

**FINANCIAL ASSISTANCE
FUNDING OPPORTUNITY ANNOUNCEMENT**



U. S. Department of Energy

Idaho Operations Office

Fiscal Year 2019

**Scientific Infrastructure Support for Consolidated
Innovative Nuclear Research**

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LIST OF ACRONYMS

ARC	Advanced Reactor Concepts
ATR	Advanced Test Reactor
CCR	Central Contractor Registration
CFA	Call for Application
CFDA	Catalog of Federal Domestic Assistance
CFR	Code of Federal Regulations
CINR	Consolidated Innovative Nuclear Research
COI	Conflict of Interest
CTD	Crosscutting Technology Development
DE	Department of Energy (FOA Number)
DOE	Department of Energy
DUNS	Data Universal Number System
EPAct	Energy Policy Act of 2005
FC R&D	Fuel Cycle Research and Development
FDO	Federal Demonstration Partnership
FFATA	Federal Funding and Transparency Act of 2006
FFRDC	Federally Funded Research and Development Center
FOA	Funding Opportunity Announcement
FSRS	FFATA Subaward Reporting System
FY	Fiscal Year
GOGO	Government Owned/Government Operated
GSI	General Scientific Infrastructure
ICHMI	Instrumentation, Control, Human, Machine Interface
ID	Identification
IRP	Integrated Research Project
LWRS	Light Water Reactor Sustainability
M&O	Management and Operating
M&TE	Measuring and Test Equipment
MOOSE	Multiphysics Object Oriented Simulation Environment
MS	Mission Supporting
MSI	Minority Serving Institution
NE	Office of Nuclear Energy
NEAMS	Nuclear Energy Advanced Modeling and Simulation

NEET	Nuclear Energy Enabling Technologies
NEUP	Nuclear Energy University Program
NS&E	Nuclear Science & Engineering
NGNP	Next Generation Nuclear Plant Demonstration Project
NSUF	Nuclear Science User Facilities
NNSA	National Nuclear Security Administration
NPPs	Nuclear Power Plants
PD	Program Directed
PDF	Adobe Portable Document Format
PIE	Post-irradiation Examination
PI	Principal Investigator
POC	Point of Contact
QA	Quality Assurance
R&D	Research and Development
RC RD&D	Reactor Concepts Research, Development and Demonstration
RPA	Request for Pre-Applications
RPS	Radioisotope Power Systems
RPV	Reactor Pressure Vessel
RTR	Research and/or Test Reactor
SAM	System for Award Management
SBIR	Small Business Innovation Research
SF	Standard Form
SMR	Small Modular Reactors
STTR	Small Business Technology Transfer
TAC	Total Allowable Costs
U.S.	United States

PART I – FUNDING OPPORTUNITY DESCRIPTION

A. STATEMENT OF OBJECTIVES

This Funding Opportunity Announcement (FOA) is for Scientific Infrastructure Support for Consolidated Innovative Nuclear Research and university research reactor upgrades for the U.S. nuclear research community. It is referred to in this document as the “Infrastructure FOA.”

A.1 Background and Objectives

The Department of Energy’s (DOE) Office of Nuclear Energy (NE) provides funding to support crosscutting nuclear energy research and development (R&D) and associated infrastructure support activities, to develop innovative technologies that offer the promise of dramatically improved performance for advanced reactors and fuel cycle concepts, while maximizing the use of DOE resources.

The development of nuclear energy-related infrastructure and basic capabilities in the research community is necessary to promote R&D that supports nuclear science and engineering (NS&E), DOE-NE’s mission, and the Nation’s nuclear energy challenges. Accordingly, DOE intends to enable the education and training of nuclear scientists, engineers, and policy-makers in graduate and undergraduate study, and two-year programs, as well as R&D that is relevant to the Department and the nuclear energy industry in general.

The Nuclear Energy University Program (NEUP) utilizes up to 20 percent of funds appropriated to NE’s R&D program for university-based infrastructure support and R&D in key NE program-related areas:

- Fuel Cycle Research and Development (FC R&D)
- Reactor Concepts Research, Development and Demonstration (RC RD&D)
- Nuclear Energy Advanced Modeling and Simulation (NEAMS)

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

- Support, maintain, or enhance the institutions’ capacities to attract and teach high quality students interested in nuclear energy-related studies;
- Build the institutions’ research or education capabilities; or
- Enhance the institutions’ capabilities to perform R&D that is relevant to DOE-NE’s mission.

NE reserves the right to respond to potential shifts in priorities during FY2019 that may be driven by events, policy developments, or Congressional/budget direction. NE will factor such considerations into decisions related to the timing and scale of award announcements associated with this FOA.

A.2 Major NE-Funded Research Programs

Information on the current DOE-NE research programs can be found at the Office of Nuclear Energy’s website: <https://energy.gov/ne/mission>.

B. RELATED COLLABORATIVE OPPORTUNITES

Utilization of equipment acquired as a result of this Infrastructure FOA may enhance or benefit currently funded or proposed NE R&D. Therefore, opportunities exist to leverage R&D applications as outlined below.

Nuclear Science User Facilities (NSUF)

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

- This mission is supported by providing access to state-of-the-art experimental irradiation testing and post-irradiation examination facilities, at no cost to the user, as well as technical assistance in design and analysis of reactor experiments.
- Through NSUF, university, national laboratory, and industry researchers and their collaborators are building on current knowledge to better understand the complex behavior of materials and fuels in the radiation environment of a nuclear reactor.
- Access to the NSUF and its partner facilities is granted through a separate competitive proposal process.

NSUF and its partner facilities represent a prototype laboratory for the future.

- This unique model is best described as a distributed partnership, with each facility bringing exceptional capabilities to the relationship, including reactors, beamlines, state-of-the-art instruments, hot cells, and, most importantly, expert mentors.
- Together, these capabilities and people create a nation-wide infrastructure that allows the best ideas to be proven using the most advanced capabilities.

NSUF performs an annual Nuclear Energy R&D capabilities gap analysis to identify areas needing investment. Proposals addressing these identified needs will be given higher priority.

- For FY 2019, specific areas of interest for this FOA are:
 - Establishing or improving capabilities for handling radioactive materials
 - Nuclear fuels and materials examination (characterization)
- NSUF provides access to high-performance computational resources at INL at no charge to users. Because of this, proposals requesting to purchase high performance computing (HPC) equipment will not be entertained. See nsuf.inl.gov or hpc.inl.gov for information on accessing HPC resources.
- NSUF provides access to specialized capabilities to support nuclear energy research. In the area of materials research NSUF focuses on investigating the effects of irradiation on nuclear fuels and materials. Proposals for capabilities that can accommodate work with radioactive/irradiated materials (>5mr/hr @ 30 cm) will be given higher priority.

Awarding of infrastructure grants through this FOA is one of the methods to expand the NSUF to serve more users. This should be emphasized in an applicant's proposal.

- To apply to any of the areas in this FOA, the applicant is required to be a current partner, or demonstrate the ability and willingness to join the NSUF as a partner facility, through the NSUF Partnership Program.

- Reference the NSUF website for more information about the NSUF and becoming a partner (NSUF.inl.gov).
- If NSUF determines the new equipment/capability adds significant value to DOE, the equipment/capability may be added as a DOE user facility, so the equipment is available to other researchers. For information about existing capabilities, review the Nuclear Energy Infrastructure Database (NEID) available at NSUF-infrastructure.INL.gov.

C. FUNDING OPPORTUNITIES

DOE is seeking applications under the Infrastructure FOA in the following areas:

1. University Research Reactor Upgrades Infrastructure Support
2. General Scientific Infrastructure (GSI) Support for Universities

Note: An application to either of these FOA areas is restricted to equipment or activities supporting research, teaching, and education, such as the purchase, set-up, and vendor installation costs for equipment and instrumentation, as well as building modifications that immediately support the installation and operation of the equipment.

- The application cannot include hiring or other human capital costs. Personnel or indirect costs are not allowed, except as specified in this FOA.
- The application cannot include the cost of routine operation and maintenance of equipment on the applicant's research reactor.
- Non-standard installation costs for equipment and instrumentation that are beyond the vendor's standard installation cost are not allowed.
- Institution-specific costs, not specific to the equipment or instrumentation, are the responsibility of the applicant. For example, if a vendor needs to meet safety and health requirements to access the campus or a facility, then these costs are the responsibility of the applicant.
- Funds are restricted to equipment or activities supporting research, teaching, and education. Upgrades to increase operational profit or support for commercial activities are not allowed.

Note: DOE has initiated a priority effort to develop and maintain a national R&D framework to achieve NE's research mission, and this requires an integrated approach involving people, tools, facilities, and knowledge tied to strategic partnerships. Experimental infrastructure (i.e., tools and facilities), is a critical piece of this framework. However, these capabilities, especially radiological and nuclear facilities required to handle nuclear material, are expensive to build and maintain. Therefore, thoughtful management of new capability procurement is required, while also providing researchers with an effective mechanism to obtain access to unique nuclear energy research facilities.

Accordingly, although requests for infrastructure support in response to this FOA are not restricted, DOE reserves the right to inform its award decisions by the results of its ongoing evaluation of priorities.

C.1 University Research Reactor Upgrades Infrastructure Support

C.1.1 Statement of Objectives

This section describes the objectives for University Research Reactor Upgrades Infrastructure Support. This area of the FOA supports the NE program missions as previously described.

The following research reactors are eligible to submit applications under this section of the FOA:

1	Idaho State University	13	The Ohio State University
2	Kansas State University	14	University of California, Davis
3	Massachusetts Institute of Technology	15	University of California, Irvine
4	Missouri University of Science & Technology	16	University of Florida
5	North Carolina State University	17	University of Maryland, College Park
6	Oregon State University	18	University of Massachusetts, Lowell
7	Pennsylvania State University	19	University of Missouri, Columbia
8	Purdue University	20	University of New Mexico
9	Reed College	21	University of Texas at Austin
10	Rensselaer Polytechnic Institute	22	University of Utah
11	Rhode Island Nuclear Science Center	23	University of Wisconsin, Madison
12	Texas A&M University	24	Washington State University

Each institution is permitted to submit a **single, separate** application for each research reactor they operate.

Purposes of the program:

1. To upgrade and improve the U.S. university nuclear research and training reactors;
2. To contribute to strengthening the academic community's nuclear engineering infrastructure
3. Applications should be directed to the upgrade of the research reactor, or to the purchase/maintenance of equipment and instrumentation or activities related to the safety, performance, control, or operational reliability of the research reactor, including security/safety enhancements required by the federal/state/local regulatory agencies; or
4. For equipment and instrumentation that significantly improve or expand the research, instruction, training capabilities, or operating capabilities related to NE program missions (e.g., utilization or handling of radiological or radioactive materials) of the research reactor facility, including radiation detection and measurement equipment.

Please note that the primary purpose of this funding opportunity announcement is the safety, security, and operational reliability of the university research reactors (Item 1). Proposals

addressing those needs will be given highest priority.

Infrastructure requests that support the sharing and use of equipment and instrumentation by multiple campuses of a university or multiple universities are encouraged.

Requests for equipment and associated upgrades, specifically for general scientific laboratories, are addressed in Part I, Section C.2 of this FOA.

C.2 General Scientific Infrastructure Support for Universities

C.2.1 Statement of Objectives

This section describes the objectives for the General Scientific Infrastructure Support for the NE program missions as previously described. Additionally, universities can submit applications that support DOE-NE's mission and objectives by specifically supporting or improving the instructional mission of the university.

Universities are permitted to submit one single application to this FOA area per institution.

General requirements:

- Under this FOA, applications can be submitted for equipment, software, instrumentation, and associated non-reactor upgrade requests that support nuclear energy-related R&D or education.
- Funding requests may include, but are not limited to, equipment and instrumentation for specialized facilities, classrooms and teaching laboratories, and non-reactor NS&E research.
- Infrastructure requests that support the sharing and use of equipment and instrumentation by multiple campuses of a university, multiple universities, or national laboratories are encouraged.
- Equipment and associated upgrades specifically for university research reactors are the subjects of the University Research Reactor Upgrades Infrastructure Support opportunity discussed in Part I, Section C.1.

PART II – AWARD INFORMATION

Note: The following requirements apply to all FOA areas, unless specific requirements are identified.

A. TYPE OF AWARD INSTRUMENT

DOE anticipates awarding grants to universities, and utilizing work authorizations under DOE O 412.1A, Work Authorization System, for awards to national laboratories.

B. ESTIMATED FUNDING

The estimated amounts identified for each FOA area is contingent upon Congressional appropriations and is subject to significant change.

B.1 University Research Reactor Upgrades Infrastructure Support

DOE currently estimates that it will fund approximately **\$2.5 million** in awards in response to this FOA area.

B.2 General Scientific Infrastructure Support for Universities and DOE National Laboratories

B.2.1 University General Scientific Infrastructure Support

DOE currently estimates it will fund approximately **\$2.5 million** in awards for this FOA area.

C. MAXIMUM AND MINIMUM AWARD SIZE

Maximum and minimum award sizes are identified for the FOA areas below.

C.1 University Research Reactor Upgrades Infrastructure Support

Ceiling (i.e., the maximum amount for an individual award made under this area):

- Up to \$2.5 million

Floor (i.e., the minimum amount for an individual award made under this area): None.

C.2 General Scientific Infrastructure Support

C.2.1 University General Scientific Infrastructure Support

Ceiling (i.e., the maximum amount for an individual award made under this area):

- Up to \$2.5 million

Floor (i.e., the minimum amount for an individual award made under this announcement): None.

D. EXPECTED NUMBER OF AWARDS

The estimated amounts identified for each FOA area is contingent upon Congressional appropriations and is subject to change. However, at this time, DOE anticipates making

numerous awards under each FOA area, depending on the quality of the submissions and availability of funds. DOE reserves the right to make fewer or no awards under this announcement.

E. ANTICIPATED AWARD SIZE

The anticipated award size for each of the FOA areas are identified below. (The anticipated award size ranges are estimated and actual awards may vary.)

E.1 University Research Reactor Upgrades Infrastructure Support

This program can accommodate awards up to \$2.5 million, depending on the quality of the submissions and availability of funds; however, DOE anticipates making several smaller awards.

E.2 General Scientific Infrastructure Support

E.2.1 University General Scientific Infrastructure Support

DOE anticipates awards will average \$250,000 for the total project period.

F. PERIOD OF PERFORMANCE

DOE anticipates making awards with an estimated project period of one (1) year. Additional time, if needed, may be requested and justified in the application.

G. TYPE OF APPLICATION

DOE will accept only new applications under this announcement.

PART III – ELIGIBILITY INFORMATION

Note: The following requirements apply to all FOA areas, unless specific requirements are identified.

A. ELIGIBLE APPLICANTS

Universities and Colleges: In accordance with 2 CFR 910.126(b), eligibility for award is restricted to U.S. universities and colleges. Underrepresented Groups and Minority-Serving Institutions (e.g., Historically Black Colleges and Universities, Hispanic Serving Institutions, Tribal Serving Institutions) are encouraged to apply. The following link provides the list of minority serving institutions: <http://www.ed.gov/about/offices/list/ocr/edlite-minorityinst.html>.

B. COST SHARING

For university participants, cost sharing is not required, but is encouraged, for awards under \$250,000.

C. COST MATCHING

To maximize the use of available NE funding, cost matching is required for universities on a 1:1 dollar match for requests above \$250,000, for applications under the General Scientific Infrastructure Support for research or teaching. For example, if a \$300,000 project is proposed, cost matching requirements apply to \$50,000 of this amount (the amount over \$250,000), and the recipient would be required to match \$25,000. This requirement may not be waived.

D. OTHER ELIGIBILITY REQUIREMENTS

NSUF Partner Facilities

To apply to any of the areas in this FOA, the applicant is required to be a current partner, or demonstrate the ability and willingness to join the NSUF as a partner facility, through the NSUF Partnership Program.

- Reference the NSUF website for more information about the NSUF and becoming a partner (NSUF.inl.gov).
- If NSUF determines the new equipment/capability adds significant value to DOE, the equipment/capability may be added as a DOE user facility so the equipment is available to other researchers.
- For information about existing capabilities, review the Nuclear Energy Infrastructure Database (NEID) available at NSUF-infrastructure.INL.gov.

Table 1 provides a summary of Parts II and III of this FOA.

Table 1. Summary of Parts II and III.

	Estimated Available Budget	Eligibility	Maximum Award Size	Anticipated Award Range	Cost Match
Research Reactor Upgrades	\$2,500,000	University	\$2,500,000	Up to \$1,500,000	N/A
GSI	\$2,500,000	University	\$2,500,000	\$250,000	1:1 >\$250,000

PART IV – APPLICATION AND SUBMISSION INFORMATION

Note: The requirements apply to all FOA areas, unless specific requirements are identified.

A. ADDRESS TO REQUEST APPLICATION PACKAGE

Electronic applications and instructions are available at the NEUP 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.

B. LETTER OF INTENT AND PRE-APPLICATION

B.1 Letter of Intent

Letters of Intent are not required.

B.2 Pre-applications

Pre-applications are not required.

C. CONTENT AND FORM OF APPLICATION

Applicants must complete the mandatory forms, and any applicable optional forms (e.g., Disclosure of Lobbying Activities), in accordance with the instructions on the forms and the additional instructions below. Files attached to the forms must be in Adobe Portable Document Format (PDF) and merged into a single PDF file, unless otherwise specified in this announcement.

C.1 SF 424 – Application for Federal Assistance

Complete all required fields in accordance with the pop-up instructions on the form. The correct form to use is OMB 4040-0004. The list of certifications and assurances referenced in Field 21 can be found on the DOE Financial Assistance page at <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Certifications and Assurances.

Save form as “SF424 Fed Assist.pdf.”

C.2 Project/Performance Site Location(s)

Insert 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.

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.

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

Save form as "Performance Site.pdf."

C.3 Project Summary/Abstract File

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 name of the applicant, the project director/principal investigator(s), the project title, the objectives of the project, a description of the project, including methods to be employed, the potential impact of the project (i.e., benefits, outcomes), and major participants (for collaborative projects). Do not include any proprietary or sensitive business information in this document, because, if an award is made the Department may make it available to the public. The project summary must not exceed one (1) page when printed using standard 8.5" by 11" paper with 1" margins (top, bottom, left and right) [select single or double spaced] with font no smaller than 11 point.

Save this information in a file named "Summary Abstract.pdf." and save to "other attachments form"

C.4 Project Narrative File

The project narrative must not exceed eight (8) printed pages, including cover page, table of contents, charts, graphs, maps, photographs, and other pictorial presentations. The project narrative page must be on standard 8.5" by 11" paper, with 1" margins (top, bottom, left, and right) [single spaced], and with font no smaller than 11 point for general text; fonts no smaller than 8 may be used for figures, charts, graphs, maps, photographs, and other pictorial presentation. EVALUATORS WILL REVIEW ONLY EIGHT PAGES, AS SPECIFIED ABOVE. Do not include any Internet addresses (URLs) that provide information necessary to review the application. See Part VIII, Section D, for instructions on how to mark proprietary application information.

Save the information in a single file named "Project Narrative.pdf." and save to "other attachments form"

The project narrative must include the following:

1. **Narrative Cover Page** which must include:
 - a. Name of organization;
 - b. Announcement number;
 - c. FOA Opportunity Title (e.g., University Research Reactor Upgrades Infrastructure Support, General Scientific Infrastructure Support);
 - d. Technical and business points-of-contact for the applicant, denoting the names, titles, addresses, telephone and facsimile numbers, and electronic mail addresses;
 - e. Principal Investigator's (PI's) name, telephone number, facsimile number, e-mail address, and organization name/unit; and
 - f. Names of team members or partnerships.

2. **Project Objectives**

This section should provide a clear, concise statement of the specific objectives/aims of the proposed project.

- a. For universities, briefly describe the NS&E program(s) at your school; if you do not have a current program, describe your plans to establish such a program.
- b. Provide a narrative that describes how your application will further NS&E R&D and education.
- c. Discuss the proposed objectives and goals for use of the equipment.
- d. Discuss how the request enables the university's learning mission.
- e. Discuss how the request fills institutional and/or national infrastructure gaps, and complements existing infrastructure and personnel capabilities.
- f. Discuss ties to the DOE-NE mission and/or NSUF.

3. **Merit Review Criterion Discussion**

The section should be formatted to address each of the merit review criterion and sub-criterion listed in greater detail in Part V, Section A.2, as well as Other Selection Factors. Applicants shall provide sufficient information to enable reviewers to evaluate the application in accordance with the merit review criteria and other selection factors.

4. **Project Timetable and Description of Work**

This section should outline as a function of time, year by year, all the important activities or phases of the project, including any activities planned beyond the project period. Successful applicants must use this project timetable to report progress. This section should also include a scope of work and execution plan with detail appropriate to the complexity of the project. This will form the basis for the Project Implementation merit review listed in Section V.A.2.1.3 and V.A.2.2.3.

5. **Relevance and Outcomes/Impacts**

This section should explain the relevance of the effort to the mission of DOE-NE and the expected outcomes and/or impacts.

This justification for the proposed project should include a clear statement of the importance of the project in terms of 1) the utility of the outcomes, and 2) the target community of beneficiaries. List all applicable DOE-NE funded R&D projects in this section. Specifically list any DOE-NE R&D program relevance. This information can be found at: <https://energy.gov/ne/mission>.

6. **Roles of Participants**

Describe the capabilities and qualifications of the PI and application team to accomplish the proposed work. This should include personnel information for any expertise required to accomplish the proposed project. References should be specific to individuals. The PI should state explicitly if there is any expertise that must be acquired to complete the project and the plan to acquire the expertise (new hires, consultants, etc.).

7. Facilities and Other Resources

Identify the facilities (e.g., office, laboratory, computer, etc.) to be used at each performance site listed, and, if appropriate, indicate their capacities, pertinent capabilities, relative proximity, and extent of availability to the project. Describe only those resources that are directly applicable to the proposed work. Provide any information describing the other resources available to support the project such as machine and electronics shops.

8. Equipment

- a. List important items of equipment already available for this project, and, if appropriate, note the location and pertinent capabilities of each.
- b. If you are proposing to acquire equipment, describe comparable equipment, if any, already at your organization or within the DOE complex, and explain why it cannot be used. Review the Nuclear Energy Infrastructure Database (NEID) available at NSUF-infrastructure.INL.gov for information about existing capabilities.

9. Utilization

- a. Provide a narrative that describes how your application will allow for researcher usage, both within the institution and by other entities.
- b. Provide a measure of the amount of use expected for the requested equipment and instrumentation, by both the proposing institution and others within the research community.
- c. If there is a preexisting capability, provide a description of how readily accessible and/or currently utilized the resource is by other entities.

C.5 Project Team Curriculum Vitae (CV)

Applicants shall provide a CV from the PI. CVs are limited to a 2-page maximum. CV must include the following:

- Contact Information.
- Education and Training: Undergraduate, graduate, and postdoctoral training. Identify institution, major/area, degree, and year.
- Research and Professional Experience: Beginning with the current position, list, in chronological order, professional/academic positions with a brief description.
- 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.
- Synergistic Activities: List no more than 5 professional and scholarly activities related to the effort proposed.

CVs should be provided for all staff providing significant and required expertise on the project, following the instructions provided above.

Save each CV as a separate file titled, "CV 'Insert PI Name'.pdf." and save to "other attachments form"

C.6 SF 424A Excel, Budget Information – Non-Construction Programs File (University Applicants)

Applicants must provide a separate budget for each year of support requested, and a cumulative budget for the total project period. Use the SF 424A Excel, "Budget Information - Non Construction Programs" form on the DOE Financial Assistance Forms Page at <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms>.

Applicants may request funds under any of the Object Class Categories, as long as 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 G).

Save this information in a single file named "Budget (SF424A).xls."

C.7 Budget Justification File

Applicants must justify the costs proposed in each Object Class Category/Cost Classification category (e.g., provide a list of equipment and cost of each item, and provide any other information you wish to support your budget).

If cost sharing is proposed, applicants must have a letter from each third party contributing to the cost sharing (i.e., a party other than the organization submitting the application), stating that the third party is committed to providing a specific minimum dollar amount of cost sharing.

The budget justification file should also identify the following information for each third party contributing cost sharing: 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.

By submitting your application, you are providing assurance that you have signed letters of commitment. Successful applicants will be required to submit these signed letters of commitments.

Note there are restrictions on the use of funds under this FOA:

1. The application cannot include hiring or other human capital costs. Personnel or indirect costs are not allowed, except as specified in this FOA.
2. The application cannot include the cost of routine operation and maintenance of equipment on the applicant's research reactor.
3. Non-standard installation costs for equipment and instrumentation that are beyond the vendor's standard installation cost are not allowed.
4. Institution-specific costs, not specific to the equipment or instrumentation, are the responsibility of the applicant. For example, if a vendor needs to meet safety and health

requirements to access the campus or a facility, these costs are the responsibility of the applicant.

5. Funds are restricted to equipment or activities supporting research, teaching, and education.
6. Upgrades to increase operational profit or support for commercial activities are not allowed.

Save the budget justification information in a single file named "Budget Justification.pdf." and save to "other attachments form"

C.8 Vendor Quotes

Submit vendor quotes, referenced costs (catalog pricing), or other basis for estimate for any single item over \$5,000. This is required even though the proposer may intend to submit the contract for open bids following the award.

Save file as "Vendor Quotes.pdf." and save to "other attachments form"

C.9 Past, Current, and Pending Support

Identify funding that is pending or has been awarded, for similar activities related to nuclear infrastructure/curriculum within the last three years. Please identify by source and amount requested/awarded.

Save this information in a file named "Support.pdf." and save to "other attachments form"

C.10 Conflict of Interest Statement (Required for All Applicants)

Conflicts of interest may exist due to previous efforts performed by the National Laboratories, or assistance provided in program direction and other mission related activities. Accordingly, for each subapplicant that is a National Laboratory or DOE and/or non-DOE FFRDC, identify any potential conflicts of interest, fully explain the conflict, whether you believe it is significant, along with your rationale. If significant, explain how you will avoid, neutralize, or mitigate the potential conflict.

Save this sheet in a single file named "COI.pdf." and save to "other attachments form"

C.11 Applicant Lighting Efficiency Additional Budget Justification

If the resulting award is a grant exceeding \$1,000,000, the applicant shall be required to identify the facility (the rooms or areas where a majority of the proposed project work will occur). In the applicants budget justification, they must identify and justify the costs associated with upgrading the light bulbs to meet or exceed the energy efficiency standard for incandescent light bulbs, as required by Section 325 of the Energy Policy and Conservation Act (42 U.S.C. 6295), prior to the end of the Federal fiscal year.

C.12 SF-LLL Disclosure of Lobbying Activities (Required for All Applicants)

Identify any funds, other than Federal appropriated funds, that have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the grant/cooperative agreement.

Save this form as “SF-LLL.pdf.”

C.12.1 Environmental Checklist

Applicants must complete the Environmental Checklist. [Click here for a copy.](#)

Save this sheet in a single file named “EC.pdf” and save to “other attachments form”

Applications must include the following documents, which are located at <http://www.NEUP.gov>.

Required Form/file	Format	File Name
Application for Federal Assistance – SF424	Form	SF424 Fed Assist.pdf
Project/Performance Site Location(s)	Form	Performance Site.pdf
Project Summary/Abstract File	PDF	Summary Abstract.pdf
Project Narrative File	PDF	Project Narrative.pdf
Project Team Vitae	PDF	CV “Insert PI Name”.pdf
SF 424A File - Budget Information for Non-Construction Programs	Excel	Budget (SF424A).xls
Budget Justification File	PDF	Budget Justification.pdf
Vendor Quotes	PDF	Vendor Quotes.pdf
Current and Pending Support	PDF	Support.pdf
Conflict of Interest Statement	PDF	COI.pdf
SF-LLL Disclosure of Lobbying Activities, if applicable.	Form	SF-LLL.pdf
Certifications and Assurances	Form	Cert & Assurances.pdf

D. SUBMISSIONS FROM SUCCESSFUL APPLICANTS

If selected for award, DOE reserves the right to request additional or clarifying information, for any reason deemed necessary, including, but not limited to:

- Indirect cost information
- Other budget information
- Name and phone number of the Designated Responsible Employee, for complying with national policies prohibiting discrimination (see 10 CFR 1040.5)
- Representation of Limited Rights Data and Restricted Software, if applicable
- Commitment Letter from Third Parties Contributing to Cost Sharing, if applicable

E. SUBMISSION DATES AND TIMES

E.1 Letter of Intent Due Date

Letters of Intent are not required.

E.2 Pre-application Due Date

Pre-applications are not required.

E.3 Application Due Date

Applications must be received by November 15, 2018, no later than 5:00 PM Eastern Time. Applicants are encouraged to transmit applications well before the deadline. APPLICATIONS RECEIVED AFTER THE DEADLINE WILL NOT BE REVIEWED OR CONSIDERED FOR AWARD.

F. INTERGOVERNMENTAL REVIEW

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

G. FUNDING RESTRICTIONS

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

- **Cost Principles.** Costs must be allowable, allocable, and reasonable, in accordance with the applicable Federal cost principles referenced in 2 CFR 200.
- **Pre-award Costs.** Recipients may charge, to an award resulting from this announcement, pre-award costs incurred within the ninety (90) calendar day period immediately preceding the effective date of the award, providing the costs are allowable in accordance with the applicable Federal cost principles referenced in 2 CFR 200. Recipients must obtain the prior written 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 the award is made for a lesser amount than the applicant expected.

H. OTHER SUBMISSION AND REGISTRATION REQUIREMENTS

H.1 Where to Submit

Applications must be submitted through www.neup.gov.

H.2 Application Validity Timeframe

By submitting an application in response to this FOA, applicants agree that their applications are valid for at least 1-year from the date set forth for receipt of applications to this FOA. DOE reserves the right (with the concurrence of the applicant) to use the submitted application(s) to make additional awards during this 1-year time frame, even after DOE's initial selection announcement has occurred.

PART V – APPLICATION REVIEW INFORMATION

Note: The following requirements apply to all FOA areas, unless specific requirements are identified.

A. CRITERIA

A.1 Initial Review Criteria

Prior to a comprehensive merit evaluation, DOE will perform an initial review to determine that 1) the proposed work is relevant to the DOE-NE mission; 2) the applicant is eligible for an award; 3) the information required by the FOA has been submitted; and 4) no more than one application per institution has been submitted. Applications that fail to pass the initial review will not be forwarded for merit review and will be eliminated from further consideration.

A.2 Merit Review Criteria

The following evaluation criteria and weights will be used to evaluate applications submitted in response to this FOA. Rating criteria include showing increasing or enhancing research or teaching capabilities. The below criteria are dependent on the program area.

A.2.1 University Research Reactor Upgrades Infrastructure

1. (55%) Safety and/or Security – Potential of the requested equipment, instrumentation, or modification to:
 - a. Enhance the safety, performance, control, or operational reliability of research reactor systems; or
 - b. Increase the quality, safety/security, or efficiency of the operation of the research reactor facility.
2. (15%) Impact – Potential of the requested equipment, instrumentation, or modification to facilitate, improve, or expand ongoing Office of Nuclear Energy research and training capabilities;
3. (15%) Utilization – As a result of the proposed equipment, the amount of student and faculty usage of the research reactor facility, and the amount and variety of research and/or services actually provided by the facility.
4. (15%) Execution – Capability to implement the full scope of the project, including timely project completion, personnel qualifications, budget, and feasibility.

A.2.2 University General Scientific Infrastructure Support

1. (25%) Impact – Potential of the requested equipment, instrumentation, or modification to facilitate, improve, or expand ongoing Office of Nuclear Energy research and training capabilities;
2. (25%) Utilization – As a result of the proposed equipment, the amount of student, faculty, or researcher usage of the capabilities, and the amount and variety of research and/or services actually provided by the facility;
3. (25%) NSUF Priority – Importance of the proposed upgrade to the Nuclear Science User Facilities as either improving an existing partner facility or as a potential partner facility;

4. (25%) Execution – Capability to implement the full scope of the project including timely project completion, personnel qualifications, budget, and feasibility.

A.3 Other Selection Factors

Program Policy Factors. The selection official may also consider the following program policy factors in the selection process under all FOA areas, as appropriate (not listed in order of importance):

- Degree to which proposed project optimizes/maximizes use of available DOE-NE funding to achieve DOE program goals and objectives. This includes how those infrastructure projects support DOE-NE research; it may also include how the infrastructure project supports other complementary efforts or projects, which, when taken together, will best achieve program research goals and objectives.
- Application selection may optimize appropriate mix of projects to achieve DOE-NE research goals and objectives.
- Impact of the proposed project on the NSUF.
- Other Cost/Budget considerations, including how well the proposed budget for the equipment or instrumentation will achieve the proposed objectives, and availability of funding.
- The demonstrated ability of the applicant to complete projects in the specified timeframe. This includes prior year DOE applicant awards in progress or not yet completed, as well as any existing or pending no-cost extensions.
- Existing Nuclear Science and Engineering (NS&E) Program, or realistic plan to establish NS&E program.
- Underrepresented Groups and Minority-Serving Institutions that submit a competitive application.
- Cost share or cost match, if any, proposed.
- Extent or degree to which projects provide a balanced programmatic effort, a variety of research capabilities among various sizes and kinds of organizations, and their geographic distribution.

The above program policy factors may be used by the Selection Official to assist in determining which application(s) shall receive DOE funding support. These factors, while not indicators of the application's technical excellence, applicant's ability, etc., are essential to the process of selecting the application that, individually or collectively, will best achieve the program objectives and maximize public benefits.

B. REVIEW AND SELECTION PROCESS

B.1 Merit Review

Applications that pass the initial review will be subjected to a merit review in accordance with the guidance provided in the *Department of Energy Merit Review Guide for Financial Assistance*. This guide is available under Financial Assistance, Regulations and Guidance at <http://energy.gov/management/office-management/operational-management/financial-assistance>.

B.2 Selection

The Selection Official will consider the merit review recommendation, program policy factors, and the amount of funds available.

B.3 Discussions and Award

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 whether the recipient is capable of complying with the requirements in 2 CFR 200; 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 SECTION AND AWARD DATES

DOE anticipates notifying applicants selected for award, and making awards, by July 31, 2019. DOE reserves the right to make additional award selections using applications submitted in response to this FOA. Award(s) for this project are subject to the availability of Federal funding.

PART VI – AWARD ADMINISTRATION INFORMATION

A. AWARD NOTICES

A.1 Notice of Selection

DOE will notify applicants selected for award. This notice of selection is not an authorization to begin performance. (See Part IV, Section G, with respect to the allowability of pre-award costs.)

Organizations whose applications have not been selected will be advised as promptly as possible.

A.2 Notice of Award

An Assistance Agreement issued by the contracting officer is the authorizing award document. It normally includes either as an attachment or by reference: 1) Special Terms and Conditions; 2) Applicable program regulations, if any; 3) Application as approved by DOE; 4) DOE assistance regulations at 2 CFR 200, as amended by 2 CFR 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.

For grants and cooperative agreements made to universities, non-profits, and other entities subject to Title 2 of the CFR (Grants and Agreement), the Award also includes the Research Terms and Conditions located at <http://www.nsf.gov/bfa/dias/policy/rtc/index.jsp>.

B. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS

B.1 Administrative Requirements

The administrative requirements for DOE grants and cooperative agreements are contained in 2 CFR 200, as amended by 2 CFR 910 (see <http://ecfr.gpoaccess.gov>). Grants and cooperative agreements 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 DUNS and SAM Requirements

Additional administrative requirements for DOE grants and cooperative agreements are contained in 2 CFR, Part 25 (see <http://www.ecfr.gov/cgi-bin/ECFR?page=browse>). Prime awardees must keep their data at System for Award Management (SAM) current. Subawardees at all tiers must obtain Data Universal Numbering System (DUNS) numbers and provide the DUNS to the prime awardee before the subaward can be issued.

B.1.2 Subaward and Executive Reporting

Additional administrative requirements necessary for DOE grants and cooperative agreements, to comply with the Federal Funding and Transparency Act of 2006 (FFATA), are 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 System for Award Management (SAM).

B.2 Special Terms and Conditions and National Policy Requirements

Special Terms and Conditions and National Policy Requirements. The DOE Special Terms and Conditions for Use in Most Grants and Cooperative Agreements are located at <http://energy.gov/management/downloads/special-terms-and-conditions-use-most-grants-and-cooperative-agreements>.

The National Policy Assurances to Be Incorporated as Award Terms are located at <http://www.nsf.gov/bfa/dias/policy/rtc/appc.pdf>.

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>.

C. NO COST TIME EXTENSIONS

Unilateral no-cost time extensions will NOT be permitted to awards made under this FOA. All no-cost time extensions must provide adequate justification, and receive written approval from the Contracting Officer. No-cost time extensions should be requested as soon as the need is identified, and, normally, no later than 3 months before the original project end date.

One no cost time extension request may be granted for up to 12 months pending review and approval. No more than one no-cost time extension will be allowed. No-cost time extensions must be submitted to NCE-Submission-NEUP@id.doe.gov.

D. 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 under Award Forms at <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms>.

PART VII – QUESTIONS/AGENCY CONTACTS

A. QUESTIONS

Questions regarding the content of the announcement must be submitted to NSUF@inl.gov.

Questions and comments concerning this FOA shall be submitted not later than five (5) calendar days prior to the application due date. Questions submitted after that date may not allow the Government sufficient time to respond.

B. AGENCY CONTACT

Name: Mr. Brandon Stike

E-mail: stikebm@id.doe.gov

Phone: 208-526-2710

C. INFORMATIONAL WEBINAR

DOE-NE holds a webinar each year to discuss changes to its FOAs and workscope areas for upcoming opportunities. Applicants can watch the live webinars and submit questions to be answered in real time. All webinar presentations are recorded and posted on www.neup.gov for review by all applicants. Webinar presentations from past years can also be found in the “Archive” section of the www.neup.gov website.

PART VIII – OTHER INFORMATION

A. MODIFICATIONS

Notices of any modifications to this announcement will be posted on www.FedConnect.net and www.Grants.gov, and, as a courtesy, will also be posted on NSUF.INL.gov. It is recommended that you check the NSUF.INL.gov site frequently to ensure you receive timely notice of any modifications 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 and commit the Government to the expenditure of public funds. A commitment by anyone other than the Contracting Officer, either explicit or implied, is invalid.

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 independent reviews, as well as routine, nondiscretionary administrative activities. The applicant, by submitting its application, consents to the use of non-Federal reviewers/administrators. Non-Federal reviewers must sign conflict of interest 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. The government will have certain statutory rights in an invention that is conceived or first actually reduced to practice under a DOE award. Section 5908 of title 42 United States Code, provides that title to such inventions vests in the United States, except where 35 U.S.C. 202 provides otherwise for nonprofit organizations or small business firms. However, the Secretary of Energy may waive all or any part of the rights of the United States subject to certain conditions. (See "Notice of Right to Request Patent Waiver" in Section G below.)

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 an agreement to satisfy DOE's own needs or to ensure the commercialization of technology developed under a DOE agreement.

G. NOTICE OF RIGHT TO REQUEST PATENT WAIVER

Applicants may request a waiver of all or any part of the rights of the United States in inventions conceived or first actually reduced to practice in performance of an agreement as a result of 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 United States in identified inventions (i.e., individual inventions conceived or first actually reduced to practice in performance of the award). Any patent waiver granted is subject to certain terms and conditions in 10 CFR 784 <http://energy.gov/sites/prod/files/advancedwaiverpetition.pdf>.

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 nonprofit organizations to retain title to subject inventions. Therefore, small businesses and nonprofit organizations do not need to request a waiver.

H. NOTICE REGARDING ELIGIBLE/INELIGIBLE 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 which encourage or support political activities such as the collection and dissemination of information related to potential, planned, or pending legislation.

I. CONFERENCE SPENDING

The recipient shall not expend funds for the purpose of defraying the cost to the United States Government of a conference that was more than \$20,000 [described in subsection (c) of the Consolidated and Further Continuing Appropriations Act of 2013]; or 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 that is not directly and programmatically related to the purpose of the grant or cooperative agreement.