided directly to the individual or through the organization, and regardless of whether or not they have monetary value (e.g., even if the support received is only in-kind, such as office/laboratory space, equipment, supplies, or employees). This includes resource and/or financial support from all foreign and domestic entities, including but not limited to, gifts provided with terms or conditions, financial support for laboratory personnel, and participation of student and visiting researchers supported by other sources of funding.

**Foreign Government-Sponsored Talent Recruitment Program** – An effort directly or indirectly organized, managed, or funded by a foreign government, or a foreign government instrumentality or entity, to recruit science and technology professionals or students (regardless of citizenship or national origin, or whether having a full-time or part-time position). Some foreign government-sponsored talent recruitment programs operate with the intent to import or otherwise acquire from abroad, sometimes through illicit means, proprietary technology or software, unpublished data and methods, and intellectual property to further the military modernization goals and/or economic goals of a foreign government. Many, but not all, programs aim to incentivize the targeted individual to relocate physically to the foreign state for the above purpose. Some programs allow for or encourage continued employment at U.S. research facilities or receipt of federal research funds while concurrently working at and/or receiving compensation from a foreign institution, and some direct participants not to disclose their participation to U.S. entities. Compensation could take many forms including cash, research funding, complimentary foreign travel, honorific titles, career advancement opportunities, promised future compensation, or other types of remuneration or consideration, including in-kind compensation.

**Senior/key personnel** – an individual who contributes in a substantive, meaningful way to the scientific development or execution of an RD&D project proposed to be carried out with DOE award.[2]

Name File: 2025 CFA Current and Pending Support "Insert ID #"

### E.12.2 Coordination and Management Plan

Multiple PIs (multiple individuals i.e., Lead PI, Co-PI, etc.): The applicant, whether a single organization or team/partnership/consortium, must state whether the project will include multiple PIs. This decision is solely the responsibility of the applicant. If multiple PIs will be designated, the application must identify the Contact PI/Project Coordinator and provide a "Coordination and Management Plan" that describes the organization structure of the project as it pertains to the designation of multiple PIs. This plan should, at a minimum, include:

- Process for making decisions on scientific/technical direction;
- Publications;
- Intellectual property issues;
- Communication plans;
- Procedures for resolving conflicts; and
- PIs' roles and administrative, technical, and scientific responsibilities for the project.

Name File: 2025 CFA CMP "Insert ID #"

### E.12.3 Letter of Authorization for DOE/NNSA FFRDCs

**(Required for all National Laboratory participants listed on the application regardless of funding level or tier)**

The cognizant contracting officer for the FFRDC must authorize in writing the use of DOE/NNSA FFRDC and non-DOE/NNSA FFRDC contractors on the proposed project, and this authorization must be submitted with the application. The following wording is acceptable for this authorization.

> "Authorization is granted for the Fill-in 1: [Name] Laboratory to participate in the proposed project. The work proposed for the laboratory is consistent with or complimentary to the missions of the laboratory, will not adversely impact execution of the DOE/NNSA assigned programs at the laboratory, and will not place the laboratory in direct competition with the domestic private sector."

[2] Typically, these individuals have doctoral or other professional degrees, although individuals at the masters or baccalaureate level may be considered senior/key personnel if their involvement meets this definition. Consultants, graduate students, and those with a postdoctoral role also may be considered senior/key personnel if they meet this definition.

**NOTE:** Individual Letters of Authorization may be submitted, if all FFRDC/non-FFRDC management has been notified of all submissions, and all participants are identified, may be submitted as a blanket permission.

**NOTE:** Letter of Authorization is not required for NSUF Technical Leads unless the Technical Lead is named as senior/key personnel requesting R&D funding support under this CINR FOA.

Name File: 2025 CFA CO Authorization "Insert ID #"

### E.12.4 Project/Performance Site Location(s)

Indicate the primary site where the work will be performed. If a portion of the project will be performed at any other site(s), identify the site location(s) in the blocks provided.

Use the "Next Site" button to expand the form to add additional Project/Performance Site Locations.

Note that the Project/Performance Site Congressional District is entered in the format of the 2-digit state code, followed by a dash and a 3-digit Congressional district code, for example VA - 001. Hover over this field for additional instructions.

Name File: 2025 CFA Site Location "Insert ID #"

### E.12.5 Disclosure of Lobbying Activities

**(Required for ALL lead applicants)**

Recipients and subrecipients may not use any federal funds to influence or attempt to influence, directly or indirectly, congressional action on any legislative or appropriation matters.

Recipients and subrecipients are required to complete and submit SF-LLL, "Disclosure of Lobbying Activities" (https://www.grants.gov/web/grants/forms/sf-424-individual-family.html) to ensure that non-federal funds have not been paid and will not be paid to any person for influencing or attempting to influence any of the following in connection with the application:

- An officer or employee of any federal agency;
- A member of Congress;
- An officer or employee of Congress; or
- An employee of a member of Congress

Name File: 2025 CFA SF-LLL "Insert ID #"

### E.12.6 Certifications and Assurances

**(Required for all University leads; Not required for NSUF Access Only applications)**

Applicants must complete and attach the Certifications and Assurances form found on the DOE Financial Assistance Forms Page at: http://energy.gov/management/downloads/certifications-and-assurances-use-sf-424.

Name File: 2025 CFA Cert and Assurances "Insert ID #"

### E.12.7 Transparency of Foreign Connections

Applicants must provide the following as it relates to the proposed recipient and subrecipients. Include a separate disclosure for the applicant and each proposed subrecipient. U.S. National Laboratories, domestic government entities, and institutions of higher education are only required to respond to items 1, 2 and 9, and if applying as to serve as the prime recipient, must provide complete responses for project team members that are not U.S. National Laboratories, domestic government entities, or institutions of higher education.

1. Entity name, website address, and physical address;
2. The identity of all owners, principal investigators, project managers, and senior/key personnel who are a party to any Foreign Government-Sponsored Talent Recruitment Program of a foreign country of risk (i.e., China, Iran, North Korea, and Russia);
3. The existence of any joint venture or subsidiary that is based in, funded by, or has a foreign affiliation with any foreign country of risk;
4. Any current or pending contractual or financial obligation or other agreement specific to a business arrangement, or joint venture-like arrangement with an enterprise owned by a foreign state or any foreign entity;
5. Percentage, if any, that the proposed recipient or subrecipient has foreign ownership or control;
6. Percentage, if any, that the proposed recipient or subrecipient is wholly or partially owned by an entity in a foreign country of risk;
7. Percentage, if any, of venture capital or institutional investment by an entity that has a general partner or individual holding a leadership role in such entity who has a foreign affiliation with any foreign country of risk;
8. Any technology licensing or intellectual property sales to a foreign country of risk, during the 5-year period preceding submission of the proposal;
9. Any foreign business entity, offshore entity, or entity outside the United States related to the proposed recipient or subrecipient;
10. Complete list of all directors (and board observers), including their full name, citizenship and shareholder affiliation, date of appointment, duration of term, as well as a description of observer rights as applicable;
11. Complete capitalization table for your entity, including all equity interests (including LLC and partnership interests, as well as derivative securities). Include both the number of shares issued to each equity holder, as well as the percentage of that series and all equity on a fully diluted basis. Identify the principal place of incorporation (or organization) for each equity holder. If the equity holder is a natural person, identify the

citizenship(s). If the recipient or subrecipient is a publicly traded company, provide the above information for shareholders with an interest greater than 5%;

12. A summary table identifying all rounds of financing, the purchase dates, the investors for each round, and all the associated governance and information rights obtained by investors during each round of financing; and
13. An organization chart to illustrate the relationship between your entity and the immediate parent, ultimate parent, and any intermediate parent, as well as any subsidiary or affiliates. Identify where each entity is incorporated.

DOE reserves the right to request additional or clarifying information based on the information submitted.

Note: Save all information in a single PDF file.

Name File: 2025 CFA Transparency of Foreign Connections "Insert ID #"

**Table 3. Summary of Full Application Required Information.**

| Name of Document | Format | Required From | Signature Required |
|---|---|---|---|
| Conflict-of-Interest | Checkbox | Certified by Lead Applicant for all Participants | |
| SF-424 (R&R) | Form | Lead Applicant | Yes |
| Research and Related Other Project Information | Form | Lead Applicant | |
| Project Abstract | PDF | Lead Applicant | |
| Project Narrative | PDF | Lead Applicant | |
| Research Experience for Undergraduates (REU) Plan* (2 pages) | PDF | Lead Applicant, if applicable | |
| **Other Attachments** | | | |
| Vitae - Technical Expertise and Qualifications (3 pages each) | PDF | All Leads and all Senior/Key Personnel listed | |
| Benefits of Collaborations (4 pages) | PDF | Lead Applicant | |
| Capabilities (2 pages) | PDF | Lead Applicant | |
| SF-424 (R&R) Lead Budget Form (Total Fed + Non-Fed) | Form | All Lead Applicants* | |
| SF-424 (R&R) Subaward Budget (Total Fed + Non-Fed), if applicable | Form | Collaborators who meet minimum requirements (work estimated to be $250,000 or more or 50% of the total work effort, whichever is less)* | |
| Budget for DOE National Laboratory Contractor or FFRDC, if applicable | PDF | National Laboratory Leads and Collaborators* | Yes |
| Budget Justification | PDF | University Leads* | |
| Subaward Budget Justification, if | PDF | Collaborators who meet minimum | |

| Name of Document | Format | Required From | Signature Required |
|---|---|---|---|
| applicable | | requirements (work estimated to be $250,000 or more or 50% of the total work effort, whichever is less) * | |
| Current and Pending Support | PDF or Form | All University and Industry Leads **and** all Senior/Key Personnel listed | Yes, with certification statement from Part IV Section E.11.1 |
| Coordination and Management Plan | PDF | Lead Applicant | |
| Authorization for DOE/NNSA FFRDCs, if applicable | PDF | National Laboratory Applicants **(including non-funded national laboratory collaborators)** | Yes |
| Project/Performance Site Location | Form | All sites performing work | |
| SF-LLL Disclosure of Lobbying Activities | Form | Lead Applicant | Yes |
| Certifications and Assurances | Form | University Leads* | Yes |
| | | | |
| Transparency of Foreign Connections | PDF | Lead Applicant and Subrecipients; (reduced reporting requirement for U.S. National Laboratories, domestic government entities, and institutions of higher learning) | |
| Letters of Support or Commitment | PDF | Optional | |

*Not required for applications to the NSUF-2 Access Only CINR FOA area. The applicant will need to upload a document that states "*Not required for NSUF-2 Access Only applications*" in these upload fields.

## F. REQUIRED DOCUMENTS AFTER SELECTION FOR NEGOTIATIONS

### F.1 Environmental Checklist

- An environmental checklist will be required at the time of award negotiations. If selected for award negotiations, please fill out the Environmental Checklist.

- DOE's decision whether and how to distribute federal funds under this FOA is subject to the National Environmental Policy Act (NEPA) (42 U.S.C. § 4321, *et seq.*). NEPA requires federal agencies to integrate environmental values into their decision-making processes by considering the potential environmental impacts of their proposed actions. For additional background on NEPA, please see DOE's NEPA website at https://www.energy.gov/nepa.

- While NEPA compliance is a federal agency responsibility and the ultimate decisions remain with the federal agency, all recipients selected for an award will be required to assist in the timely and effective completion of the NEPA process in the manner most pertinent to their proposed project. If DOE determines certain records must be prepared

to complete the NEPA review process (e.g., biological evaluations or environmental assessments), the recipient may be required to prepare the records and the costs to prepare the necessary records may be included as part of the project costs.

### F.2 Data Management Plan (DMP)

A. A Data Management Plan (DMP) will be required by October 31, 2025, that:

- Should describe whether and how data generated in the course of the proposed research will be shared and preserved. If the plan is not to share and/or preserve certain data, then the plan must explain the basis of the decision (for example, cost/benefit considerations, other parameters of feasibility, scientific appropriateness, or limitations discussed in #4). At a minimum, DMPs must describe how data sharing and preservation will enable validation of results, or how results could be validated if data are not shared or preserved. DMPs may utilize the Nuclear Research Data System (NRDS) for storage of digital research data. NRDS is a newly developed NSUF High Performance Computing data repository solution that can provide secure lifecycle storage of NSUF and NEUP project data. Access to NRDS would be provided to the PI after award notification and before data is generated. Further details on the NRDS can be found at nsuf.inl.gov.
- Should provide a plan for making all research data displayed in publications resulting from the proposed research open, machine-readable, and digitally accessible to the public at the time of publication. This includes data that are displayed in charts, figures, images, etc. In addition, the underlying digital research data used to generate the displayed data should be made as accessible as possible to the public in accordance with the principles stated above. This requirement could be met by including the data as supplementary information to the published article, utilization of the NRDS, or through other means. The published article should indicate how these data can be accessed.
- Should consult and reference available information about data management resources to be used in the course of the proposed research. In particular, DMPs that explicitly or implicitly commit data management resources at a facility beyond what is conventionally made available to approved users should be accompanied by written approval from that facility.
- DMPs must protect confidentiality, personal privacy, Personally Identifiable Information, and U.S. national, homeland, and economic security; recognize proprietary interests, business confidential information, and intellectual property rights; avoid significant negative impact on innovation, and U.S. competitiveness; and otherwise, be consistent with all applicable laws, regulations, and DOE orders and policies. There is no requirement to share proprietary data.

## G. SUBMISSION FROM SUCCESSFUL APPLICANTS

If selected for award negotiations, DOE reserves the right to require that selected applicants provide additional or clarifying information regarding the application submissions, the project, the project team, the award requirements, and any other matters related to anticipated award. The following is a list of examples of information that may be required:

- Personnel proposed to work on the project and collaborating organizations (See Section VI.A.4. Participants and Collaborating Organizations);
- Current and Pending Support (See Sections IV.D.12 and VI.A.5 Current and Pending Support);
- Indirect cost information;
- Other budget information;
- Name and phone number of the Designated Responsible Employee for compliance with national policies prohibiting discrimination (*See* 10 CFR Part 1040.5);
- Representation of Limited Rights Data and Restricted Software, if applicable;
- Commitment Letter from Third Parties Contributing to Cost Sharing, if applicable;
- Environmental Checklist; and
- Data Management Plan.

## H. SUBMISSION DATES AND TIMES

### H.1 NSUF LOI Due Date

**(Mandatory only for NSUF (NSUF-1 and NSUF-2) Projects)**

LOIs for NSUF access are required by June 5, 2024, no later than 5:00 p.m. Eastern Time (ET). The LOI shall be submitted as required in Part IV, Section C.1 of this CINR FOA.

### H.2 R&D/NSUF Pre-Application Due Date

**(Including R&D and NSUF Projects) (Mandatory except for IRPs)**

Pre-Applications are required by June 26, 2024, no later than 5:00 p.m. ET. The Pre-Application shall be submitted as required in Part IV, Section C.2 of this CINR FOA. Applicants who fail to submit a Pre-Application, will be determined non-responsive and ineligible for a comprehensive merit review.

### H.3 NSUF Pre-application Statement of Work Due Date

**(Required only for NSUF Projects)**

Applicants requesting NSUF access must submit a Pre-Application SOW by August 01, 2024, no later than 5:00 p.m. ET. The Pre-Application SOW shall be submitted as required in Part IV, Section C.3. Applicants who fail to submit a pre-application SOW will be determined non-responsive and ineligible for further consideration.

### H.4 NSUF Full Application Statement of Work Due Date

**(Required only for NSUF Projects)**

Applicants requesting NSUF access must submit a Full Application Statement of Work by October 30, 2024, no later than 5:00 p.m. ET. The Full Application SOW shall be submitted as

required in Part IV, Section C.4. Applicants who fail to submit a Full Application SOW will be determined non-responsive and ineligible for further consideration.

### H.5 IRP Application Due Date

IRPs must be received by November 13, 2024, no later than 5:00 p.m. ET. Applicants are encouraged to transmit their applications well before the deadline. Applications received after the deadline will not be reviewed or considered for award.

### H.6 Full R&D/NSUF Application Due Date (Including R&D and NSUF Projects)

Full R&D/NSUF applications (including program concurrence for applicable NSUF projects, see Part IX, Appendix D Accessing Nuclear Science User Facilities) must be received by November 13, 2024, no later than 5:00 p.m. ET. Applicants are encouraged to transmit their applications well before the deadline. Applications received after the deadline will not be reviewed or considered for award.

### H.7 Late Submissions, Modifications, and Withdrawals of Pre-Applications, Applications, and NSUF Statement of Work

Applicants are responsible for submitting any/all required submissions specified in this CINR FOA, including LOIs, applications, statements of work, and any modifications or withdrawals thereto, so as to reach the Government office designated in the CINR FOA by the date/time specified in the CINR FOA.

Any required CINR FOA submittal, modification, or withdrawal received at the Government office designated in the CINR FOA after the exact time specified for receipt of that submittal is "late" and will not be considered.

A late modification of an otherwise successful submittal or application that makes its terms more favorable to the Government will be considered at any time it is received and may be accepted.

Acceptable evidence to establish the time of receipt at the Government installation includes the time/date stamp of that installation on the required electronic submission, other documentary evidence of receipt maintained by the installation, or oral testimony or statements of Government personnel.

If an emergency or unanticipated event interrupts normal Government processes such that the required submittal cannot be received at the Government office designated for receipt of the submittal by the exact time specified in the CINR FOA, and urgent Government requirements preclude amendment of the CINR FOA, the time specified for receipt of the required submittal will be deemed to be extended to the same time of day, as specified in the CINR FOA, on the first work day on which normal Government processes resume.

Applications and other submittals may be withdrawn by written notice (sent electronically to NEUP@inl.gov) received at any time before the exact time set for receipt of that submittal. A required submittal may be withdrawn in person by an applicant or its authorized representative,

if, before the exact time set for receipt of that submittal, the identity of the person requesting withdrawal is established and the person signs a receipt for the submittal.

If electronic applications cannot be submitted, applicants can contact:

INR Integration Office
Attn: Pamela Rich
PO Box 1625 MS 3730
Idaho Falls, Idaho 83415

Telephone: 208-526-4854
Fax: 208-526-1844

## I. INTERGOVERNMENTAL REVIEW

This program is not subject to Executive Order 12372, "Intergovernmental Review of Federal Programs."

## J. FUNDING RESTRICTIONS

Funding for all awards is contingent upon the availability of funds appropriated by Congress for the purpose of this program in current and future fiscal years.

### J.1 Prohibition related to Foreign Government-Sponsored Talent Recruitment Programs

#### a. Prohibition

Persons participating in a *Foreign Government-Sponsored Talent Recruitment Program of a Foreign Country of Risk* are prohibited from participating in projects selected for federal funding under this FOA. Should an award result from this FOA, the recipient must exercise ongoing due diligence to reasonably ensure that no individuals participating on the DOE-funded project are participating in a *Foreign Government-Sponsored Talent Recruitment Program of a Foreign Country of Risk*. Consequences for violations of this prohibition will be determined according to applicable law, regulations, and policy. Further, the recipient must notify DOE within five (5) business days upon learning that an individual on the project team is or is believed to be participating in a foreign government talent recruitment program of a foreign country of risk. DOE may modify and add requirements related to this prohibition to the extent required by law.

**b.** Definitions

1. **Foreign Government-Sponsored Talent Recruitment Program** - An effort directly or indirectly organized, managed, or funded by a foreign government or a foreign government instrumentality or entity to recruit science and technology professionals or students (regardless of citizenship or national origin, and whether having a full-time or part-time position). Some foreign government-sponsored talent recruitment programs operate with the intent to import or otherwise acquire from abroad, sometimes through illicit means, proprietary technology or software,

unpublished data and methods, and intellectual property to further the military modernization goals and/or economic goals of a foreign government. Many, but not all, programs aim to incentivize the targeted individual to physically relocate to the foreign state for the above purpose. Some programs allow for or encourage continued employment at U.S. research facilities or receipt of Federal research funds while concurrently working at and/or receiving compensation from a foreign institution, and some direct participants not to disclose their participation to U.S. entities. Compensation could take many forms including cash, research funding, complimentary foreign travel, honorific titles, career advancement opportunities, promised future compensation, or other types of remuneration or consideration, including in-kind compensation.

2. **Foreign Country of Risk - DOE has designated the following countries as foreign countries of risk: Iran, North Korea, Russia, and China. This list is subject to change.**

3. **Foreign National Participation**- All applicants selected for an award under this FOA and project participants (including subrecipients and contractors) who anticipate involving foreign nationals in the performance of an award may be required to provide DOE with specific information about each foreign national to satisfy requirements for foreign national participation. A "foreign national" is defined as any person who is not a United States citizen by birth or naturalization. The volume and type of information collected my depend on various factors associated with the award. DOE concurrence may be required before a foreign national can participate in the performance of any work under an award.

DOE may elect to deny a foreign national's participation in the award. Likewise, DOE may elect to deny a foreign national's access to a DOE site, information, technologies, equipment, programs or personnel.

## J.2 FOREIGN TRAVEL

If international travel is proposed for your project, please note that your organization must comply with the International Air Transportation Fair Competitive Practices Act of 1974 (49 U.S.C. § 40118), commonly referred to as the "Fly America Act," and implementing regulations at 41 CFR 301-10.131 through 301-10.143. The law and regulations require air transport of people or property to, from, between, or within a country other than the United States, the cost of which is supported under this award, to be performed by or under a cost-sharing arrangement with a United States flag carrier, if service is available. Foreign travel costs are allowable only with the written prior approval of the contracting officer assigned to the award.

## J.3 Cost Principles

Costs must be allowable, allocable, and reasonable in accordance with the applicable Federal cost principles referenced in 2 CFR part 200, as adopted and amended by 2 CFR part 910. The cost principles for for-profit organizations are in FAR part 31.

**NOTE:** For for-profit organizations, 2 CFR 910.352 incorporates the cost principles located at the Federal Acquisition Regulation (FAR) part 31.

## J.4 Pre-Award Costs

Recipients may charge to an award, resulting from this announcement, pre-award costs that were incurred within the ninety (90) calendar day period immediately preceding the effective date of the award if the costs are allowable in accordance with the applicable Federal cost principles. Recipients must obtain the prior approval of the contracting officer for any pre-award costs that are for periods greater than this 90-day calendar period.

Pre-award costs are incurred at the applicant's risk. DOE is under no obligation to reimburse such costs if for any reason the applicant does not receive an award or if the award is made for a lesser amount than the applicant expected.

## J.5 POTENTIALLY DUPLICATIVE FUNDING NOTICE

If the applicant or project team member has other active awards of federal funds, the applicant must determine whether the activities of those awards potentially overlap with the activities set forth in its application to this FOA. If there is a potential overlap, the applicant must notify DOE in writing of the potential overlap and state how it will ensure any project funds (i.e., recipient cost share and federal funds) will not be used for identical cost items under multiple awards. Likewise, for projects that receive funding under this FOA, if a recipient or project team member receives any other award of federal funds for activities that potentially overlap with the activities funded under the DOE award, the recipient must promptly notify DOE in writing of the potential overlap and state whether project funds from any of those other federal awards have been, are being, or are to be used (in whole or in part) for one or more of the identical cost items under the DOE award. If there are identical cost items, the recipient must promptly notify the DOE Contracting Officer in writing of the potential duplication and eliminate any inappropriate duplication of funding.

## J.6 FOREIGN COLLABORATION CONSIDERATIONS

Consideration of new collaborations with foreign entities, organizations, and governments. The recipient will be required to provide DOE with advanced written notification of any potential collaboration with foreign entities, organizations, or governments in connection with its DOE-funded award scope. The recipient will then be required to await further guidance from DOE prior to contacting the proposed foreign entity, organization, or government regarding the potential collaboration or negotiating the terms of any potential agreement.

Existing collaborations with foreign entities, organizations, and governments. The recipient will be required to provide DOE with a written list of all existing foreign collaborations in which has entered in connection with its DOE-funded award scope.

Description of collaborations that should be reported. In general, a collaboration will involve some provision of a thing of value to, or from, the recipient. A thing of value includes but may not be limited to all resources made available to, or from, the recipient in support of and/or related to the DOE award, regardless of whether or not they have monetary value. Things of value also may include in-kind contributions (such as office/laboratory space, data, equipment,

supplies, employees, students). In-kind contributions not intended for direct use on the DOE award but resulting in provision of a thing of value from or to the DOE award must also be reported. Collaborations do not include routine workshops, conferences, use of the recipient's services and facilities by foreign investigators resulting from its standard published process for evaluating requests for access, or the routine use of foreign facilities by awardee staff in accordance with the recipient's standard policies and procedures.

### J.7 RISK ASSESSMENT

As DOE invests in critical infrastructure and funds critical and emerging technology areas, DOE considers possible vectors of undue foreign influence in evaluating risk. If high risks are identified and cannot be sufficiently mitigated, DOE may elect to not fund the applicant. As part of the research, technology, and economic security risk review, DOE may contact the applicant and/or proposed project team members for additional information to inform the review.

## K. OTHER SUBMISSION AND REGISTRATION REQUIREMENTS

### K.1 Where to Submit

**NOTE:** Submit applications through www.NEUP.gov to be considered for award.

Submit electronic applications through the "Applications" function at www.NEUP.gov. For problems with completing the registration process or submitting your application, call Pamela. Rich at 208-526-4854 or send an email to NEUP@inl.gov.

### K.2 Application Validity Timeframe

By submitting an application in response to this CINR FOA, applicants agree that their applications are valid for at least one year from the date set forth for receipt of applications to this CINR FOA. DOE reserves the right (with concurrence of the applicant) to use the submitted application(s) to make additional awards for up to a one year, even after DOE's initial selection announcement has occurred.

# PART V – APPLICATION REVIEW INFORMATION

**NOTE:** The following requirements apply to all CINR FOA areas unless specific requirements are identified.

## A. CRITERIA

### A.1 Pre-Application Review (only for R&D and NSUF Projects)

At the Pre-Application review stage, DOE will invite selected applicants to provide Full Applications, based on relevance to NE mission and technical merit, provided below in Part V, Sections A.1 of this CINR FOA.

All Pre-Applications, as described in Part IV, Section C.2 submitted under this CINR FOA will be reviewed and rated, as described below in Part V, Sections A.1 of this CINR FOA.

#### A.1.1 Initial Review Criteria of Pre-Applications

DOE will perform an initial review to determine the following: (1) the applicant is eligible for an award; (2) the information required by the announcement has been submitted; and (3) all mandatory requirements are satisfied. Only applications meeting these Pre-Application initial review criteria will be considered during the Pre-Application technical review process.

#### A.1.2 Relevancy Criteria

Following the Pre-Application initial review, programmatic experts will assess those applications that have met the Pre-Application initial review criteria for relevance to the NE mission. All applications that meet the objectives of the FOA will move forward to technical review.

#### A.1.3 Technical Review Merit Criteria

Several technical experts/peers will assess each pre-application on its technical merit. Reviewers will review the technical basis of the application, assigning the application a merit category as described below. During this technical review, applications will be evaluated as meeting all, most, or some expectations for that merit category.

- **High Merit:** The project unquestionably advances the technical state of knowledge and understanding of the NE mission or relevant topic area and is creative and based largely on original concepts. The scope can be executed fully in the facilities available.
- **Moderate Merit:** The project advances the technical state of knowledge and understanding of the NE mission or relevant topic area and is based on some established concepts, although several creative and original concepts are presented. The scope may be executed fully in the facilities available.
- **Some Merit:** The project incrementally advances the technical state of knowledge and understanding of the NE mission or relevant topic area, and is based predominately on established concepts, with some creative, original concepts. The scope may be difficult to execute fully in the facilities available.
- **Low Merit:** The project recognizes the technical state of knowledge and understanding of the NE mission or relevant topic area and is only marginally creative and contains few

original concepts. The scope will require resources not named in the project or will require additional facilities or resources to execute.

- **No Merit:** The project does not advance or recognize the technical state of knowledge and understanding of the NE mission or relevant topic area and is not creative or original. The scope cannot be executed fully in the facilities available.

### A.1.4 Diverse Team Review

A bonus of up to 3 points (constituting up to 3% of a maximum achievable technical rating based upon the merit ratings given) may be contributed to the average, overall technical rating during the merit review process based on the degree to which a pre-application is led by or effectively partners with MSIs, including HBCUs and TCUs. (For a directory of MSIs, please refer to Part III, Section A of this FOA.)

**NOTE:** Diverse teams and partnerships are not required for projects to be evaluated as unquestionably relevant; however, diverse teams and partnerships will increase the average overall score by up to 3 points, based on the project meeting one of the following criteria: (1) the project has a substantive contribution by MSIs as lead or collaborator; (2) the project has a demonstrable contribution by MSIs as lead or collaborator; or (3) the project has some relevant partnership with MSIs as lead or collaborator.

### A.1.5 Feasibility Review (only for NSUF Projects)

The feasibility review is a very important part of the NSUF Pre-Application review process. Many factors will be considered as part of the feasibility review including the following: type of project; duration of project; experimental degree of complexity; types of samples; number of samples; need for shipping and containment; potential needed capability or facility enhancement or upgrade; project schedule, and cost. The feasibility review may include input from partner facilities authorization processes to ensure that facility specific factors have been considered.

To ensure that a Pre-Application and eventual application is submitted with the highest possible degree of feasibility, it is imperative that potential proposers establish contact with an NSUF Technical Lead at the earliest possible time. The NSUF Technical Lead will have knowledge of and direct access to the facility or facilities where the work will be performed. It is intended that the Technical Lead should be an integral collaborator on the project and contribute strongly to the application preparation. The Technical Lead will provide guidance in establishing the scope of the project in negotiation with the facility to produce a cost estimate. Should the project be awarded, the Technical Lead will be the primary POC to best ensure the project is performed on schedule and within budget.

Applications deemed not feasible or high risk by the NSUF Program Office will not be considered for NSUF access.

### A.1.6 Readiness Review (only for NSUF Projects)

Prior to final selection, Pre-Applications for NSUF access will be reviewed by the NSUF Program Office to verify the project is ready for NSUF access, as discussed in Part IX, Appendix D Accessing Nuclear Science User Facilities of this CINR FOA. Pre-Applications deemed not ready for NSUF access will not be considered for NSUF access.

### A.1.7 Pre-Applications Invitations

After considering the overall evaluation ratings, available funding, and the other selection factors (see Part V, Section A.5 of this CINR FOA) as needed, DOE will make a final determination of applicants, who will be invited to provide Full Applications.

Applicants, other than NSUF Pre-Application applicants, who are not specifically invited to submit Full Applications may still do so at their own risk. There is no guarantee that uninvited Full Applications will receive a full review; however, all Full Applications will be re-reviewed for NE mission relevance. Only those uninvited Full Applications that demonstrate relevance to the NE mission will be forwarded for technical peer review during the evaluation phase for Full Applications described below in Part V, Section A.4.

NSUF Pre-Applications that do not receive an invitation to submit are not permitted to submit a Full Application.

## A.2 Initial Review Criteria of Full Applications

Prior to a comprehensive merit evaluation, DOE will perform an initial review to determine: (1) the applicant is eligible for an award; (2) the named applicant, PI(s) and collaborators have not changed from the Pre-Application to the Full Application or, if they have, DOE's Contracting Officer has provided signed approval; (3) the information required by the announcement has been submitted; and (4) all mandatory requirements are satisfied. Only applications meeting these initial review criteria will be considered during the merit review and award selection decision.

## A.3 R&D Merit Review Criteria: Full Applications (for R&D and NSUF Projects)

Selection will be made in accordance with the review criteria identified for each area and the program policy factors (other selection factors) listed in Part V, Section A.5 of this FOA. The criteria for the respective FOA areas are identified below along with the relative importance of each criterion or sub-criterion, if applicable. All applications will be point scored and ranked. Applications must be fully responsive to each of the following criteria.

Review of Full Applications shall be based on how well the applications meet or exceed the technical merit criteria provided below and as weighted as described in Table 4. All invited Full Applications submitted under this CINR FOA will be reviewed and scored as described in this CINR FOA. A panel of experts will assess each Full Application's relevance to the NE mission. Multiple technical peer reviewers will evaluate the project for technical merit. Effective partnerships will be incorporated into the overall score, as described in Part V, Section A.1.4.

### A.3.1 Relevancy Criteria

Same criteria used for the R&D Pre-Application (including R&D and NSUF Projects) evaluation phase applies to Full Applications. See Part V, Sections A.1 of this CINR FOA.

### A.3.2 Technical Review Merit Criteria

Applications will be subjected to formal merit review and will be evaluated against the following criteria.

- **Criterion 1 – Advances the State of Knowledge and Understanding and Addresses Gaps in Nuclear Science and Engineering Research**: DOE will evaluate the technical merit of the proposed R&D project, including the extent to which the project advances the state of knowledge and understanding and addresses gaps in nuclear science and engineering research. Evaluation will consider how important the proposed project is to advance knowledge and understanding within the area selected and how well the proposed project advances, discovers, or explores creative, original, or potentially transformative concepts.
- **Criterion 2 – Technical Quality of the Proposed R&D Project**: DOE will evaluate the overall quality/acceptability of the proposed R&D project. In evaluating this criterion, DOE may consider the following: (1) merit, feasibility, and realism of the proposed methodology and approach to the project; (2) schedule, including sequence of project tasks, principal milestones, and times for each task; (3) planned assignment of responsibilities; (4) proposed project efficiencies; and (5) technical expertise available to the applicant in carrying out the project.
- **Criterion 3 – Applicant Team Capabilities, Risks, and Experience**: DOE will evaluate the extent to which the applicant team provides objective evidence that it has the resources and abilities to successfully complete the R&D project in a technically defensible manner. Current activities, relevance, and depth of the organization's experience and capabilities, integration of students, past performance, together with that of the PI, and the adequacy of the requested resources and their supporting justification will all be evaluated as they relate to the likely successful completion of the R&D objectives.

  In evaluating criterion 3, DOE will consider the extent to which the application demonstrates the following:

  - That the capabilities and qualifications of engineering and scientific personnel, PI, and other key contributors are such that they can successfully accomplish the technical scope of the proposed project.
  - That the applicant or respective team members have demonstrated successful experience/past performance, knowledge, and understanding of the business and regulatory requirements for projects of similar size, scope, and complexity in achieving project technical success on time with no significant, unresolved safety and quality issues.
  - The applicant team's identification of, and work with nuclear energy stakeholders, to gain perspective and technical knowledge important to project decisions, and how the applicant will work with stakeholders to best achieve the objectives of this FOA and the project.

  **Note:** REU supplements will be considered as part of the overall technical approach, and will receive consideration based on how well students are integrated into the project in Criterion 3 of the full application review

### A.3.3 Diverse Team Review

DOE may allocate up to 3 points (constituting up to 3% of a maximum achievable technical score based upon the rated merit criteria) to be added to the average, overall technical score

during the merit review process based on the degree to which an application is led by or effectively partners with MSIs, including HBCUs and TCUs. (For a directory of MSIs, please refer to Part III, Section A of this FOA.)

**NOTE:** Diverse teams and partnerships are not required for projects to be evaluated as unquestionably relevant; however, diverse teams and partnerships will increase the average overall score by up to 3 points, based on the project meeting one of the following criteria: (1) the project has a substantive contribution by MSIs as lead or collaborator; (2) the project has a demonstrable contribution by MSIs as lead or collaborator; or (3) the project has some relevant partnership with MSIs as lead or collaborator.

### A.3.4 Readiness Review (only for NSUF Projects)

Prior to final selection, Full Applications for NSUF access will be reviewed by the NSUF Program Office to verify the project is ready for NSUF access, as discussed in Part I, Section B.3.1 of this CINR FOA. Full Applications deemed not ready for NSUF access will not be considered for NSUF access.

Table 4. R&D and NSUF Projects Pre-Applications and Full Applications - Weighting of Evaluation Scores

| **Criterion** | |
|---|---|
| Technical Application – Peer Review | Percentage of Peer Review Score |
| Pre-Applications | |
| Relevancy to the NE mission | Yes/No |
| Feasibility Review (NSUF only) | Yes/No |
| Readiness Review (NSUF only) | Yes/No |
| Technical Merit Category | 100% |
| Diverse Team Review | Up to 3 points (equivalent of up to 3% of the maximum overall technical rating based upon the technical review criteria ratings) |
| Full Applications | |
| Relevancy to the NE mission | Yes/No |
| Readiness Review (NSUF only) | Yes/No |
| Criterion 1: Advances the State of Scientific Knowledge and Understanding and Addresses Gaps in Nuclear Science and Engineering Research | 35% |
| Criterion 2: Technical Quality of the Proposed R&D Project | 35% |
| Criterion 3: Applicant Team Capabilities, Risks, and Experience | 30% |
| Peer Review Score | Sum of ratings<br>x weights |
| Diverse Team Review | Up to 3 points (equivalent of up to 3% of the maximum overall technical rating based upon the technical review criteria ratings) |

## A.4 IRP Merit Review for Full Applications

Selection for the IRP for U.S. university-led projects will be based on the following relevancy and technical merit attributes and criteria and sub-criteria in Part V, Section A.6.1-A.6.3. The criteria are equally important. Review of Full Applications shall be based on how well the applications meet or exceed the technical merit criteria and relevance to the NE mission, as weighted and described in Table 5.

### A.4.1 Initial Review Criteria for IRPs

Same criteria used for the R&D pre-application (including R&D and NSUF Access) evaluation phase applies to IRPs. See Part V, Section A.1.1 of this CINR FOA.

### A.4.2 Relevancy Criteria

Same criteria used for the R&D Pre-Application (including R&D and NSUF Access) evaluation phase applies to IRPs. See Part V, Section A.1.2 of this CINR FOA.

### A.4.3 Technical Review Merit Criteria

- **Criterion 1 – Scientific and/or Technical Merit of the Project:** DOE will evaluate the scientific and technical merit of the proposed IRP, including the extent to which the project advances the state of scientific knowledge and understanding relative to the IRP and addresses key scientific challenges and shifts in research directions towards promising developments. Evaluations will consider how important the proposed project presents a balanced and comprehensive program of research that, as needed, supports experimental, theoretical, and computational efforts and develops new approaches in these areas.
- **Criterion 2 – Appropriateness of the Proposed Method or Approach:** DOE will evaluate the appropriateness of the proposed IRP method or approach, including risk posed by the approach, as well as the extent to which the strategy and plan for the development and operation of the proposed IRP identifies an acceptable approach involving senior/key personnel, the means for achieving integration on the IRP, and plans for leadership and guidance for the scientific and technical direction. DOE shall consider whether the applicant presents a comprehensive management plan for a world-class program that encourages research, including high-risk, high-reward, as well as synergisms among investigators. The organization structure should delineate the roles and responsibilities of senior/key personnel and describes the means of providing external oversight and guidance for scientific and technical direction and approval of the research program. Additionally, DOE will also consider the following:

    - The applicant's plans (if any) for education, outreach, and training in the proposed IRP are appropriate and, if needed, described as part of the scope.
    - Appropriateness and reasonableness of applicant's plans (if any) for external collaborations and partnerships.
    - The roles and intellectual contributions of the IRP lead PI, other investigator(s), and each senior/key person.

- Maximizing the use of other available facilities and existing equipment.
- Relation to existing and planned research programs at the host or collaborator institution.

- **Criterion 3 – Applicant Team Capabilities, Risks, and Experience:** DOE will evaluate the extent to which the applicant team provides objective evidence that it has or can obtain the professional resources and abilities to successfully complete the IRP project in a technically defensible manner. Current activities, relevance, integration of students, and depth of the organization's experience and capabilities, together with that of the PI, will be evaluated as it relates to the likely successful completion of the IRP. DOE will evaluate risk posed by the applicant team. In evaluating this criterion, DOE will consider the extent to which the application demonstrates the following**:**

  - Maximizing the use of other available facilities and existing equipment.
  - The proposed access to existing research space, instrumentation, and facilities at the host institutions and its partners are likely to meet the needs of the proposed IRP.
  - There is adequate access to experimental and computational capabilities as needed to ensure successful completion of the proposed research.
  - The lead institution and the senior/key personnel for the IRP have proven records of success in project, program, and personnel management for projects of comparable magnitude.
  - The plan for recruiting any additional scientific and technical personnel including new senior staff, students, and post-docs is reasonable and appropriate.
  - The IRP leadership has the capability to communicate effectively with scientists of all required disciplines.
  - The IRP lead PI and senior/key personnel will be adequately involved in the proposed IRP, particularly taking into account their potential involvement in other major projects.

  **Note:** REU supplements will be considered as part of the overall technical approach, and will receive consideration based on how well students are integrated into the project in Criterion 3 of the full application review

### A.4.4 Diverse Team Review

DOE may allocate up to 3 bonus points (constituting up to 3% of a maximum achievable technical score based upon the merit ratings given) to be added to the average, overall technical score during the merit review process based on the degree to which an application is led by or effectively partners with MSIs, including HBCUs and TCUs. (For a directory of MSIs, please refer to Part III, Section A of this FOA.

**NOTE:** Diverse teams and partnerships are not required for projects to be evaluated as unquestionably relevant; however, diverse teams and partnerships will increase the average

overall score by up to 3 points, based on the project meeting one of the following criteria: (1) the project has a substantive contribution by MSIs as lead or collaborator; (2) the project has a demonstrable contribution by MSIs as lead or collaborator; or (3) the project has some relevant partnership with MSIs as lead or collaborator.

Table 5. IRP Full Applications - Weighting of Evaluation Scores

| Criterion | |
|---|---|
| Technical Application – Peer Review | Percentage of Peer Review Rating |
| Criterion 1: Scientific and/or Technical Merit of the Project | 35% |
| Criterion 2: Appropriateness of the Proposed Method or Approach | 35% |
| Criterion 3: Applicant Team Capabilities, Risks, and Experience | 30% |
| Peer Review Score | Sum of ratings<br>x weights |
| Relevance to the NE mission | Yes/No |
| Diverse Team Review | Up to 3 points (equivalent of up to 3% of the maximum overall technical rating based upon the technical review criteria ratings) |

## A.5 Other Selection Factors

Program Policy Factors. The Selection Official may consider the following program policy factors in the selection process:

- Degree to which proposed project optimizes/balances/maximizes use of available DOE funding to achieve DOE program goals and objectives, including how those R&D and IRP projects support DOE research. It may also include research portfolio diversity, geographic distribution and/or how the projects support other complementary efforts that, when taken together, will best achieve program research goals and objectives.
- Application selection may optimize appropriate mix of projects to best achieve DOE research goals objectives.
- Cost/Budget considerations, including availability of funding.
- Extent that the applicant has awards in progress, or not completed, from DOE, from a previous year's FOA, or has existing no cost time extensions.
- Demonstrated ability of the applicant to successfully complete projects (including relevant prior projects) and do so within budget and within the specified timeframe of the award.
- Applicability across multiple reactor technologies, including future design types. Proposed cost share that exceeds minimum required amounts on the part of the applicant may be given preferential consideration.
- Projects that contribute to energy equity.
- Projects that support the Justice40 Initiative.

The Selection Official may consider any of the above factors independently in determining the optimum mix of applications that will be selected for support. These factors, while not indicators of the application's merit, may be essential to the process of selecting the application(s) that, individually or collectively, will best achieve the program objectives. Such factors are often beyond the control of the applicant.

**Applicants should recognize that some very good applications might not receive an award because of program policy factors and available funding.** Therefore, the Selection Official may use program policy factors to assist in determining which applications shall receive DOE funding support.

### A.6 Selection

The Selection Official will consider the findings of the merit and risk reviews and may consider any of the Program Policy Factors described above.

### A.7 Review of Risk

Pursuant to 2 CFR subpart 200.205, DOE will conduct an additional review of the risk posed by applications submitted under this FOA. Such review of risk will include:

1. Quality of the application;
2. Reports and findings from audits performed under 2 CFR part 200 or OMB Circular A-133; and
3. Systems maintained under 2 CFR part 180.

DOE may make use of other publicly available information and the history of an applicant's performance under DOE or other Federal agency awards.

Applicants with no prior performance of DOE awards may be asked to provide information about their financial stability and or their ability to comply with the management standards of 2 CFR part 200.

Research, Technology and Economic Security Risk Reviews. Further, as DOE invests in critical infrastructure and funds critical and emerging technology areas, DOE also considers possible vectors of undue foreign influence in evaluating risk. If high risks are identified and cannot be sufficiently mitigated, DOE may elect to not fund the applicant. As part of the research, technology, and economic security risk review, DOE may contact the applicant and/or proposed project team members for additional information to inform the review. This risk review is conducted separately from the technical merit review.

## B. SUMMARY OF THE REVIEW AND SELECTION PROCESS

### B.1 R&D and NSUF Pre-Applications

DOE will evaluate Pre-Application projects against the technical criteria and relevance to the NE mission described in this CINR FOA. This evaluation process will produce a list of

recommended projects for each topic area. DOE will consider the overall evaluation results and program policy factors to select a final set of invited projects to provide a Full Application.

**NOTE:** Applicants not requesting NSUF access, who do not receive a formal invitation from DOE to submit Full Applications in response to the Pre-Application review process may still do so at their own risk. There is no guarantee uninvited Full Applications will receive a full review; however, all Full Applications received will be re-reviewed for relevance to the NE mission. Only uninvited Full Applications determined to be relevant to the NE mission will receive a technical peer review during the evaluation phase for Full Applications.

**NOTE: Applicants requesting NSUF access who are not specifically invited by DOE to submit Full Applications will NOT be allowed to submit Full Applications.** Due to resource limitations within the NSUF, the feasibility review, which is a critical element of NSUF access, will continue only for applications that are specifically invited. An uninvited NSUF application without a complete NSUF feasibility review is incomplete and cannot be re-reviewed for NE mission relevancy.

### B.2 R&D and NSUF Full Applications

Multiple peer reviewers will independently evaluate the applications in accordance with the technical review evaluation criteria described in this CINR FOA. Also, DOE will complete a Relevancy Criteria Review in accordance with the criteria described above. DOE will consider the overall evaluation results and subjective programmatic factors to ultimately recommend a final set of applications for approval by the Selection Official.

### B.3 IRP Full Applications

Multiple technical experts independently evaluate the applications in accordance with the review criteria as described above. Also, DOE will complete a Relevancy Criteria Review in accordance with the criteria described above. Following individual review, reviewers meet as a panel for final recommendation to DOE. DOE will consider the overall evaluation results and program policy factors to ultimately recommend applications for approval by the Selection Official.

Due to the expected complexity of these projects, DOE may require clarification on the contents of application(s) and an opportunity to ask questions regarding the proposed project. As part of the evaluation and selection process for any review cycle, DOE may elect to do pre-selection clarifications. These pre-selection clarifications, if done, will be used for the purposes of clarifying the applications, not supplementing the applications. Use of such pre-selection clarifications neither obligates DOE to make an award nor to use a clarification process for successive review cycles.

### B.4 Reporting of Matters Related to Recipient Integrity and Performance

DOE, prior to making a Federal award with a total amount of Federal share greater than the simplified acquisition threshold, is required to review and consider any information about the applicant that is in the designated integrity and performance system accessible through Sam.gov (see 41 U.S.C. § 2313).

The applicant, at its option, may review information in the designated integrity and performance systems accessible through SAM. The applicant may comment on any information about itself

which a federal awarding agency previously entered that is currently in the designated integrity and performance system accessible through SAM.

DOE will consider any written comments by the applicant, in addition to the other information in the designated integrity and performance system, in making a judgment about the applicant's integrity, business ethics, and record of performance under Federal awards when completing the review of risk posed by applicants as described in 2 CFR 200.205 - Federal awarding agency review of risk posed by applicants.

| |
|---|
| Government Discussions with Applicant The Government may enter into discussions with a selected applicant for any reason deemed necessary, including but not limited to: (1) the budget is not appropriate or reasonable for the requirement; (2) only a portion of the application is selected for award; (3) the Government needs additional information to determine that the recipient is capable of complying with the requirements in 2 CFR part 200 as amended by 2 CFR part 910; and/or (4) special terms and conditions are required. Failure to resolve satisfactorily the issues identified by the Government will preclude award to the applicant. |

## C. ANTICIPATED NOTICE OF SELECTION

DOE anticipates making selection announcements no later than March, 2025.

# PART VI – AWARD ADMINISTRATION INFORMATION

## A. AWARD NOTICES

### A.1 Notice of Selection

Successful applicants will receive written notification that they have been selected for award negotiations. Receipt of a notification letter selecting an application for award negotiations does not authorize the applicant to commence performance of the project. If an application is selected for award negotiations, it is not a commitment by DOE to issue an award nor is it a guarantee of federal government funding. Applicants do not receive an award unless and until award negotiations are complete and the Contracting Officer executes the funding agreement, accessible by the prime recipient in FedConnect.

Applicants must designate a primary and a backup point-of-contact in the SF424 application document with whom DOE will communicate to conduct award negotiations. The applicant must be responsive during award negotiations (i.e., provide requested documentation) and meet the negotiation deadlines. If the applicant fails to do so or if award negotiations are otherwise unsuccessful, DOE will cancel the award negotiations and rescind the selection. DOE reserves the right to terminate award negotiations at any time for any reason.

### A.2 Nondisclosure and Confidentiality Agreements Representations

In submitting an application in response to this CINR FOA, the Applicant represents that:

- It does not and will not require its employees or contractors to sign internal nondisclosure or confidentiality agreements or statements prohibiting or otherwise restricting its employees or contractors from lawfully reporting waste, fraud, or abuse to a designated investigative or law enforcement representative of a federal department or agency authorized to receive such information.
- It does not and will not use any Federal funds to implement or enforce any nondisclosure and/or confidentiality policy, form, or agreement it uses unless it contains the following provisions:

  ‘‘These provisions are consistent with and do not supersede, conflict with, or otherwise alter the employee obligations, rights, or liabilities created by existing statute or Executive order relating to (1) classified information, (2) communications to Congress, (3) the reporting to an Inspector General of a violation of any law, rule, or regulation, or mismanagement, a gross waste of funds, an abuse of authority, or a substantial and specific danger to public health or safety, or (4) any other whistleblower protection. The definitions, requirements, obligations, rights, sanctions, and liabilities created by controlling Executive Orders and statutory provisions are incorporated into this agreement and are controlling.’’

  The limitation and representations above in Part VI, Section A.2 of this CINR FOA shall not contravene requirements applicable to Standard Form 312, Form 4414, or any other form issued by a Federal department or agency governing the nondisclosure of classified information.

Notwithstanding the limitation and representations listed Part VI, Section A.2 of this CINR FOA above, a nondisclosure or confidentiality policy form or agreement that is to be executed by a person connected with the conduct of an intelligence or intelligence-related activity, other than an employee or officer of the U.S. Government, may contain provisions appropriate to the particular activity for which such document is to be used. Such form or agreement shall, at a minimum, require that the person will not disclose any classified information received in the course of such activity, unless specifically authorized to do so by the U.S. Government. Such nondisclosure or confidentiality forms shall also make it clear that they do not bar disclosures to Congress, or to an authorized official of an executive agency or the Department of Justice, that are essential to reporting a substantial violation of law.

### A.3 Notice of Award

An assistance agreement issued by the Contracting Officer is the authorizing award document (excludes NSUF-2 Access Only awards). It normally includes, either as an attachment or by reference, the following: (1) special terms and conditions; (2) applicable program regulations, if any; (3) application as approved by DOE; (4) DOE assistance regulations at 2 CFR part 200, as amended by 2 CFR part 910; (5) National Policy Assurances to be incorporated as award terms; (6) Budget Summary; and (7) Federal Assistance Reporting Checklist, which identifies the reporting requirements.

If an award is made to a DOE national laboratory, it will be made against their existing prime M&O contract with DOE through the work authorization system as outlined in DOE O 412.1A, Admin Change 1. DOE national laboratories remain bound by the terms and conditions of their contract with DOE. DOE O 481.1E., Strategic Partnership Projects, is not applicable.

### A.4 Participants and Collaborating Organizations

If selected for award negotiations, the selected applicant must submit a list of personnel who are proposed to work on the project, both at the recipient and subrecipient level and a list of proposed collaborating organizations prior to award. Recipients will have an ongoing responsibility to notify DOE of changes to the personnel and collaborating organizations and submit updated information during the life of the award.

### A.5 Current and Pending Support

If selected for award negotiations, within 30 days of the selection notice the selectee must submit: 1) current and pending support disclosures and resumes for any new PIs or senior/key personnel, and 2) updated disclosures if there have been any changes to the current and pending support submitted with the application. Throughout the life of the award, the recipient has an ongoing responsibility to submit: 1) current and pending support disclosure statements and resumes for any new PI and senior/key personnel, and 2) updated disclosures if there are changes to the current and pending support previously submitted to DOE.

### A.6 Post Selection Information Requests

If selected for award negotiations, DOE reserves the right to require that selected applicants provide additional or clarifying information regarding the application submissions, the project, the project team, the award requirements, and any other matters related to anticipated award.

## B. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS

### B.1 Administrative Requirements

The administrative requirements for DOE grants are contained in 2 CFR part 200, as amended by 2 CFR part 910 (See: http://ecfr.gov). Grants made to universities, non-profits, and other entities subject to Title 2 CFR are subject to the Research Terms and Conditions located on the National Science Foundation website at http://www.nsf.gov/bfa/dias/policy/rtc/index.jsp.

#### B.1.1 Unique Entity ID and SAM Requirements

Additional administrative requirements for DOE grants are contained in 2 CFR part 25 (see http://www.ecfr.gov/cgi-bin/ECFR?page=browse). Prime awardees must be registered in SAM before submitting an application and must continue to maintain a SAM registration with current information at all times during which it has an active Federal award or an application or plan under consideration by DOE under this CINR FOA. Primes and subawardees at all tiers must obtain Unique Entity ID numbers and provide it to the prime awardee before the subaward can be issued. The prime will provide this valid Unique Entity ID in its application. DOE may not make a Federal award to an applicant until the applicant has complied with all applicable unique entity ID and SAM requirements and, if an applicant has not fully complied with the requirements by the time DOE is ready to make the award, DOE may determine that the applicant is not qualified to receive an award and use that determination as a basis for making an award to another applicant.

#### B.1.2 Subaward and Executive Reporting

Additional administrative requirements necessary for DOE grants to comply with the Federal Funding and Transparency Act of 2006 (FFATA) are contained in 2 CFR, part 170 (see http://www.ecfr.gov/cgi-bin/ECFR?page=browse). Prime awardees must register with the new FFATA Subaward Reporting System (FSRS) database and report the required data on their first tier subawardees. Prime awardees must report the executive compensation for their own executives as part of their registration profile in the SAM.

### B.2 Special Terms and Conditions and National Policy Requirements

The DOE special terms and conditions for use in most grants are located at http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms under "Award Terms".

If the Federal share of any Federal award includes more than $500,000 over the period of performance, post award reporting requirements reflected in 2 CFR part 200, Appendix XII—*Award Term and Condition for Recipient Integrity and Performance Matters,* may also apply to any resultant award made under this CINR FOA.

The National Policy assurances to be incorporated as award terms are located at http://www.nsf.gov/bfa/dias/policy/rtc/appc.pdf and at http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms under Award Terms.

Quality Assurance (QA) to be incorporated as award terms (applicable to educational institutions only). While DOE will normally rely on the institution's quality assurance (QA) system, below are general guidelines that those systems should adhere to, as applicable, for the type of work being done. No separate deliverable is required by this provision, unless the institution's existing QA systems are not compliant with these guidelines, or in the case that the institution identifies that the work to be performed has any special or unique QA requirements. The DOE has the right of access to the university facilities and records for surveillance or inspection. Any surveillance or inspections will be coordinated with the PI.

**Test Planning, Implementation, and Documentation (Research Planning)**

- Test methods and characteristics shall be planned and documented, and the approaches and procedures recorded and evaluated. Characteristics to be tested and test methods shall be specified. The test results shall be documented and their conformance to acceptance criteria evaluated.
- Documentation shall be developed to ensure replication of the work. The researcher/developer shall document work methods and results in a complete and accurate manner. The level of documentation shall be sufficient to withstand a successful peer review. Protocols on generation and safeguarding of data and process development from research shall be developed for consistency of R&D work.
- Laboratory notebooks shall be controlled by a university documented procedure/process. Also, the process for development of intellectual property documentation shall be controlled under university document control procedures/processes.
- If the university identifies any special or unique QA requirements for Test Planning, Implementation, and Documentation, the university shall submit a Test Plan/Research Plan to the funding organization for review and concurrence prior to use.

**Equipment Calibration and Documentation**

The researcher shall specify the requirements of accuracy, precision, and repeatability of measuring and test equipment (M&TE). Depending upon the need for accuracy, precision, and repeatability of M&TE used in research, standard university documented procedures shall be implemented. During the process development stage, and for all R&D support activities, M&TE shall be controlled. The degree of control shall be dependent on the application of the measurement. The university shall have available calibration records documenting instrument calibration to a national standard.

**Procurement Document Control**

University documented procurement document control procedures/processes shall be implemented, if results of initial research work are expected in the next stage of work, and if the pedigree of materials being used could influence the usefulness of the research work results. Procurement document specifications shall be controlled. For development and support activities, the level of procurement document control shall be applied to support a design basis (i.e., engineering design system criteria). If procurement document control requirements apply, the university shall have a documented procedure/process for control of suspect/counterfeit items (S/CI) and have available for submission for DOE review material pedigree records.

**Training and Personnel Qualification**

Personnel performing research activities shall be trained per university documented requirements to ensure work is being conducted properly to prevent rework or the production of unacceptable data. The university shall have available personnel training records for submission for DOE review.

**Records**

In many cases, the notebook or journal of the researcher is the QA record. These documents shall be controlled in accordance with university documented procedure/process, e.g., maintain notebook as a controlled document, maintain copies of critical pages or access-controlled filing when not in use to preserve process repeatability and the QA record. Electronic media may be used to record data and shall be subject to documented administrative controls for handling and storage of data. Work activity records shall be maintained by the university and available for DOE review, upon request, within sixty (60) days of completion of the topic area.

**Data Acquisition/Collection and Analysis**

When gathering data, the researcher shall ensure that the systems and subsystems of the experiment are operating properly. Software systems used to collect data and operate the experiment requires verification that it meets functional requirements prior to collection of actual data. Data anomalies require investigation. When performing data analysis, define the following: (1) assumptions and the methods used; (2) the results obtained so that independent qualified experts can evaluate how data was interpreted; (3) methods used to identify and minimize measurement uncertainty; (4) the analytical models used; and (5) whether the R&D results have been documented adequately and can be validated.

**Peer Review**

Peer reviews shall be performed in accordance with peer review best practices as described in Part V of this CINR FOA. The peer reviews shall be documented and maintained by the university. Peer review documentation and results shall be provided to DOE.

## B.3 Intellectual Property Provisions

The standard DOE financial assistance intellectual property provisions applicable to the various types of recipients are located at http://energy.gov/gc/standard-intellectual-property-ip-provisions-financial-assistance-awards.

## B.4 Interim Conflict of Interest Policy for Financial Assistance

The DOE interim Conflict of Interest Policy for Financial Assistance (COI Policy) can be found at Financial Assistance Letter No. FAL 2022-02 | Department of Energy. This policy is applicable to all non-Federal entities applying for, or that receive, DOE funding by means of a financial assistance award (e.g., a grant, cooperative agreement, or technology investment agreement) and, through the implementation of this policy by the entity, to each Investigator who is planning to participate in, or is participating in, the project funded wholly or in part under the DOE financial assistance award. DOE's interim COI Policy establishes standards that provide a reasonable expectation that the design, conduct, and reporting of projects funded wholly or in part under DOE financial assistance awards will be free from bias resulting from financial

conflicts of interest or organizational conflicts of interest. The applicant is subject to the requirements of the interim COI Policy and within each application for financial assistance, the applicant must certify that it is, or will be by the time of receiving any financial assistance award, compliant with all requirements in the interim COI Policy. The applicant must flow down the requirements of the interim COI Policy to any subrecipient non-Federal entities.

### B.5 Lobby Restrictions

By accepting funds under this award, the applicant agrees that none of the funds obligated on the award shall be expended, directly or indirectly, to influence congressional action on any legislation or appropriation matters pending before Congress, other than to communicate to Members of Congress as described in 18 U.S.C. § 1913. This restriction is in addition to those prescribed elsewhere in statute and regulation.

### B.6 Corporate Felony Conviction and Federal Tax Liability Representations

In submitting an application in response to this CINR FOA, the applicant represents that:

- It is not a corporation that has been convicted (or had an officer or agent of such corporation acting on behalf of the corporation convicted) of a felony criminal violation under any Federal law within the preceding 24 months; and
- It is not a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

For purposes of these representations the following definitions applies:

- A corporation includes any entity that has filed articles of incorporation in any of the 50 states, the District of Columbia, or the various territories of the United States (but not foreign corporations); and
- It includes both for-profit and non-profit organizations.

### B.7 Statement of Federal Stewardship

DOE/NNSA will exercise normal Federal stewardship in overseeing the project activities performed under this award. Stewardship activities include, but are not limited to, conducting site visits; reviewing performance and financial reports; providing technical assistance and/or temporary intervention in unusual circumstances to correct deficiencies which develop during the project; assuring compliance with terms and conditions; and reviewing technical performance after project completion to ensure that the award objectives have been accomplished.

The recipient's responsibilities are listed in Part VI, Section B.6 below:

**Recipient's Responsibilities.** The recipient is responsible for:

- Complying with all award requirements, including performing the activities supported by this award, including providing the required personnel, facilities, equipment, supplies, and services.

- Defining approaches and plans as may be required by this award, submitting the plans to DOE for review, and incorporating DOE's comments.
- Managing and conducting the project activities, including coordinating with DOE management and operating (M&O) contractor(s) as required and as proposed in the recipient's project plan on activities performed under the M&O contract(s) that are related to the project.
- Attending annual program review meetings and reporting project status, if requested by the program.
- Submitting technical reports as stated in the Federal Assistance Reporting Checklist and incorporating DOE comments.
- Completing reporting requirements as outlined in the instructions provided in the awards Attachment B "Federal Assistance Reporting Checklist and Instructions" including:
    - **NE Program Information Collection System (PICS:NE):** NE CINR R&D award PIs are required to complete reporting requirements as outlined in the instructions provided in the awards Attachment B "Federal Assistance Reporting Checklist and Instructions". Information provided in required award reporting will be utilized to populate PICS:NE (PICS:NE data entry will be done by DOE using information provided by the PI). PIs may be asked by the DOE PICS:NE representative for additional information during the initial work package setup process to accurately document the project plan, as well as through the award's project period to populate information in PICS:NE. PIs may be requested to provide additional assistance for clarification purposes in assuring accuracy of the information being entered into PICS:NE.
    - **NE Program Accrual Information:** DOE policy requires the monthly tracking of uncosted obligations on financial assistance awards in the DOE accounting system to assist DOE in accomplishing more accurate project management and to more accurately recognize Department liabilities to the recipient. DOE personnel do this internally by subtracting paid costs and any costs accrued (yet to be paid incurred costs of the recipient) from the amounts obligated on the financial assistance award. In accomplishing this, DOE may request the recipient provide additional cost accrual information to accurately estimate/document the accrual in the DOE accounting system. If such information is needed, it will typically be done on awards over $1M and DOE will normally do this using an e-mail to the recipient requesting the recipient identify the dollar value of work it has performed each month but not yet invoiced (or done a Treasury system draw on) as of month end. Recipients will cooperate with DOE in providing the needed cost accrual information.

**NOTE:** There are limitations on recipient responsibilities and authorities in the performance of the project activities. Performance of the project activities must be within the scope of the Statement of Objectives, the terms and conditions of the grant, and the funding and schedule constraints.

### B.8 Fraud, Waste, and Abuse

The mission of the DOE Office of Inspector General (OIG) is to strengthen the integrity, economy, and efficiency of the Department's programs and operations, including deterring and detecting fraud, waste, abuse, and mismanagement. The OIG accomplishes this mission primarily through investigations, audits, and inspections of DOE activities to include grants, cooperative agreements, loans, and contracts.

The OIG maintains a hotline for reporting allegations of fraud, waste, abuse, or mismanagement. To report such allegations, please visit https://www.energy.gov/ig/ig-hotline.

Additionally, recipients of DOE awards must be cognizant of the requirements of 2 CFR 200.113 Mandatory disclosures, which states:

> The non-Federal entity or applicant for a federal award must disclose, in a timely manner, in writing to the Federal awarding agency or pass-through entity all violations of Federal criminal law involving fraud, bribery, or gratuity violations potentially affecting the Federal award. Non-Federal entities that have received a federal award including the term and condition outlined in appendix XII of 2 CFR Part 200 are required to report certain civil, criminal, or administrative proceedings to SAM.gov. Failure to make required disclosures can result in any of the remedies described in 2 CFR 200.339. (See also 2 CFR part 180, 31 U.S.C. § 3321, and 41 U.S.C. § 2313.) [85 FR 49539, Aug. 13, 2020)

Applicants and subrecipients (if applicable) are encouraged to allocate sufficient costs in the project budget to cover the costs associated for personnel and data infrastructure needs to support performance management and program evaluation needs, including but not limited to independent program and project audits to mitigate risks for fraud, waste, and abuse.

## C. REPORTING

Reporting requirements are identified on the Federal Assistance Reporting Checklist, DOE F 4600.2, attached to the award agreement. A sample checklist is available at http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms under Award Forms.

**NOTE:** A new award may be delayed due to delinquent reporting, including delinquent final reports for past awards.

**NOTE:** The DOE F 4600.2 identifies in box 4.E "Other Reporting", a marked checkbox titled "Other (see special instructions)", which requires submission of the following:

- **Work Package Template** (one time submission) – Completed and submitted by the PI to assist DOE with populating general award information in the PICS:NE system. The template is due no later than 08/31/2025 for awardees in the above listed areas. The Work Package should contain milestones that are appropriate, meaningful and measurable, over the life of the project.

- **Quad Chart** (semi-annual submission) – The chart is completed and submitted by the PI to provide NE program managers and technical leads with a quick "snapshot" look at R&D progress.

# PART VII – QUESTIONS/AGENCY CONTACTS

## A. QUESTIONS

Interested parties are encouraged to ask questions as early in the CINR FOA process as possible. Questions and comments concerning this CINR FOA shall be submitted no later than five (5) business days prior to the application due date. Questions submitted after that date may not allow the Government sufficient time to respond.

Questions regarding the content of this CINR FOA must be submitted to NEUP@inl.gov. Questions or concerns can also be directed to the Agency Contact listed in Part VII, Section B of this CINR FOA. PIs are not allowed to contact Federal POCs or other POCs who may have an advisory role to NE. Questions regarding topic areas may be submitted to NEUP@inl.gov and a response from the applicable DOE federal and technical POCs will be relayed back to the inquirer. Inquiries regarding topic areas and technical questions can be submitted in this manner until Full Applications are submitted.

Answers to submitted questions containing information about the CINR FOA, topic areas and technical questions, or the FOA process that would be necessary for the preparation of applications will be posted to www.NEUP.gov as soon as practical. Information provided to a potential applicant in response to its request will not be disclosed if doing so would reveal the potential applicant's confidential business strategy and/or is otherwise protected. DOE will try to respond to a question within three (3) business days unless a similar question and answer have already been posted on the website.

## B. AGENCY CONTACT

Name: Andrew Ford
E-mail: fordaj@id.doe.gov

## C. INFORMATIONAL WEBINAR

DOE holds a webinar each year to discuss the structure and execution of this FOA, including major updates from previous years, including topic areas. Applicants can watch and participate in the live webinars and submit questions, through the webinar interface, to be answered in real time. Registration information and webinar presentations are available on www.NEUP.gov for review by applicants.

# PART VIII – OTHER INFORMATION

## A. AMENDMENTS

Notices of any amendments to this announcement will be posted on www.FedConnect.net and www.Grants.gov and will also be posted as a courtesy on www.NEUP.gov. It is recommended that the website is checked frequently at www.NEUP.gov to ensure you receive timely notice of any amendments or other announcements.

## B. GOVERNMENT RIGHT TO REJECT OR NEGOTIATE

DOE reserves the right, without qualification, to reject any or all applications received in response to this announcement and to select any application, in whole or in part, as a basis for negotiation and/or award.

## C. COMMITMENT OF PUBLIC FUNDS

The Contracting Officer is the only individual who can make awards or commit the Government to the expenditure of public funds. A commitment by anyone other than the Contracting Officer, either explicit or implied, is invalid.

Funding for all awards is contingent upon the availability of funds appropriated by Congress for the purpose of this program.

## D. PROPRIETARY APPLICATION INFORMATION

Patentable ideas, trade secrets, proprietary or confidential commercial or financial information, disclosure of which may harm the applicant, should be included in an application only when such information is necessary to convey an understanding of the proposed project. The use and disclosure of such data may be restricted, provided the applicant includes the following legend on the first page of the project narrative and specifies the pages of the application which are to be restricted:

> "The data contained in pages [Insert pages] of this application have been submitted in confidence and contain trade secrets or proprietary information, and such data shall be used or disclosed only for evaluation purposes, provided that if this applicant receives an award as a result of or in connection with the submission of this application, DOE shall have the right to use or disclose the data herein to the extent provided in the award. This restriction does not limit the government's right to use or disclose data obtained without restriction from any source, including the applicant."

To protect such data, each line or paragraph on the pages containing such data must be specifically identified and marked with a legend similar to the following:

> "The following contains proprietary information that (name of applicant) requests not be released to persons outside the Government, except for purposes of review and evaluation."

## E. EVALUATION AND ADMINISTRATION BY NON-FEDERAL PERSONNEL

In conducting the merit review evaluation, the Government may seek the advice of qualified non-Federal personnel as reviewers. The Government may also use non-Federal personnel to conduct routine, nondiscretionary administrative activities. The applicant, by submitting an application, consents to the use of non-Federal reviewers/administrators. Non-Federal reviewers must sign COI and non-disclosure agreements prior to reviewing an application. Non-Federal personnel conducting administrative activities must sign a non-disclosure agreement.

## F. INTELLECTUAL PROPERTY DEVELOPED UNDER THIS PROGRAM

Patent Rights. Domestic small businesses and domestic nonprofit organizations will receive the patent rights clause at 37 CFR 401.14, i.e., the implementation of the Bayh-Dole Act. This clause permits domestic small business and domestic non-profit organizations to retain title to subject inventions.

Class Patent Waiver. For applicant's that are not domestic small businesses or nonprofit organizations, the Office Nuclear Energy (NE) Class Patent Waiver W(C) 2020-002 may be applicable to an award made under this announcement. The class patent waiver will provide applicants, not subject to the Bayh-Dole Act, the option to retain title to their own inventions, subject to the same government retained rights identified in the Act above. To receive the class waiver, an applicant, must agree to provide statutory minimum cost share required under the award and agree to substantially manufacture technology created under the award in the U.S., or provide other economic benefits to the U.S. in accordance with the U.S. Competitiveness provision set forth in the above-referenced class patent waiver.

Advance and Identified Waivers. Applicants not covered by a Class Patent Waiver or the Bayh-Dole Act may request a waiver of all or any part of the U.S. rights in inventions conceived or first actually reduced to practice in performance of an award this announcement, in advance of or within 30 days after the effective date of the award. Even if such advance waiver is not requested or the request is denied, the recipient will have a continuing right under the award to request a waiver of the rights of the U.S. in identified inventions, i.e., individual inventions conceived or first actually reduced to practice in performance of the award. Any patent waiver that may be granted is subject to certain terms and conditions in 10 CFR 784.

Rights in Technical Data. Normally, the Government has unlimited rights in technical data created under a DOE agreement. Delivery or third-party licensing of proprietary software or data developed solely at private expense will not normally be required except as specifically negotiated in a particular agreement to satisfy DOE's own needs or to ensure the commercialization of technology developed under a DOE agreement.

Special Protected Data Statutes. This program is covered by a special protected data statute. These special protected data statutes apply to only those applicants who cost share. The provisions of the statute provide for the protection from public disclosure, for a period of up to five (5) years from the development of the information, of data that would be a trade secret, or commercial or financial information that is privileged or confidential, if the information had been obtained from a non-Federal party. Generally, the provision entitled, Rights in Data - Programs Covered Under Special Protected Data Statutes (Item 4 under 2 CFR 910, Appendix A to Subpart D), would apply to an award made under this announcement. This provision will identify

data or categories of data first produced in the performance of the award that will be made available to the public, notwithstanding the statutory authority to withhold data from public dissemination and will also identify data that will be recognized by the parties as protected data.

Copyright. The recipient and subrecipients may assert copyright in copyrightable works, such as software, first produced under the award without DOE approval. When copyright is asserted, the government retains a paid-up nonexclusive, irrevocable worldwide license to reproduce, prepare derivative works, distribute copies to the public, and to perform publicly and display publicly the copyrighted work. This license extends to contractors and others doing work on behalf of the government.

U.S. Manufacturing. On June 7, 2021, in connection with a 100-day review of critical supply chains as directed under E.O. 14017, America's Supply Chains, the DOE Science and Energy Determination of Exceptional Circumstances (S&E DEC) was announced as part of a series of new policy actions to support U.S. job creation and bolster the domestic manufacturing supply chain. As a result, the Intellectual Property Provisions requires that any products embodying any subject invention or produced through the use of any subject invention will be manufactured substantially in the U.S. unless the recipient can show to the satisfaction of DOE that it is not commercially feasible.

The standard DOE financial assistance intellectual property provisions applicable to various types of recipients are located at:
https://energy.gov/gc/standard-intellectual-property-ip-provisions-financial-assistance-awards

## G. NOTICE REGARDING ELIGIBLE/INELIGIBLE ACTIVITIES

Political Activities. Eligible activities under this program include those which describe and promote the understanding of scientific and technical aspects of specific energy technologies, but not those that encourage or support political activities such as the collection and dissemination of information related to potential, planned, or pending legislation.

Export Controls. The United States government regulates the transfer of information, commodities, technology, and software considered to be strategically important to the United States to protect national security, foreign policy, and economic interests without imposing undue regulatory burdens on legitimate international trade. There is a network of federal agencies and regulations that govern exports that are collectively referred to as "Export Controls." All recipients and subrecipients are responsible for ensuring compliance with all applicable United States Export Control laws and regulations relating to any work performed under a resulting award.

The recipient must immediately report to DOE any export control violations related to the project funded under the DOE award, at the recipient or subrecipient level, and provide the corrective action(s) to prevent future violations.

Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment. As set forth in 2 CFR 200.216, recipients and subrecipients are prohibited from obligating or

expending project funds (federal funds and recipient cost share) to procure or obtain; extend or renew a contract to procure or obtain; or enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Section 889 of Public Law 115-232, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

See Public Law 115-232, Section 889, 2 CFR 200.216, and 2 CFR 200.471 for additional information.

## H. NO-COST TIME EXTENSIONS

Unilateral no-cost time extensions will NOT be permitted to awards made under this CINR FOA. All no-cost time extensions must provide adequate justification and receive approval from the Contracting Officer. No-cost time extensions should be requested as soon as the need is identified within the last year of the award.

A request for a no-cost time extension on existing NE funded projects must be made at least 90 calendar days prior to the project end date. Any request outside of this period will need to be substantially justified and receive approval from the Contracting Officer. One no-cost time extension request may be granted for up to 12 months, pending review and approval. No-Cost Time Extension instructions can be found here.mailto:NEUP@inl.gov

## I. REBUDGET REQUEST

Any rebudget request where the cumulative amount of such change is expected to exceed 10 percent of the total budget as last approved by the Federal awarding agency must be requested in writing (see 2 CFR 200.308). The request must include a detailed budget justification, and an updated budget in the same format that was used in the original application. Any request for the purchase of equipment exceeding $5,000 must be requested in writing to include a valid quote, and justification for purchase.

Budget forms can be found at: https://www.energy.gov/management/downloads/sf-424-research-and-related-budget-rr

## J. CONFERENCE SPENDING

The recipient shall not expend any funds on a conference not directly and programmatically related to the purpose for which the grant was awarded that would defray the cost to the United States government of a conference held by any executive branch department, agency, board, commission, or office for which the cost to the United States government would otherwise exceed $20,000, thereby circumventing the required notification by the head of any such executive branch department, agency, board, commission, or office to the inspector general (or senior ethics official for any entity without an inspector general), of the date, location, and number of employees attending such conference.

## K. ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT (OECD) NUCLEAR ENERGY AGENCY (NEA) NUCLEAR EDUCATION, SKILLS AND TECHNOLOGY (NEST) PROGRAM

Incremental funding is potentially available through participation in the Department of Energy's interactions with the Organization for Economic Cooperation and Development (OECD) Nuclear Energy Agency (NEA) Nuclear Education, Skills and Technology (NEST) program for the following topic areas:

- Topic Area 1: Reactor Development and Plant Optimization
- Topic Area 10: Licensing, Safety, and Security
- IRP-1: Grand Challenge IRP – Accelerating Reactor Development

NEST ties together university research projects across multiple countries to provide students a fuller professional experience as they pursue their degrees. NEST funds are provided to allow travel for students to interact with colleagues in other NEST countries in accordance with NEST program rules. Applications submitted to this Topic Area do not require NEST participation. Access to NEST funds do require investigators to agree to participate in NEST. Investigators must clearly indicate in their application if they are willing to join as a NEST project or not. For more information visit: Nuclear Energy Agency (NEA) - Nuclear Education, Skills and Technology (NEST) Framework (oecd-nea.org).

NOTE: Anticipated budget requirements for NEST participation must not be included in an application submitted to this topic area. NEST funding received by successful applicants will not be included or tracked as part of the overall project budget and not subject to inclusion in project financial reporting. Additionally, participation in NEST will not be a factor considered in the review of applications.

# PART IX – APPENDICES/REFERENCE MATERIAL

**Appendix A:** Topic areas for U.S. University-led R&D Projects and NSUF Access with R&D (NSUF-1) Projects

**Appendix B:** Topic areas for U.S. University-led IRPs

**Appendix C:** Topic areas for U.S. University-, National Laboratory-, or Industry-led NSUF Access Only (NSUF-2) Projects

**Appendix D:** Accessing Nuclear Science User Facilities

**Appendix E:** Draft Nuclear Science User Facilities User Agreement

# Appendix A: Topic areas for U.S. University-led R&D Projects and NSUF Access with R&D (NSUF-1) Projects

**TOPIC AREA 1 - REACTOR DEVELOPMENT AND PLANT OPTIMIZATION**

**(ELIGIBLE TO LEAD: UNIVERSITIES ONLY; UP TO 3 YEARS AND $1,000,000; NEST ELIGIBLE, SEE PART VIII, SECTION K)**

Advanced reactor concepts have the potential to offer significant benefits, including lower costs, enhanced safety and security, greater resource utilization, and simplified operations. NE performs research and development (R&D) to support a range of advanced reactor concepts, including high temperature gas-cooled reactors (HTGRs), sodium-cooled fast reactors (SFRs), molten salt reactors (MSRs), microreactors, and other concepts. Proposals are being sought for activities that could help reduce the technical risks associated with these designs. Some potential challenges that could be addressed include, but are not limited to, advanced reactor component development and testing; advanced reactor transient and safety analysis, including experiments for software validation; innovative solutions to material and operational challenges presented by molten salts (as distinct from fuel development described in Topic Area 5); core and system design optimization or modifications; characterization of system changes over time, such as to the reflector geometry in pebble-bed reactors; optimization of fueling strategies; and materials surveillance during reactor operations.

Additionally of interest are advances in reactor development, design, and testing that improve technical, cost, safety, and security metrics associated with advanced reactor technologies across a broad range of sizes, coolants, fuels, neutron spectra, and applications. NE is also interested in research related to plant optimization including, but not limited to, siting; economics; construction and scheduling outcomes; reducing cost and deployment timelines; remote deployment of reactors; environmental justice and equity considerations; secure operations; and other relevant topics of interest. Activities related to non-traditional and non-electric applications for nuclear energy are also of interest including the development and testing of hardware supporting the integration of nuclear reactors with process heat applications such as pyrolysis, hydrothermal liquefaction, or $CO_2$ separation and purification, including intermediate heat exchangers and thermal transport components required for interfacing nuclear reactors.

Proposals should clearly identify the challenge being addressed and how proposed activities will advance the development, demonstration, and future deployment of advanced reactor concepts.

**TOPIC AREA 2 – EXISTING PLANT OPTIMIZATION**

**(ELIGIBLE TO LEAD: UNIVERSITIES ONLY; UP TO 3 YEARS AND $1,000,000)**

The United States benefits from the largest existing fleet of nuclear reactors in the world. Maintaining access to the carbon-free energy supplied by our current fleet of nuclear reactors is essential to reducing carbon emissions. To support this goal, NE is seeking proposals for research projects to develop technologies or other solutions to significantly reduce operating costs, improve economic competitiveness of existing plants, and extend plant operational lifetimes.

Reduced operating costs could arise from innovation in areas including, but not limited to, implementation of human-factors-informed digital technologies, risk-informed reductions in security conservatism, and plant asset management. Meanwhile, research underpinning the scientific bases for reactor power uprates and reactor restarts also have the potential to increase the clean power capacity of our nation's electric grid. Similarly, understanding the aging of structures, systems, and components (SSCs), have the potential to optimize and extend the safe, cost-effective operational lifetimes of existing reactors.

Successful proposals in this topic area will pioneer discoveries, methods, and solutions that bolster the economic and technical sustainability of the current fleet of nuclear reactors.

Proposals should clearly identify the challenge being addressed and how proposed activities will advance the technology.

**TOPIC AREA 3 – NUCLEAR FUEL RECYCLE TECHNOLOGIES**

**(ELIGIBLE TO LEAD: UNIVERSITIES ONLY; UP TO 3 YEARS AND $1,000,000)**

Deployment of advanced nuclear reactors will inevitably introduce new challenges for devising and implementing an efficient, safe, secure, and economical nuclear fuel cycle that meets society's need for clean energy and expectations for environmental stewardship. Innovative technologies and processes for the recovery, recycle and reuse of valuable components from used nuclear fuel such as uranium, transuranic elements, noble metals and cladding, including development of transmutation targets to destroy long lived isotopes, will enable sustainable nuclear energy development.

NE seeks proposals for R&D on advanced fuel recycle technologies that have the potential to improve resource utilization and energy generation, reduce long-term radiotoxicity, reduce waste generation, and incorporate the highest standards of safety and security. Specific emphasis is on:

- Developing advanced fuel recycling technologies for used fuel from existing and advanced reactors and
- Addressing fundamental materials separations and recovery challenges that present significant degrees of technical risks and financial uncertainties.

Areas for emerging technologies and future research directions are described in the following workshop reports: (1) Innovative Separations R&D Needs for Advanced Fuel Cycles (https://info.ornl.gov/sites/publications/Files/Pub172641.pdf),
and (2) Technology and Applied R&D Needs for Molten Salt Chemistry (https://www.ornl.gov/sites/default/files/Molten%20Salt%20Workshop_Final_092917.pdf).

**TOPIC AREA 4 – FUELS**

**(ELIGIBLE TO LEAD: UNIVERSITIES ONLY; UP TO 3 YEARS AND $1,000,000)**

NE has cooperated with U.S. fuel suppliers to develop accident tolerant fuel (ATF) concepts with significant support from the U.S national laboratories and universities. Near-term concepts include coated zirconium cladding and doped UO2 pellets. Longer term concepts include iron-chromium-aluminum cladding, silicon carbide composite cladding, and high uranium density fuels. Proposals are sought, but not limited to, areas that can contribute to enhancing LWR safety and performance, including potential applications of ATF concepts to next generation Small Modular Reactors (SMRs).

Silicon Carbide fuel cladding is being studied as part of the ATF Program in order to provide robust safety performance for high temperature thermal hydraulic transient conditions. Proposals are sought for activities that enable the goal of licensing silicon carbide cladding for operating in light water reactors (LWR) and helium-cooled fast and thermal reactors. Potential focus areas could include, but are not limited to, non-destructive evaluation methods, quality assurance characterization techniques, and advances in silicon carbide fuel cladding fabrication methods.

TRISO-particle fuel has demonstrated robust safety performance for high temperature applications. Numerous U.S. companies are pursuing the use of TRISO fuel in their advanced high temperature reactor concepts. Proposals are sought for activities that enable the goal of licensing and operating nuclear reactors that utilize TRISO fuel. Potential focus areas could include, but are not limited to, a comprehensive understanding of fuel and fuel matrix properties under irradiated conditions; addressing unique challenges associated with the use of TRISO fuel in non-typical (i.e., non-helium) environments; and activities to evaluate or develop novel TRISO-fuel forms, including new fuel kernel compositions.

Metallic fuels for advanced reactors can operate in open or closed fuel cycles. Both open and closed metal fuel cycle applications place a high priority on manufacturability, economics, safety, and resource utilization. Proposals are sought, but not limited to, research that will develop and evaluate new or already proposed metallic fuel innovations. Bond-free metallic fuel concepts have led towards annular fuel concepts which introduce very different irradiation behavior and add additional challenges in the manufacturing and assembly process. Ideally, results will support modeling of metallic fuel performance.

Molten salt fuels are liquid fuels used in several molten salt reactor (MSR) concepts in which the fissile material is dissolved in a molten fluoride or molten chloride solution. Typically, the molten salt fuel also serves as the MSR primary coolant/heat transfer media. There continues to be a need to support the design and optimization of MSRs by characterizing and modeling the thermophysical and thermochemical properties of molten salt solutions as well as the atomic level structure and chemistry of potential molten salt fuels as a function of composition. Molten salt fuel R&D under this topic area also needs to be expanded to address the process chemistry and technology needs and gaps of entire molten salt entire fuel cycle. In 2023 a workshop was held at Argonne National Laboratory on the MSR Fuel Cycle Chemistry R&D needs. The Molten Salt Reactor Fuel Cycle Chemistry Workshop Report*

**TOPIC AREA 4 – FUELS**

**(ELIGIBLE TO LEAD: UNIVERSITIES ONLY; UP TO 3 YEARS AND $1,000,000)**

summarizes the current state of the art and identifies R&D needs under the following nine headings: 1)conversion of fuel sources to salt; 2)fresh fuel salt purification; 3)scale-up of fuel synthesis, packaging and delivery; 4)fuel salt characterization and qualification; 5)technologies for recovering actinides; 6)used salt purification for recycle; 7)recovery and transmutation of long-lived isotopes; 8)noble metal and insoluble fission product recovery; and 9)safeguards approaches for liquid fuels and fuel cycle facilities. *https://publications.anl.gov/anlpubs/2024/02/187645.pdf

Proposals should clearly identify the challenge being addressed and how proposed activities will advance the technology.

**TOPIC AREA 5 – DISPOSAL RESEARCH**

**(ELIGIBLE TO LEAD: UNIVERSITIES ONLY; UP TO 3 YEARS AND $1,000,000)**

The Disposal Research area seeks to develop a sound technical basis for multiple viable disposal options, identify and research sources of uncertainty that challenge the viability of disposal concepts, increase confidence in robustness of disposal concepts to site-specific complexity, and develop the science and engineering tools required to address these needs. The areas of highest priority for disposal research are described in the following document: Sevougian, et al. 2019, 'DOE SFWST Campaign R&D Roadmap Update Rev. 1' SAND2019-9033R, which can be found at https://www.osti.gov/biblio/1559571. Topics of interest could include, but are not limited to, the following topics.

1. **Improving THMC Modeling through Improving Interfaces between Various Model Scales**

Over the past several years, process models for various performance aspects of waste form, canister materials, and back fill behavior under the Thermal-Hydrological-Mechanical-Chemical (THMC) conditions expected in a repository have been developed for spent fuel. Individually, these models have been developed at nano, molecular, micro or macro scales. Incorporating these diverse model scales into a system model becomes challenging, and can result in significant computation run times, instabilities, and convergence issues. Approaches to address these issues, including developing high-fidelity surrogate models employing machine learning (ML) and artificial Intelligence (AI) techniques, are being sought.

2. **Improving Geologic Characterization through Field Tests**

The Spent Fuel and Waste Science and Technology (SFWST) program has developed geologic mapping and cross-section structural data for the continental United States (see https://gis.inl.gov/regionalgeology/). Scientific methodologies are being sought for both laboratory and field evaluation of the performance of geological features and processes. This would include development of pertinent sensor technologies, as well as computational or experimental methodologies.

3. **Improving PA Models through Improved Uncertainty Quantification**

The long-term disposal of high-level nuclear waste may exceed conventional human timescales (e.g., one million years.) The high-level waste components, particularly long-lived radionuclides that contribute to dose to the accessible environment, are important when considering the performance of a repository. A repository may rely on an approach to isolate waste by using multiple engineered and natural barriers, with various uncertainties inherent in the performance of the barriers. Over the past several years, uncertainty quantification has been incorporated into system performance assessment models. Further evaluation and development of uncertainty quantification methodology is solicited, including approaches that enable higher fidelity performance assessments.

Proposals should clearly identify the challenge being addressed and how proposed activities will advance the technology.

**TOPIC AREA 6 – STORAGE AND TRANSPORTATION RESEARCH**

**(ELIGIBLE TO LEAD: UNIVERSITIES ONLY; UP TO 3 YEARS AND $1,000,000)**

Spent nuclear fuel (SNF) will continue to be stored, until a determination on final disposition is made, in welded steel canisters. The SNF canisters are typically fabricated from 5/8-inch thick (Type 304 or 316) stainless steel and stored either vertically, in concrete casks, or horizontally, in concrete modules. The U.S. Nuclear Regulatory Commission has identified key safety functional areas for SNF storage, including retrievability, thermal performance, confinement, radiation protection, and subcriticality. It is important to demonstrate that these safety functions are met during extended storage and after transportation. The areas of highest priority for storage and transportation are described in the following document: Teague et al. 2019, 'Gap Analysis to Guide DOE R&D in Supporting Extended Storage and Transportation of Spent Nuclear Fuel: An FY2019 Assessment', SAND2019- 15479R, which can be found at https://www.osti.gov/servlets/purl/1592862. Topics of interest could include, but are not limited to, the following topics.

1. **3D Imaging of SNF Canister Internals**
   There is a requirement to maintain configuration control of the SNF canister internals to prevent criticality and to facilitate retrieving the contents for possible future reasons. There are several 3-D imaging technologies used in other applications that could possibly be adapted to imaging the interior on an SNF canister to determine the condition and location of the fuel, cladding, and hardware. There is an opportunity for a research project to develop an imaging technology to enhance the accuracy, precision, and speed of the 3-D rendering.

2. **Canister Fill – geometric stability, moderator exclusion, neutron poisoning**
   There is a potential in some of the older SNF canisters that were designed for storage- and/or transportation-only for the neutron poisons to be insufficient to prevent criticality during the life of the repository under all probable circumstances, including accident scenarios and water ingress. There is an opportunity for a research project to develop a technology that provides the necessary geometric stability, moderator exclusion, and neutron absorbing/poisoning for the fuel, assemblies, and internals of such canisters, by introducing a material that performs these functions with minimal damage to the canister. The material could be solid beads, solid foam, liquid, or gas, which could be injected through existing vent and drain valves, drilled holes, hot tap valves, or other resealable opening; the process must introduce minimal heat and vibration. Total fill is not essential, only enough to prevent criticality under the circumstances listed above.

3. Structural Health Monitoring of the SNF Canister Wall
The SNF canister structure is the primary containment boundary for the radioactive contents of the canister, so it's important to monitor the structural health of the canister walls. Chlorine induced stress corrosion cracking in the longitudinal fabrication welds and heat affected zones is a postulated mechanism for breaching the canister walls. Therefore, there is an opportunity for a research project to develop a structural health monitoring (SHM) technology that can

**TOPIC AREA 6 – STORAGE AND TRANSPORTATION RESEARCH**

**(ELIGIBLE TO LEAD: UNIVERSITIES ONLY; UP TO 3 YEARS AND $1,000,000)**

detect the existence of such cracks, including their initiation or propagation, in the SNF canister while inside its dry storage cask or module.

4. Novel Materials and/or Manufacturing Methods for Impact Limiters
Spent nuclear fuel (SNF) and high-level radioactive waste (HLW) are commonly transported in the US in Type B packages that are right cylinders with impact limiters on either end to protect the package and its contents in the event of a transport accident. Impact limiters consist of a metal shell filled with energy-absorbing materials, including plastic foams and metal honeycombs. During an accident, impact limiters function by being crushed and absorbing impact forces. The materials encased in the shell are therefore crucial for the proper function of impact limiters. Furthering the NE mission to advance nuclear energy science and technology to meet U.S. energy, environmental, and economic needs, research and development on novel materials and/or manufacturing methods to be used as Type B impact limiters are sought. NE is particularly interested in research projects supporting the efficient and cost-effective fabrication of impact limiters that 1) meet U.S. Nuclear Regulatory Commission certification requirements in 10 CFR Part 71, and 2) use manufactured materials (and not natural materials, such as wood).

Proposals should clearly identify the challenge being addressed and how proposed activities will advance the technology.

**TOPIC AREA 7 – PUBLIC PERCEPTIONS OF AN INTEGRATED WASTE MANAGEMENT SYSTEM (ELIGIBLE TO LEAD: UNIVERSITIES ONLY; UP TO 3 YEARS AND $1,000,000)**

The DOE Office of Nuclear Energy's Office of Integrated Waste Management (IWM) is preparing to construct one or more federal interim storage facilities (CISF), sited using a consent-based process, ready to receive commercial spent nuclear fuel (SNF) as soon as practicable. A consent-based siting process prioritizes the well-being and needs of people and communities, centers upon equity and environmental justice, and is collaborative, phased, and adaptive. The siting and operations of the facility or facilities will involve extensive meaningful public engagement, broad participation, planning, emergency responder training, and more. IWM will need to understand the factors that may influence the long-term vision, design, construction, and maintenance of a major infrastructure development project (e.g., CISF), as well as to gain public trust and confidence for the successful transport of SNF and subsequent operation of interim storage and final disposal facilities.

In support of these efforts, IWM seeks innovative research projects related to 1) facility designs that are reflective of community values and 2) public perceptions about SNF transportation, storage, and disposal. Proposals should clearly identify the challenge being addressed and how the proposed activities will advance IWM efforts.

**TOPIC AREA 8 – MODELING AND SIMULATION**

**(ELIGIBLE TO LEAD: UNIVERSITIES ONLY; UP TO 3 YEARS AND $1,000,000)**

Science-based, verified, and validated modeling and simulation capabilities are essential for the design, implementation, and operation of nuclear energy systems and fuel cycle technologies. This topic area focuses on nuclear energy related modeling and simulation projects that develop or improve tools for many different applications including, but not limited to: high fidelity reactor modeling, including neutronics, structural dynamics, and thermal hydraulics; multi-scale, multi-physics models for characterizing complex neutron kinetics, dynamics, microstructural, and thermomechanical phenomena; verification and validation; uncertainty quantification; and flow modeling, among other relevant areas.

Applications under this Topic Area should primarily focus on development or improvement of modeling tools, while the use or benchmarking of modeling and simulation tools, including the generation of supporting data, would need to be included in one of the other Topic Areas that best relates to the reactor, fuel type or technology being investigated or supported. Proposals should clearly identify the challenge being addressed and how proposed activities will advance the technology.

**TOPIC AREA 9 – MEASURING, MONITORING, AND CONTROLS**

**(ELIGIBLE TO LEAD: UNIVERSITIES ONLY; UP TO 3 YEARS AND $1,000,000)**

Robust sensors, instrumentation, and controls are needed to enhance capabilities, provide for higher accuracy, and to accommodate new and challenging operational environments in the existing fleet and advanced reactors. NE seeks proposals for sensor development that add new capabilities to existing technologies or develops novel technologies to support relevant and challenging operational conditions.

NE has identified artificial intelligence (AI) and machine learning (ML) methods can complement the development and operation of sensors, as well as enhance advanced control systems, such as autonomous or remote operations, in the nuclear energy industry. Additionally, the utilization of digital twin platforms is considered a high impact tool as part of the research progression from benchtop experimentation to reactor demonstration.

Topics of interest in this area could include, but are not limited to:

1. Development of AI/ML techniques and/or applications relevant to the current fleet or advanced reactors.
2. Capability enhancement of existing sensor technologies, or development of novel instruments that fill identified measurement technology gaps.
3. Construction of a digital twin to compliment a physical reactor system or architecture.

Applicants with AI/ML focused proposal should provide details regarding training data and discuss whether access to High Performance Computing (HPC) resources will be necessary to complete project objectives.

Applicants with instrumentation focused proposals should provide a roadmap of development anticipated during the project and should provide commentary on experimental testing; whether it is conducted on the benchtop or in relevant reactor conditions.

Applicants with digital twin focused proposals should describe the physical twin system and provide details regarding digital twin operational accuracy validation.

*Note – applications with scope primarily focused on cybersecurity should review and consider applying to Topic Area 10.

Proposals should clearly identify the challenge being addressed and how proposed activities will advance the technology.

**TOPIC AREA 10 – LICENSING, SAFETY, AND SECURITY**

**(ELIGIBLE TO LEAD: UNIVERSITIES ONLY; UP TO 3 YEARS AND $1,000,000; NEST ELIGIBLE, SEE PART VIII, SECTION K)**

There is a continued need for enhancing understanding of licensing and safety requirements as they apply to the safe and secure operations of reactors and all fuel cycle related facilities. NE is seeking proposals in the areas of safeguards and security, nuclear materials control and accountability (MC&A), cybersecurity, safety analysis methods, regulatory frameworks, and systems engineering and integration of these areas.

Topics of interest include, but are not limited to, enhancing the applicability, usability and efficiency of PRA tools or other innovative risk assessment methodologies; combined hazard PRA models; innovative methods and tools for licensing, security, and safeguards of nuclear fuel cycle including advanced reactors, and fuel fabrication and recycling processes; cost-effective means of managing advanced cybersecurity threats; enabling the cyber-secure deployment of advanced digital technologies; and addressing specific gaps in licensing technical requirements for advanced reactors.

Proposals should clearly identify the challenge being addressed and how proposed activities will reduce regulatory uncertainties and/or enhance the safety, security and/or safeguards of the concept being considered**.**

**TOPIC AREA 11 – ADVANCED NUCLEAR MATERIALS AND MANUFACTURING TECHNOLOGIES (ELIGIBLE TO LEAD: UNIVERSITIES ONLY; UP TO 3 YEARS AND $1,000,000)**

Revolutionary technologies in crosscutting materials science have the potential for radical improvement in reactor or fuel cycle performance, safety, and economics. The emerging fleet of advanced reactors is supported by its strongest business case when coupled with advanced materials and manufacturing techniques that offer enhanced performance and/or significant reductions to the costs of original construction and major component replacement. The concepts under consideration include advanced materials and/or classes of materials, and advances in manufacturing with applications ranging from components through complete factory fabrication of reactors for delivery and installation at the site.

NE is seeking proposals for R&D to better understand core and structural materials, advanced testing of existing materials, to explore and develop new classes of materials for identified applications, and to support the development of nuclear qualification, and/or regulatory acceptance of advanced manufacturing processes, methods, equipment, and/or materials or components manufactured using such techniques. Topics of interest most closely related to advanced materials include, but are not limited to, environmental, thermal and irradiation effects on materials, materials to efficiently immobilize fission products and off-gas capture species, development of comprehensive frameworks to characterize and model degradation of key materials, components and structures such as concrete or polymers, development of relevant advanced metal alloys for core materials and cladding, and development of materials to support waste minimization and management, such as sorbents and transmutation targets.

Advanced manufacturing topics of interest include, but are not limited to, processing and fabrication methods for composites, concrete, and metals; joining and repair; and specific applications to components, sub-systems, systems, structures and non-destructive examination. NE recognizes that advanced materials and their manufacturing methods are often not distinct categories of R&D, so it is not necessary to align applications with one of the elements within this topic area.

Proposals are also sought to support the development and characterization of innovative fuel cladding materials for fuel cycle applications. Specific interests in this area include materials design (novel metallic alloy and/or new coating), material performance under extreme conditions (e.g., fuel element-to-cladding and cladding-to-coolant interactions, high temperatures, dose/dose rate, and corrosive chemical environments), material fabrication and manufacturing technologies, and test and characterization capabilities.

Developing capture and immobilization materials for the next generation nuclear fuel recycle plant that reduces the size and associated capital and operating cost to the portions of the facility, while maintaining and improving the safety to the public. In this proposal, we are looking for materials that can effectively capture and immobilize volatile chemical species during the recycling process. Reference: Soelberg, NR, Jubin RT, 2023. *Technology Development Roadmap for Volatile Radionuclide Capture and Immobilization*. Report No. ANL/NSE-23/63.

**TOPIC AREA 11 – ADVANCED NUCLEAR MATERIALS AND MANUFACTURING TECHNOLOGIES (ELIGIBLE TO LEAD: UNIVERSITIES ONLY; UP TO 3 YEARS AND $1,000,000)**

Cermets are composite materials composed of ceramic and metallic phases that possess novel properties, such as flexible capacity, high thermal/electrical conductivity, extra waste loading, robust durability and efficient fabricability. In this proposal, we are looking for ideas to develop innovative cermet composite as a flexible platform to accommodate complex waste streams arising from various advanced fuel cycle designs. Reference: Gattu, VK, Asmussen M, 2023. *Suitability of Cermets as Nuclear Waste Forms; 2023 Cermet Workshop. Report* No. ANL/CFCT-23/47.

Proposals should clearly identify the challenge being addressed and how proposed activities will advance the technology, partner with industrial applications, demonstrate viability, and understanding supply chain challenges

**TOPIC AREA 12 – STRATEGIC NEEDS BLUE SKY**

**(ELIGIBLE TO LEAD: UNIVERSITIES ONLY; UP TO 3 YEARS AND $500,000)**

NE is seeking proposals to advance foundational models, methods, and theory. Maintaining fundamental skills and knowledge in key nuclear engineering topics is important to maintaining and establishing research excellence and expertise. Areas of interest could include, but are not limited to, thermal hydraulics, heat transfer, reactor physics, and nuclear chemistry. A response should address innovative research in the identified area and could include any aspect (experiments, modeling, etc.) that is necessary to accomplish the proposed scope.

Proposals should clearly identify the challenge being addressed and how the proposed activities will advance the proposed technology.

**NUCLEAR SCIENCE USER FACILITIES (NSUF) JOINT R&D AND ACCESS (NSUF-1)**

Applicants interested in a joint R&D and Nuclear Science User Facilities (NSUF) project should submit under this topic area. Proposals with NSUF access can include ion, neutron, and gamma irradiation, x-ray synchrotron beam or neutron beam interrogation, post-irradiation examination, advanced materials characterization, and high-performance computing. Applicants are encouraged to contact the NSUF directly with questions prior to submitting and review the full list of NSUF capabilities at https://nsuf.inl.gov/. In this topic area, R&D support is only permitted for tasks associated with the execution of the requested NSUF capabilities. This would include compilation and interpretation of irradiation and post-irradiation examination results, complementary modeling and simulation studies, and related activities. NSUF readiness requirements are provided in Appendix D.

NSUF is focused on providing access to unique and highly specialized nuclear research facilities and technical expertise to advance nuclear energy technologies that crosscut a range of NE topic areas. These topic areas include, but are not limited to, (1) fuel and core materials, (2) advanced materials and manufacturing technologies, and (3) sensor materials and active components. Separate effects or integral experimental testing focused on verification and validation of modeling and simulation topics that leverage high performance computing is encouraged.

Fuel and Core Materials: Proposals are sought for projects in the areas of fuels irradiation performance and combined effects of irradiation and environment on fuels and materials. Fuel types include, but are not limited to, light-water reactor accident tolerant fuels, oxide fuels, metallic fuels, TRISO-particle fuels, and new innovative fuel concepts. Additional topics of interest under this area include, but are not limited to, existing and innovative cladding materials such as chromium-coated zirconium alloys and silicon-carbide cladding and novel neutron-absorbing materials. Activities can be aimed at irradiation experiments (neutron steady state or transient, ion, and gamma) and post-irradiation examination that utilize NSUF capabilities to explore fundamental, novel, and applied aspects of fuel performance such as radiation damage, amorphization, fuel restructuring, species diffusion, fission product behavior, thermophysical properties, and mechanical properties.

Advanced Materials and Manufacturing Methods: Proposals are sought in the areas of advanced nuclear materials, novel or cost-effective manufacturing methods, and related topics that leverage NSUF irradiation and post-irradiation examination capabilities. For advanced materials, areas of interest include, but are not limited to, the evaluation of materials degradation mechanisms and aging, fundamental or applied irradiation effects, and testing of other nuclear energy related materials. This topic also includes the irradiation and post-irradiation examination of innovative advanced manufacturing technologies to support reductions in construction cost and schedule, and significant performance improvements.

Sensor Materials, Instrumentation, and Active Component Systems: Proposals are sought for irradiation testing and post-irradiation examination that support the development of advanced

| **NUCLEAR SCIENCE USER FACILITIES (NSUF) JOINT R&D AND ACCESS (NSUF-1)** |
| --- |
| sensor materials, and the development of advanced instrumentation or measurement systems to enhance the long-term viability and competitiveness of the existing fleet, and to develop an advanced reactor pipeline, and to implement and maintain national strategic fuel cycle and supply chain infrastructure. For this topic, areas of interest include irradiation testing and post irradiation examination of sensor materials and candidate instrumentation systems. Proposed projects can include irradiations and post-irradiation examination to address fundamental and applied technology gaps.<br><br>Proposals should clearly identify the challenge being addressed and how proposed activities will advance the technology. |

# Appendix B: Topic areas for U.S. University-led IRPs

**IRP-1: GRAND CHALLENGE IRP – ACCELERATING REACTOR DEVELOPMENT**

**(FEDERAL POC – JANELLE EDDINS)**

**(ELIGIBLE TO LEAD: UNIVERSITIES ONLY; UP TO 3 YEARS AND $3,000,000; NEST ELIGIBLE, SEE PART VIII, SECTION K)**

NE's goal of demonstrating several advanced reactor types within this decade resulting in advanced reactor deployment in the 2030s, is a core aspect of addressing U.S. clean energy climate change goals. One of the primary challenges is reducing overall capital and operating and maintenance (O&M) costs while also de-risking the technologies for more rapid adoption by industry. NE solicits applications for this scope that take a holistic, multi-disciplinary approach to reactor deployment considerations for specific reactor technologies. Applications can cover a wide variety of topics including innovative component, instrumentation, and fuel handling systems; design optimization including integrated systems or reducing the size of the core or number of components; technologies to reduce the cost and schedule for construction; and siting infrastructure considerations for remote applications; development of AI/ML applications to improve plant technical, economic, and/or safety performance; and transition from fossil generation sources, including environmental justice considerations. Proposals that suggest innovative ideas for cost reduction or shortening the deployment timeline by developing a holistic, multi-faceted approach, including a focus on key technical needs areas, like nuclear economics, accelerated testing, and reactor/plant design expertise, are desired.

Proposals should clearly identify the challenge being addressed and how proposed activities will accelerate the development, demonstration, and future deployment of advanced reactor concepts.

**IRP -2: GRAND CHALLENGE IRP: ADVANCED REACTOR SNF DISPOSITION**

**(FEDERAL POC – TBD, NE-8)**

**(ELIGIBLE TO LEAD: UNIVERSITIES ONLY; UP TO 3 YEARS AND $3,000,000)**

The DOE Office of Spent Fuel and Waste Disposition is interested in supporting Integrated Research Projects aimed at the development of backend of the fuel cycle considerations for advanced reactor designs that have made significant progress towards demonstration. Through this research, advanced reactor vendors, universities, and national laboratories can partner up to conduct research that will characterize the anticipated spent nuclear fuel (SNF) types and other waste forms. This work will quantify the amount of SNF and other waste forms that would be generated during the operating lifetime of the reactors. This research seeks to determine if advanced reactor SNF types are suitable for disposal in a generic repository site, and the type of treatment(s) that will be required to do so. Other considerations that are part of the integrated waste management system such as advanced reactor SNF transportation and extended storage will be explored. Below are additional considerations that this IRP will explore.

- Advanced reactor designs that will result in the generation of the following SNF types will be considered: TRISO-based SNF fabricated in pebble and compact forms, metallic SNF designed with sodium bond and without it, molten salt SNF, and small modular LWR SNF
- Disposal of advanced reactor SNF in a generic repository research could include but is not limited to performance considerations for repositories with SNF from multiple types of reactors, or single SNF type only repositories (e.g., TRISO SNF only repository); disposal of residuals from treatment of the SNF; heat dispersion technology, evaluations, or strategies; disposal package design and package handling technology; and waste retrievability considerations.
- Transportation and extended storage research for advanced reactor SNF could include but is not limited to considerations and strategies for transport and storage of SNF using existing canister and overpack designs. However, this can be extended to propose conceptual designs for canisters, overpacks, tanks, and containers that could support transportation, and extended storage.
- Treatment of advanced reactor SNF research should only be considered to make an advanced reactor SNF type suitable for disposal in a generic repository. This research could include but is not limited to encapsulation technology such as cermet, polymers, or other coating materials; high and low temperature processes for waste treatment; technology or processes to minimize off gassing of fission products during treatment; waste treatment processes and process technology compatible with hot cell operations, neutron radiation, and radiolysis; and investigation of treated waste forms suitability for transportation and disposal.

Proposals should clearly identify the challenge being addressed and how proposed activities will advance the technology.

**IRP-3: GRAND CHALLENGE RESEARCH AND DEVELOPMENT AT MINORITY SERVING INSTITUTIONS (MSIS)**

**FEDERAL POC – JENNA PAYNE**

**(ELIGIBLE TO LEAD: UNIVERSITIES ONLY; UP TO 3 YEARS AND $3,000,000**

NE's mission is to advance nuclear energy science and technology to meet U.S. energy, environmental, and economic needs. Toward this mission, NE has identified goals to address challenges in the nuclear energy sector, to help realize the potential of advanced technology, and to leverage the unique role of the government in spurring innovation:

- Enable continued operation of existing U.S. nuclear reactors.
- Enable deployment of advanced nuclear reactors.
- Develop advanced nuclear fuel cycles and spent nuclear fuel management options.

This opportunity is restricted to MSI lead institutions, including historically black colleges and universities (HBCUs), tribally controlled colleges and universities, (TCCUs), Asian American and Native American Pacific Islander-serving institution (AANAPISI) and Hispanic-serving institutions (HSIs), as defined in Title III and Title V of the Higher Education Act. This scope solicits applications that address one or more NE mission related technical areas that advance nuclear engineering research and development at MSI institutions.

NE is allowing a flexible framework for consortia construction and recognizes several viable and effective models including partnering in a multi-MSI consortia style model, partnering with national laboratories, other institutions of higher education, or industry collaborators. This scope is intended to develop nuclear expertise and capabilities at Minority Serving Institutions. Therefore, 80% of the total budget request should directly support lead or collaborating partners that are MSIs. Other institutions of higher education, national laboratories, or industry may participate in a supporting capacity at no more than 20% of total budget in composite.

Applications should focus on addressing an important NE mission related topic area with a particular focus on broad student involvement and capacity building to support the next generation workforce in nuclear energy.

Proposals should clearly identify the challenge being addressed and how proposed activities will advance the technology.

# Appendix C: Topic areas for U.S. University-, National Laboratory-, or Industry-led NSUF Access Only (NSUF-2) Projects

**NUCLEAR SCIENCE USER FACILITIES (NSUF) ACCESS ONLY (NSUF-2)**

Applicants interested in utilizing Nuclear Science User Facilities (NSUF) capabilities only should submit under this topic areas. **This topic does not provide R&D support**. Proposals with NSUF access can include ion, neutron, and gamma irradiation, x-ray synchrotron beam or neutron beam interrogation, post-irradiation examination, advanced materials characterization, and high-performance computing. Applicants are encouraged to contact the NSUF directly with questions prior to submitting and review the full list of NSUF capabilities at https://nsuf.inl.gov/. In this topic area, NSUF access can be requested by university, industry, and national laboratory led projects. NSUF readiness requirements are provided in Appendix D.

NSUF is focused on providing access to unique and highly specialized nuclear research facilities and technical expertise to advance nuclear energy technologies that crosscut a range of NE topic areas. These topic areas include, but are not limited to, (1) fuel and core materials, (2) advanced materials and manufacturing technologies, and (3) sensor materials and active components. Separate effects or integral experimental testing focused on verification and validation of modeling and simulation topics that leverage high performance computing is encouraged.

Fuel and Core Materials: Proposals are sought for projects in the areas of fuels irradiation performance and combined effects of irradiation and environment on fuels and materials. Fuel types include, but are not limited to, light-water reactor accident tolerant fuels, oxide fuels, metallic fuels, TRISO-particle fuels, and new innovative fuel concepts. Additional topics of interest under this area include, but are not limited to, existing and innovative cladding materials such as chromium-coated zirconium alloys and silicon-carbide cladding and novel neutron-absorbing materials. Activities can be aimed at irradiation experiments (neutron steady state or transient, ion, and gamma) and post-irradiation examination that utilize NSUF capabilities to explore fundamental, novel, and applied aspects of fuel performance such as radiation damage, amorphization, fuel restructuring, species diffusion, fission product behavior, thermophysical properties, and mechanical properties.

Advanced Materials and Manufacturing Methods: Proposals are sought in the areas of advanced nuclear materials, novel or cost-effective manufacturing methods, and related topics that leverage NSUF irradiation and post-irradiation examination capabilities. For advanced materials, areas of interest include, but are not limited to, the evaluation of materials degradation mechanisms and aging, fundamental or applied irradiation effects, and testing of other nuclear energy related materials. This topic also includes the irradiation and post-irradiation examination of innovative advanced manufacturing technologies to support reductions in construction cost and schedule, and significant performance improvements.

Sensor Materials, Instrumentation, and Active Component Systems: Proposals are sought for irradiation testing and post-irradiation examination that support the development of advanced sensor materials, and the development of advanced instrumentation or measurement systems to enhance the long-term viability and competitiveness of the existing fleet, and to develop an advanced reactor pipeline, and to implement and maintain national strategic fuel cycle and supply chain infrastructure. For this topic, areas of interest include irradiation testing and post irradiation examination of sensor materials and candidate instrumentation systems. Proposed projects can

include irradiations and post-irradiation examination to address fundamental and applied technology gaps.

# Appendix D: Accessing Nuclear Science User Facilities

As previously described in this document, the NSUF provides access, at no cost to the user, to DOE National Laboratory, University, and Industry facilities. Access to these facilities includes the support of the expert technical staff at each facility to ensure that the applicant is able to successfully complete their research. Requesting NSUF access funding is more complex than requesting R&D funding through this FOA. Figure D-1 depicts the process for requesting NSUF access. Note that NSUF Rapid Turnaround Experiments (RTEs) are not part of this FOA, for information on RTEs see NSUF.inl.gov. A list of NSUF topic areas can be found on the topic area index on Table 1.

Role of NSUF Technical Lead

The applicant is required to submit a NSUF Letter of Intent (LOI) and Pre-Application to apply for the FOA. The applicant is expected to work with the NSUF Technical Lead(s) to prepare the Pre-Application. If invited to submit a Full Application, the applicant and NSUF Technical Lead(s) will work together to develop the application and define the scope of the application. If an application requests irradiation at INL, the INL Technical Lead submits an INL Irradiation Work Acceptance (IWA) request which is an approval process required for any irradiation work that may occur at INL.

Developing a successful application for NSUF access requires effort from the applicant, as well as the NSUF Technical Leads who should be included at the earliest possible date. Non-INL Technical Leads are listed as contacts at NSUF.inl.gov/Page/Partners. The NSUF Program Office assigns INL Technical Leads then informs the applicant. If NSUF capabilities are requested at multiple institutions, then multiple Technical Leads will support the application. Because NSUF Technical Leads are an integral part of the application, it is expected that they be listed as Other Collaborators or Personnel in the Pre-Application and in the Full Application.

NSUF Readiness Review Considerations

Project narratives are submitted with both the Pre-Application and the Full Application. A stand-alone detailed description of the readiness of the project is required for NSUF-1 and NSUF-2 access requests. Refer to the following section on NSUF readiness to ensure that all elements, as they pertain to your proposal, are included in the pre-application or full application narratives.

The following items will be reviewed by NSUF program office staff during the readiness reviews. Applicants are strongly encouraged to address all of these items **prior to submitting a Pre-Application** requesting NSUF access. Missing or insufficient information on any of these topics may cause an application to be rejected on readiness grounds. NSUF readiness examines the following aspects:

- Fabrication techniques, processes, and methods on the materials to be studied has been previously established. ***Applicant action***: Show evidence that the project team has successfully executed the proposed fabrication techniques, processes, and methods on the materials to be studied or a similar material.

- Basic thermal, chemical, and physical properties of the proposed material is known to support irradiation design activities. ***Applicant action***: Show evidence that the materials of interest have been fabricated and basic thermal, chemical, and physical properties are known.
- Description on the availability of the fuel, material, or sensor material. ***Applicant action***: Provide a plan for delivery of fuel, material, or sensors for NSUF access. Specific considerations include: (1) Description for when the specimens will be available for irradiation (e.g., neutron, ion, and gamma irradiations) and PIE-only awards. For most applicants, the material should be supplied to NSUF by January 1, 2026. (2) The source of the specimens/materials. For fuels and materials residing in the NSUF NFML, identify the specific specimen(s). For previously irradiated fuels and materials not residing in the NSUF NFML, the location (as specific as possible), condition, provenience, pedigree, radioactivity levels isotopic content, material composition, configuration, ownership, and any other available information that will be needed to ship and/or prepare the fuel or material for examination must be identified. For projects utilizing fuels or materials coming from an on-going irradiation, the current irradiation schedule at time of review will be taken into consideration for determining readiness of the project. (3) Ownership of the materials/specimens. For any fuels or materials supplied for the purpose of neutron irradiation, the applicant must own and have authority to transfer ownership and title (free of any liens, claims of ownership, or other liabilities) to DOE. For fuels or materials coming from other DOE programs (not NSUF), a statement of program commitment is required. If invited to submit a Full Application, a statement that includes concurrence from the appropriate DOE federal program manager or national technical director is to be attached in the Pre-Application in the section titled Post Submission Attachments. (Part IV, C.6).

<u>NSUF User Agreement</u>

**Note:** Access to NSUF capabilities will require agreement and final signature to the User Agreement (copy provided in Part IX, Appendix E). **The terms and conditions of the User Agreement are non-negotiable, and failure to accept the terms and conditions of the User Agreement will terminate processing and review of the NSUF applications.**

- To ensure compliance throughout the application review process, applicants must indicate in the LOI and Full Application submission that the User Agreement has been read, understood, and the terms and conditions are accepted.
- Further, submission of a Pre-Application and a Full Application indicates the applicant will comply with and agree to the terms and conditions of the User Agreement.
- Upon award of an NSUF supported project, the User Agreement must be signed before activities begin on the project. Failure to sign the non-negotiable User Agreement within 30 days of receipt of the User Agreement may result in cancellation of an awarded project.

NSUF Statement of Work Considerations

For all applications, the NSUF Technical Lead(s) will work with the applicant to define the scope in the form of a Statement of Work (SOW). A Pre-Application SOW will be submitted as a "post submission attachment" in the Pre-Application. If invited to submit a Full Application, a Full Application SOW will be submitted prior to the Full Application as a "post submission attachment" in the Pre-Application. At a minimum, the SOW will include the following (as applicable):

- Facilities and equipment required to conduct the experiment,
- Specific requirements for specimen acquisition (e.g., material location, material condition, and fabrication or preparation requirements),
- Specific requirements for irradiation or beam-time (e.g., neutron, gamma or ion beam energy spectrum, target temperature, flux and fluence [or burn-up/dpa] for each specimen, in-pile instrumentation, etc.) including a detailed test matrix; and,
- Specific requirements for post-irradiation examination (PIE) of each specimen (e.g., visual examination, dimensional examinations, tensile testing, radiography, microscopy, etc.) including a detailed test matrix.

The Pre-Application and Full Application SOW (Statement of Work Template) will be utilized by the NSUF facility technical staff to develop an execution plan and cost. Execution Plan details may be included in the Full Application SOW at the discretion of the NSUF Technical Lead and typically addresses the following elements (as applicable):

- Concept for the irradiation device including fabrication and assembly plans;
- Irradiation position and duration (if known);
- Experiment shipping;
- Disassembling and cataloging the experiment;
- Specimen preparation and shipping;
- Specimen examination details;
- Waste disposal; and,
- Resource loaded schedule.

NSUF Access Values will be entered in the corresponding data field in the Full Application by a NEUP.gov website administrator. This occurs after Full Applications are submitted.

The Full Application SOW must contain a summary of the proposed activity, suitable for dissemination to the public. It should be a self-contained document that identifies the following: the name of the applicant; the name of the PI(s); the project title; a list of major deliverables; the scope and objectives of the project; a description of the project, including major tasks (phases, planned approach, etc.) and methods to be employed; the potential impact of the project (i.e., benefits, outcomes); and the names of key/senior personnel (for

collaborative projects). This document must not include any proprietary or sensitive business information as it will be available to the public after awards are made and the project is completed.

After award announcement, several steps occur prior to initiating work. The successful applicant's institution will be required to sign a Non-Proprietary User Agreement with Battelle Energy Alliance. Appendix E contains the standard User Agreement. ***The User Agreement is not negotiable.*** The SOW becomes an appendix in the User Agreement so as to bind the PI to the SOW and define the NSUF policies applicable to the scope of work. A subcontract(s) or work authorization(s), with a total value equal to the previously developed cost estimate, will be placed with NSUF institutions performing the work as defined in the SOW and experiment execution plan. The award is made to the User who is defined as the institution (not the individual) who submitted the Full Application.

NSUF Quality Assurance Requirements

Irradiation of materials in test reactors requires additional rigor and quality assurance requirements beyond those described in other sections of this FOA. Specific requirements will depend on the reactor license, the irradiation vehicle design, and specimen constituents. NSUF Technical leads will assist the PI in understanding the specific requirements early in the process.

Budget Development for NSUF Applications

Applicants for NSUF Access Only projects that do not have an R&D funding component (NSUF-2 topic area) are responsible for costs described below. A letter of commitment from an appropriate authority is required that explains how the applicant will pay for costs similar to:

- Travel costs to NSUF facilities for facility access training, technical meetings, examinations, experiment loading, etc.;
- Applicant salary support;
- Graduate student support;
- Post-doctoral or other researcher support; and,
- Materials and supplies support at the PI's work location.
- To append the Letter of Commitment: 1) Find the submitted Pre-Application in the "My Applications" section of the submission website; 2) Open the submitted Pre-Application by using the 'pencil' icon; 3) Scroll to the bottom of the application form; and 4) Click "Attach File" on the "Post Submission Attachment" section and attach the Letter of Commitment.
    - Name File: 2025 Letter of Commitment "Insert ID #"

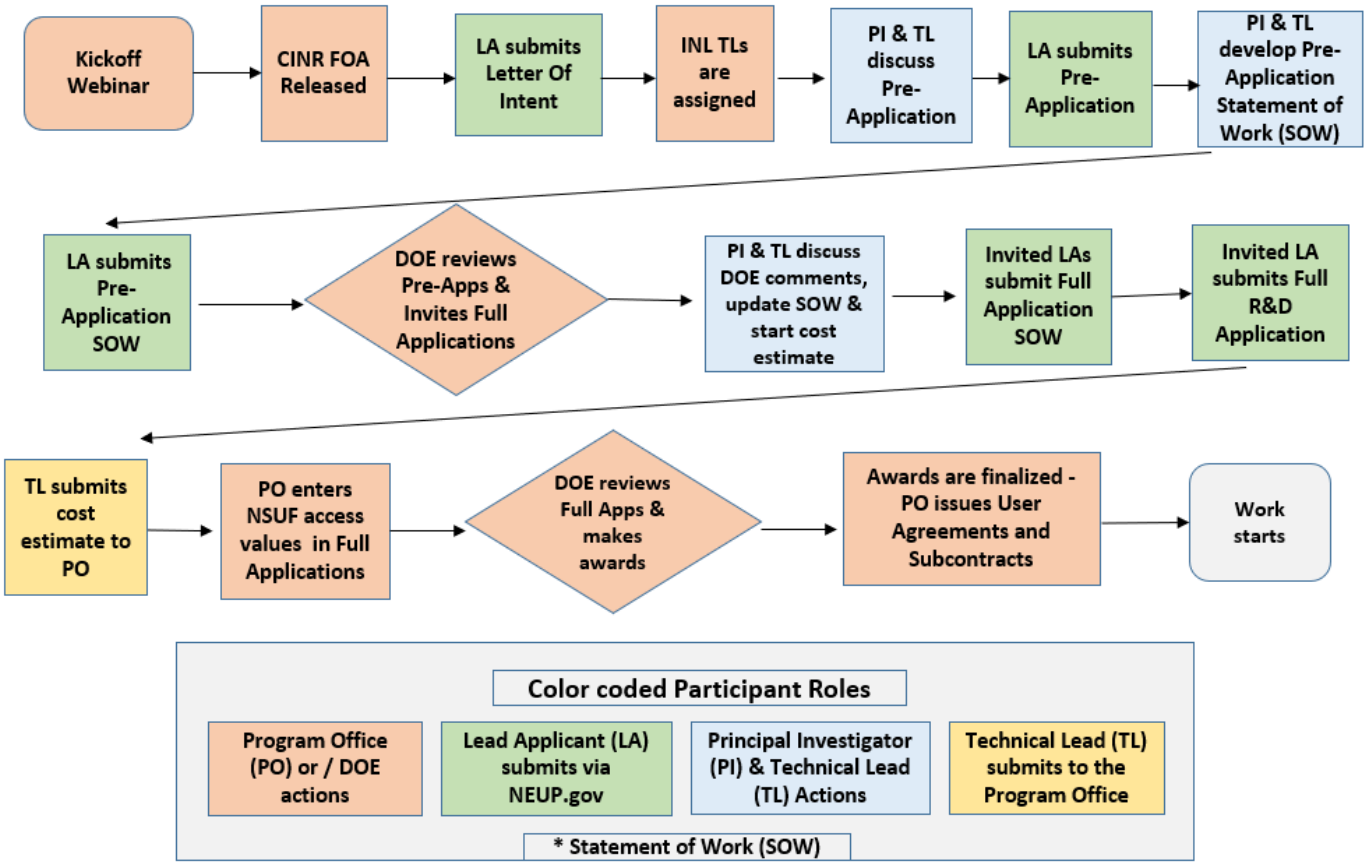
Cancellation of an Award

If the project or any part of the project falls two years or more behind the schedule established in the Full Application SOW, DOE reserves the right to cancel the project or any part of the project without concurrence of the Principal Investigator.

NSUF Nuclear Fuels and Materials Library

The NSUF Nuclear Fuels and Materials Library (NFML), which is owned by NE and curated by the NSUF, is a collection of specialized information and nuclear fuel and material specimens from past and ongoing neutron irradiation test campaigns, as well as real-world components retrieved from decommissioned power reactors, and donations from other sources. The NFML database can be accessed at NSUF.inl.gov. To continue the expansion of the NFML, any specimens created as the result of an awarded NSUF neutron irradiation project will be added to the NFML, including unirradiated archive materials. The Principal Investigator (PI) will be given exclusive rights to the specimens for a three-year period of PIE following completion of the neutron irradiation portion of the project. The specimens will be listed as Not Available in the NFML throughout the three-year exclusivity period. To populate the NFML, the NSUF program office may recommend irradiating a larger number of specimens than required for an awarded project. PIs of all future awarded applications requesting specimens from previously awarded neutron irradiation tests are encouraged to contact the original PI(s) for potential collaboration. Although collaboration with the original PI(s) is encouraged, permission from the original PI(s) to use previously generated materials that are currently Available in the NFML is not required. It is strongly suggested that CINR FOA applicants contact the NFML Coordinator, listed at NSUF.inl.gov/Home/Staff, to confirm availability of specimens to be requested.

Figure D-1. Process for NSUF applications.



## Appendix E: Draft Nuclear Science User Facilities User Agreement

**NOTE:** Access to NSUF capabilities will require agreement and final signature to the User Agreement (copy provided in Part IX, Appendix E). **The terms and conditions of the User Agreement are non-negotiable, and failure to accept the terms and conditions of the User Agreement will terminate processing and review of the NSUF applications.** In order to ensure compliance throughout the application review process, applicants must indicate in the LOI and Full Application submission that the User Agreement has been read, understood, and the terms and conditions are accepted. Further, submission of a pre- application and a Full Application indicates the applicant will comply with and agree to the terms and conditions of the User Agreement. Upon award of an NSUF supported project, the User Agreement must be signed before activities will begin on the project.

Failure to sign the non-negotiable User Agreement within 30 days of receipt of the User Agreement may result in cancellation of an awarded project.

**NOTE:** For Public Institutions residing in the State of Colorado, a version of the User Agreement, compliant with Colorado statute, is available. Contact the NSUF program office for more information.

## Non-Proprietary User Agreement

User Facility Agreement No. xxxxx BETWEEN

BATTELLE ENERGY ALLIANCE, LLC

(" CONTRACTOR")
Operator of The Idaho National Laboratory (hereinafter "Laboratory") under U.S. Department of Energy (DOE) Contract No. DE-AC07-05ID14517

AND

XXXXXXXXXXXXXXXXXX

("USER")

(Collectively, "the Parties")

The obligations of the above-identified DOE Contractor may be transferred to and shall apply to any successor in interest to said Contractor continuing the operation of the DOE Non-Proprietary User Facility involved in this User Agreement.

## ARTICLE I. FACILITIES AND SCOPE OF WORK

Subject to the terms and conditions of this Agreement, CONTRACTOR will make available to employees, consultants and representatives of USER (hereinafter called "Participants") certain Laboratory Non-Proprietary User facilities, which may include equipment, services, information and other material, with or without Laboratory scientist collaboration, for purposes as described in the attached Scope of Work and in accordance with the attached Funding Statement, both of which are incorporated by this reference and are made a part of this Agreement. Amendments to the attached Scope of Work and Funding Statement may be submitted by USER for identifying facilities and purposes during the term of this Agreement (see Article II). Such amendments will be considered to be part of this Agreement upon written acceptance by CONTRACTOR. The attached Scope of Work sets forth a specific project, including deliverables, to be performed pursuant to this Agreement. The Scope of Work and abstracts thereof, shall not be considered proprietary information and shall be publicly releasable. The Parties agree that an initial abstract of the work to be performed shall be deliverable under this Agreement.

## ARTICLE II. TERM OF THE AGREEMENT

This Agreement shall have a term of X years from the effective date. The term of this Agreement shall be effective as of the date on which it is signed by the last of the Parties.

## ARTICLE III: COST

Each Party will bear its own costs and expenses associated with this Agreement unless otherwise agreed to by the Parties or as may otherwise be agreed to by the User and DOE.

## ARTICLE IV: ADMISSION REQUIREMENTS

USERs and Participants are subject to the administrative and technical supervision and control of CONTRACTOR; and will comply with all applicable rules of CONTRACTOR and DOE with regard to admission to and use of the User facility, including safety, operating and health-physics procedures, environment protection, access to information, hours of work, and conduct. Participants shall execute any and all documents required by CONTRACTOR acknowledging and agreeing to comply with such applicable rules of CONTRACTOR. Participants will not be considered employees of CONTRACTOR for any purpose.

## ARTICLE V: PROPERTY AND MATERIALS***

USER may be permitted by Contractor to furnish equipment, tooling, test apparatus, or materials necessary to assist in the performance of its experiment(s) at the USER facility. Such items shall remain the property of USER, except as otherwise provided in this Article. Unless the Parties otherwise agree, all such property furnished by USER or equipment and test apparatus provided by USER will be removed by USER within sixty (60) days of termination or expiration of this Agreement or will be disposed of as directed by USER at User's expense. Any equipment that becomes integrated into the facility shall be the property of the Government. USER acknowledges that any material supplied by USER may be damaged, consumed or lost. USER will return facilities and equipment utilized in their original condition except for normal wear and tear.

CONTRACTOR shall have no responsibility for USER's property in CONTRACTOR's possession other than loss or damage caused by willful misconduct or gross negligence of CONTRACTOR or its employees.

Personal property produced or acquired during the course of this Agreement shall be disposed of as directed by the owner at the owner's expense.

USER represents that it owns and has full authority to transfer ownership and title to any materials it supplies for the purpose of irradiation under this Agreement and those said materials are free of any liens, claims of ownership, or other liabilities. Transfer of materials for irradiation and/or examination under this Agreement, shall constitute a transfer of title of said materials from User to DOE upon delivery of the materials at the Nuclear Science User Facility (NSUF) unless otherwise specified.

After the material has been irradiated, transferred to an examination facility and extracted from the encapsulation and/or holders, the USER will be notified by the CONTRACTOR that the irradiated material is available for examination. The USER will have exclusive research rights to the irradiated material for a period of three (3) years from the date of notification. After the three (3) years, DOE and CONTRACTOR have full discretion to make the irradiated material available to

the general research community, maintain possession, transfer possession, or dispose of the irradiated material. DOE may transfer title to the material at its discretion.

## ARTICLE VI: SCHEDULING***

USER understands that CONTRACTOR will have sole responsibility and discretion for allocating and scheduling usage of the User Facilities and equipment needed for or involved under this Agreement.

## ARTICLE VII: INDEMNITY AND LIABILITY***

**A. Personnel Relationships -** USER shall be responsible for the acts or omissions of Participants.

**B. Product Liability** - To the extent permitted by US and US State law, if USER utilizes the work derived from this Agreement in the making, using, or selling of a product, process or service, then USER hereby agrees to hold harmless and indemnify CONTRACTOR and the United States Government, their officers, agents and employees from any and all liability, claims, damages, costs and expenses, including attorney fees, for injury to or death of persons, or damage to or destruction of property, as a result of or arising out of such utilization of the work by or on behalf of USER, its assignees or licensees.

**C. General Indemnity** - To the extent permitted by US and US State law, USER hereby agrees to indemnify and hold harmless CONTRACTOR and the United States Government, their officers, agents and employees from any and all liability, claims, damages, costs and expenses, including attorney fees, for injury to or death of persons, or damage to or destruction of property, to the extent such liability, claims, or damages is caused by or contributed to the negligence or intentional misconduct of USER or its employees or representatives during the performance of the work under this Agreement.

***D. Patent and Copyright Indemnity—Limited - To the extent permitted by US and US State law, USER shall fully indemnify the Government and CONTRACTOR and their officers, agents, and employees for infringement of any United States patent or copyright arising out of any acts required or directed or performed by USER under the Agreement to the extent such acts are not normally performed at the facility.***

**E.** The liability and indemnity provisions in paragraphs B, C and D above shall not apply unless USER shall have been informed as soon as practicable by CONTRACTOR or the Government of the suit or action alleging such infringement, and such indemnity shall not apply to a claimed infringement that is settled without the consent of USER unless required by a court of competent jurisdiction.

**F. General Disclaimer -**
THE GOVERNMENT AND CONTRACTOR MAKE NO EXPRESS OR IMPLIED WARRANTY AS TO THE CONDITIONS OF THE USER FACILITY FURNISHED HEREUNDER. IN ADDITION, THE GOVERNMENT, CONTRACTOR AND USER MAKE NO EXPRESS OR IMPLIED WARRANTY AS TO THE RESEARCH OR ANY INTELLECTUAL PROPERTY, GENERATED INFORMATION, OR PRODUCT MADE OR DEVELOPED UNDER THIS AGREEMENT, OR THE OWNERSHIP,

MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE OF THE RESEARCH OR RESULTING PRODUCT; THAT THE GOODS, SERVICES, MATERIALS, PRODUCTS, PROCESSES, INFORMATION, OR DATA TO BE FURNISHED HEREUNDER WILL ACCOMPLISH INTENDED RESULTS OR ARE SAFE FOR ANY PURPOSE INCLUDING THE INTENDED PURPOSE; OR THAT ANY OF THE ABOVE WILL NOT INTERFERE WITH PRIVATELY OWNED

RIGHTS OF OTHERS. THE GOVERNMENT, CONTRACTOR AND/OR USER SHALL NOT BE LIABLE FOR SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES ATTRIBUTED TO USE OF SUCH FACILITIES, RESEARCH OR RESULTING PRODUCT, INTELLECTUAL PROPERTY, GENERATED INFORMATION, OR PRODUCT MADE OR DELIVERED UNDER THIS AGREEMENT.

## ARTICLE VIII: PATENT RIGHTS***

### A. Definitions

1. “Subject Invention” means any invention or discovery conceived or first actually reduced to practice in the course of or under this Agreement.
2. "USER Invention" means any Subject Invention of USER.
3. “CONTRACTOR Invention” means any Subject Invention of CONTRACTOR.
4. "Patent Counsel" means the DOE Counsel for Intellectual Property assisting the DOE Contracting activity.

### B. Subject Inventions

CONTRACTOR and USER agree to disclose their Subject Inventions, which includes any inventions of their Participants, to each other, concurrent with reporting such Subject Inventions to DOE.

### C. CONTRACTOR’s Rights

Except as provided below in the case of joint inventions, CONTRACTOR Inventions will be governed by the provisions of CONTRACTOR’S Prime Contract for operation of the User facility.

### D. USER’s Rights

Subject to the provisions herein, USER may elect title to any USER Invention and in any resulting patent secured by USER within one year of reporting the subject invention to DOE. The USER shall file a US patent application within a reasonable period of time. Where appropriate, the filing of patent applications by USER is subject to DOE security regulations and requirements.

### E. Joint Inventions

For Subject Inventions conceived or first actually reduced to practice under this Agreement that are joint Subject Inventions made by CONTRACTOR and USER, each Party shall have the option to elect and retain title to its undivided rights in such joint Subject Inventions.

## F. Rights of Government

1. USER agrees to timely assign to the Government, if requested, the entire right, title, and interest in any country to each USER Invention where USER:
   a. Does not elect to retain such rights; or
   b. Fails to timely have a patent application filed in that country on the USER Invention or decides not to continue prosecution or not to pay the maintenance fees covering the Invention; or
   c. At any time, no longer desires to retain title.
2. USER shall provide the Government a copy of any application filed by USER promptly after such application is filed, including its serial number and filing date.
3. USER hereby grants to the Government a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the USER Invention made under said project throughout the world.
4. USER acknowledges that the DOE has certain March-in Rights to any USER Inventions elected by the USER in accordance with 48 C.F.R. 27.304-1(g) and that the USER is subject to the requirements with respect to preference for U.S. industry pursuant to 35 U.S.C. § 204 to any USER Inventions elected by the USER.
5. The USER agrees to include, within the specification of any U.S. patent applications and any patent issuing thereon covering a USER Invention, the following statement: "The Government has rights in this invention pursuant to a USER Agreement (specify number) between (USER name) and (CONTRACTOR Name), which manages and operates (name of Laboratory) for the US Department of Energy."
6. USER agrees to submit on request periodic reports to DOE no more frequently than annually on the utilization of USER Inventions or on efforts to obtain such utilization that are being made by USER or its licensees or assignees.
7. Facilities License: USER agrees to and does hereby grant to the Government a nonexclusive, nontransferable, irrevocable, paid-up license in and to any inventions or discoveries, regardless of when conceived or actually reduced to practice or acquired by USER, which are incorporated in the User Facility as a result of this Agreement to such an extent that the facility is not restored to the condition existing prior to the Agreement (1) to practice or to have practiced by or for the Government at the facility, and (2) to transfer such licenses with the transfer of that facility. The acceptance or exercise by the Government of the aforesaid rights and license shall not prevent the Government at any time from contesting the enforceability, validity or scope of, or title to, any rights or patents herein licensed.

## G. Invention Report and Election

USER shall furnish the Patent Counsel a written report concerning each USER Invention within six months after conception or first actual reduction to practice, whichever occurs first. If USER wished to elect title to the Invention, a notice should be submitted with the report or within one year of such date of reporting.

## ARTICLE IX: RIGHTS IN TECHNICAL DATA***

### A. Definitions:

1. "Technical Data" means recorded information regardless of form or characteristic, of a scientific or technical nature. Technical Data as used herein does not include financial reports, costs analyses, and other information incidental to Agreement administration.
2. "Proprietary Data" means Technical Data which embody trade secrets developed at private expense, outside of this agreement, such as design procedures or techniques, chemical composition of materials, or manufacturing methods, processes, or treatments, including minor modifications thereof, provided that such data:
   - **a.** Are not generally known or available from other sources without obligation concerning their confidentiality.
   - **b.** Have not been made available by the owner to others without obligation concerning their confidentiality
   - **c.** Are not already available to the CONTRACTOR or the Government without obligation concerning their confidentiality.
   - **d.** Are marked as “Proprietary Data.”
3. "Unlimited Rights" means right to use, duplicate, or disclose Technical Data, in whole or in part, in any manner and for any purpose whatsoever, and to permit others to do so.

### B. Allocation of Rights

1. The Government shall have Unlimited Rights in Technical Data first produced or specifically used in the performance of this Agreement except as otherwise provided in this Agreement.
2. USER shall have the right to use for its private purposes, subject to patent, security or other provisions of this Agreement, Technical Data it first produces in the performance of this Agreement provided the data delivery requirements of this Agreement have been met as of the date of the private use of such data; and Technical Data first produced by CONTRACTOR, if any, under this Agreement. USER agrees that to the extent it receives or is given access to Proprietary Data or other technical, business or financial data in the form of recorded information from DOE or a DOE contractor or subcontractor, USER shall treat such data in accordance with any restrictive legend contained thereon, unless use is specifically authorized by prior written approval of the Contracting Officer.

### C. Deliverables

1. USER agrees to furnish to DOE or CONTRACTOR those data, if any, which are (a) specified to be delivered in Appendices, (b) essential to the performance of work by CONTRACTOR personnel or (c) necessary for the health and safety of such personnel in the performance of the work. Any data furnished to DOE or CONTRACTOR shall be deemed to have been delivered with unlimited rights unless marked as "Proprietary Data" of USER.
2. Upon completion or termination of the project, USER agrees to deliver to DOE and CONTRACTOR a nonproprietary report describing the work

performed under this Agreement.

**D. Legal Notice**

The following legal notice shall be affixed to each report or publication resulting from this Agreement which may be distributed by USER:

DISCLAIMER NOTICE

This document was prepared by __ as a result of the use of facilities provided through the U.S. Department of Energy (DOE) Nuclear Science User Facilities program, which is managed by Battelle Energy Alliance, LLC, acting under Contract No.DE-AC-07-05ID14517. Neither Battelle Energy Alliance, LLC, DOE, the U.S. Government, nor any government contractors, nor other persons and facilities performing work under this Agreement or acting on behalf of any of the above: (a) make any warranty or representation, express or implied, with respect to the information contained in this document; or (b) assume any liabilities with respect to the use of, or damages resulting from the use of any information contained in the document.

**E. Copyrighted Material**

**1.** USER agrees to, and does hereby grant to the Government, and to its officers, agents, servants and employees acting within the scope of their duties:

**a.** A royalty-free, nonexclusive, irrevocable license to reproduce, translate, publish, use, and dispose of and to authorize others so to do, all copyrightable material first produced or composed in the performance of this Agreement by USER, its employees or any individual or concern specifically employed or assigned to originate and prepare such material; and

**b.** A license as aforesaid under any and all copyrighted or copyrightable works not first produced or composed by USER in the performance of this Agreement but which are incorporated in the material furnished or delivered under the Agreement, provided that such license shall be only to the extent USER now has, or prior to completion or final settlement of the Agreement may acquire, the right to grant such license without becoming liable to pay compensation to others solely because of such grant.

**2.** USER agrees that it will not knowingly include any copyrightable material furnished or delivered under this Agreement without a license as provided for in subparagraph 1(b) hereof, or without the consent of the copyright owner, unless it obtains specific written approval of the Contracting Officer for the inclusion of such copyrighted materials.

**F. Disclosure of Proprietary Data**

In the absence of a properly executed and effective non-disclosure agreement between USER and CONTRACTOR, the USER shall not bring Proprietary Data into the USER facility except at USER's own risk and any such data, regardless how it is marked, shall be deemed Technical Data and shall be treated according to this article of this Agreement.

**ARTICLE X: LABORATORY SITE ACCESS, SAFETY AND HEALTH*****

As a precondition to using CONTRACTOR facilities, Participants must complete all CONTRACTOR Site Access documents and requirements. USER and participant shall take all reasonable precautions in activities carried out under this Agreement to protect the safety and health of others and to protect the environment. Participants must comply with all applicable safety, health, access to information, security and environmental regulations and the requirements of the Department and CONTRACTOR, including the specific requirements of the User Facility covered by this Agreement. In the event that USER or Participant fails to comply with said regulations and requirements, CONTRACTOR may, without prejudice to any other legal or contractual rights, issue and order stopping all or any part of USER's activities at the User Facility.

**Article XI: PERSONNEL RELATIONSHIPS*****

Participants will remain employees or representatives of the USER at all times during their participation in the work under this Agreement and shall not be considered employees of CONTRACTOR or DOE for any purpose. Participants shall be subject to the administrative and technical supervision and control of CONTRACTOR during and in connection with the Participant's activities under this Agreement.

**ARTICLE XII: EXPORT CONTROLS*****

USER acknowledges that the export of goods or Technical Data may require some form of export control license from the U.S. Government and that failure to obtain such export control license may result in criminal liability under the laws of the United States.

**ARTICLE XIII: PUBLICATIONS*****

**A.** USER and CONTRACTOR will provide each other copies of articles of any publication of information generated pursuant to this Agreement for review and comment fourteen (14) days prior to publication.

**B.** USER will not use the name of CONTRACTOR or the United States Government or their employees in any promotional activity, such as advertisements, with reference to any product or service resulting from this Agreement, without prior written approval of the Government and CONTRACTOR.

**ARTICLE XIV: DISPUTES*****

The parties will attempt to jointly resolve all disputes arising under this agreement. If the parties are unable to jointly resolve a dispute within a reasonable period of time, either party may contact the laboratory's Technology Transfer Ombudsman (TTO) to provide assistance. The TTO may work directly to resolve the dispute or, upon mutual agreement of the parties, contact a third-party neutral mediator to assist the parties in coming to a resolution. The costs of the mediator's services will be shared equally by the parties. In the event that an agreement is not reached with the aid of the ombudsman or mediator, the parties may agree to have the dispute addressed by neutral evaluation. The decision rendered by the neutral evaluator shall be nonbinding on the parties, and any costs incurred there from shall be divided equally between the parties. Upon mutual agreement, the parties may request a final decision by the DOE Contracting Officer. Absent resolution, either party may seek relief in a court of competent jurisdiction.

**ARTICLE XV: CONFLICT OF TERMS*****

This Agreement constitutes the primary document which governs the work described in the attached Appendices. In the event of any conflict between the terms of this document and any other document issued by either Party, the terms of this document shall prevail.

**ARTICLE XVI: TERMINATION*****

Either Party may terminate this Agreement for any reason at any time by giving not less than thirty (30) days prior written notice to the other Party. Notice will be deemed made as of the day of receipt. The obligations of any clause of this Agreement, which by their nature extend beyond its termination, shall remain in full force and effect until fulfilled.

**BATTELLE ENERGY ALLIANCE, LLC (CONTRACTOR):**

**BY:** _____

**Signature**

**NAME:** _____

**Printed**

**TITLE:** Deputy Laboratory Director, Science & Technology

**DATE:** _____

**User's Formal Name (USER):**

**BY:** _____

**Signature**

**NAME:** _____

**Printed**

**TITLE:** _____

**DATE:** _____

**ADDRESS:** _____

**TELEPHONE:** _____

**User Principal Investigator Acknowledgment**

**I, XXXXXXXX, have read and hereby acknowledge the above terms and conditions.**

**BY:** _____

**Signature**

**TITLE:** _____

**DATE:** _____

**ADDRESS:** _____

**TELEPHONE:** _____

***** Any changes to the *** or substantive changes to the non *** provisions will require formal written approval by DOE.**