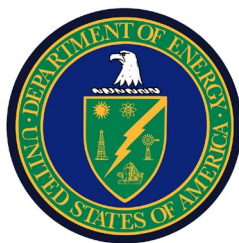


**FINANCIAL ASSISTANCE
FUNDING OPPORTUNITY ANNOUNCEMENT (FOA)**



**U. S. Department of Energy
Idaho Operations Office
U.S. Industry Opportunities for Advanced
Nuclear Technology Development
Funding Opportunity Number: DE-FOA-0001817
CFDA Number: 81.121
Announcement Type: Initial (12/7/2017)
Amendment 014 (08/11/2022)**

Final Application Due Date: October 11, 2022, at 5:00:00 p.m. ET

Note: Due to funding limitations, DOE will not execute additional cycles in FY 2022. Accordingly, the NE Industry FOA (#DE-FOA-0001817) will permanently close upon completion of Cycle 2022-1. Analysis and planning for follow on engagements between NE and United States Industry is underway and outcomes will be communicated separately.

Registration Requirements

There are several one-time actions you must complete in order to submit an application in response to this funding opportunity announcement (FOA) (e.g., obtain a Unique Entity Identifier (UEI) number, register with the System for Award Management (SAM), and register with Grants.gov, set up user name and password at the application site). Applicants, who are not registered with SAM and Grants.gov, should allow at least 44 days to complete these requirements. It is suggested that the process be started as soon as possible.

NOTE: All FOA information will be posted at the www.grants.gov website. Electronic submission of applications is required; the application submission site is <https://www.id.energy.gov/>. Details are provided in this FOA document.

- **Applicants must obtain a UEI number.**

Applicants must register with the SAM. SAM website: <http://www.sam.gov/>. If you had an active registration in the Central Contractor Registration (CCR) system, you should have an active registration in SAM. More information about SAM registration for applicants is found at: https://www.sam.gov/SAM/transcript/Quick_Guide_for_Grants_Registrations.pdf

- **Applicants must register with Grants.gov. There are 3 steps to this process.**

1) The Authorized Organizational Representative (AOR) must register at: <https://apply07.grants.gov/apply/OrcRegister>.

2) An email is sent to the E-Business (E-Biz) POC listed in SAM. The E-Biz POC must approve the AOR registration using their Marketing Partner ID Number (MPIN) from their SAM registration.

3) AOR verifies that registration was completed at: <https://www.grants.gov/web/grants/applicants/organization-registration.html>

More information about the registration steps for Grants.gov is provided at: <https://www.grants.gov/help/html/help/Register/Register.htm>

- **Applicants must register with FedConnect to submit questions. FedConnect website: www.fedconnect.net.**
- **Applicants must set up a username and password at the application submission site located at <https://www.id.energy.gov/> Applications will be submitted for all opportunities available through this FOA at <https://www.id.energy.gov/>.**
- **Applicants must disclose to the DOE all foreign interest in applicant's company or corporation, as**

defined in this FOA. In this FOA, foreign interest is defined as: all *foreign government ownership, investment, interest, and/or influence*, as well as *foreign nongovernment public, private ownership, interest, and/or investment* in an applicant's company or corporation. Foreign interest applies at all levels of the corporate structure, including the executive and board levels, from parent (e.g., trust, holding company, corporation, etc.) to subsidiary, as well as ancillary levels, regardless of the applicant entity's place of incorporation and operation. Moreover, foreign interest includes, but is not limited to, political influence and participation in foreign talent recruitment programs. A foreign government is defined as a non-U.S. government. Applicants with no foreign interest, as defined in this FOA, shall certify to the DOE in writing that they have none.

Questions

Questions relating to the Grants.gov registration process, must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov.

Questions regarding the **content of the funding opportunity announcement** must be emailed to IndustryFOA@id.doe.gov. DOE will try to respond to a question within 3 business days, unless a similar question and answer have already been posted on the <https://www.id.energy.gov/> website.

Application Preparation and Submission

Instructions are provided in Section IV of this FOA.

Review of Risk Posed and Responsibility Determination

Applicants selected for negotiation will be subject to a review of risk posed and responsibility determination in accordance with 2 CFR Part 200.205 and DOE's Guide to Financial Assistance (<https://www.energy.gov/management/downloads/department-energy-guide-financial-assistance>). This process may involve a review of the applicant's and subrecipient's business management systems (i.e., accounting, financial, procurement, property, etc.) and a review of financial statements. Other information may be requested to support this review and determination based on the amount of previous experience the applicant and subrecipient have in successfully performing other federal awards.

The following changes were incorporated with Amendment 0001 (01/11/2018):

- Delete the following sentence from page 4; “Support for salaries, travel or other costs under this application pathway is not allowed.”
- To update the “Advanced Reactor Development Project Narrative File” page limit from 15 pages to 25 pages
- To update the “Capabilities” page limit from 2 pages to 5 pages
- To incorporate cutoff dates for “Submission of Questions” for each quarterly review cycle in Section IV
- Make administrative changes such as spelling, format, etc.

The following changes were incorporated with Amendment 0002 (01/16/2018):

- Section I.C “Industry Application Pathways” was updated, please read it completely
- Section III.A “Eligible Applicants” was updated, please read it completely

The following changes were incorporated with Amendment 0003 (01/18/2018):

- Section VI.Q “Data Management Plan” was updated, please read it completely
- Section VIII.O “Protected Personally Identifiable Information” the first paragraph was updated, please read it completely
- Section IV.D.23 & Section IV.F.14 “Past Performance” was updated, please read completely

The following changes were incorporated with Amendment 0004 (02/15/2018):

- Make administrative changes such as spelling, format, etc.
- Updated the source for obtaining application documents
- Section I.E added bullet for clarification
- Section IV.D.9 “Capabilities” was updated, removed the requirement for attachment to narrative
- Section IV.D.21 & Section IV.F.12 was removed/reserved
- Section V.C.2 update third paragraph
- Section VI.B.10 deleted Nondisclosure and Confidentiality Agreements Representations from this section as it is a duplication

The following changes were incorporated in Amendment 0005 (05/01/2018):

- Make administrative changes, such as spelling, format, etc.
- Section I.C.1. First of a Kind Nuclear Demonstration Readiness Projects language
- Section I.C.E. Applications Specifically Not of Interest
- Section II.D Expected Number of Awards
- Section IV.5 Project Narrative File
- Section IV.12 Budget for DOE
- Section IV.F. Roles of Participants, added “key personnel”
- Section V.C.2 updated the selection criteria
- Section V.D.3 added a bullet to “Selection and Other Program Policy Factors”

The following changes were incorporated in Amendment 0006 (07/13/2018)

- Make administrative changes, such as spelling, format, clarifications etc.
- Registration Requirements, updated
- Section II. D. Expected Number of Awards, updated

- Section III.D Number of Submittals Eligible for Review, updated
- Section IV.C Foreign Government Interest/Ownership Disclosure Template, added
- Section IV.D.10 R&R Budget Form Note, added
- Section IV.E Foreign Government Interest/Ownership Disclosure Document Template, added
- Section V.D.3 Review and Selection Process, Program Policy Factors, update

The following changes were incorporated in Amendment 007 (11/27/2019)

- Proposal due dates changed to three times per year.
- Registration Requirements – Definition of foreign interest/ownership updated.
- Administrative changes, such as spelling, format, clarifications etc.
- Section I.3. Title updated to Nuclear Energy Vouchers
- Section I.E. Applications Specifically Not of Interest - updated to include fusion energy.
- Section II.B. Estimated Funding – Budget Periods to be written so that tasks are completed within each proposed Budget Period.
- Section II.C. Federal Ceiling Amount increased for Advanced Reactor Development Projects.
- Section II.D. Expected Number of Awards – Clarification when only a portion of application is selected.
- Section II.F. Period of Performance – Continuation application information provided
- Section III.C. Cost Sharing – updated for clarification purposes only.
- Section III.D Percentage of work to be completed by applicant is defined.
- Section III.E. Number of Submittals Eligible for Review – updated to three awards if one award is a Pathway 3 award.
- Section IV.C. Application for first of a Kind – Collaborator defined.
- Section IV.D.6 (c) Milestone Log – updated for clarification purposes only.
- Section IV.D.10 R&R Budget Form - updated for clarification purposes only.
- Section IV.D.11 R&R Subaward Budget Form (Total Fed + Non-Fed) updated dollar threshold when form is required.
- Section IV.D.13 Budget Justification – added information on indirect costs.
- Section IV.E.7 Budget Justification File – added information on indirect costs.
- Section IV.H. Submission Dates and Times – updated to three times per year.
- Section IV.K. Pre-award Costs - updated for clarification purposes only.
- Section V.D.3 Policy Factor for foreign interest/ownership updated.
- Section VII.A. Questions – updated the dates when questions cannot be submitted.

The following changes were incorporated in Amendment 008 (09/14/2020)

- Administrative changes, such as spelling, format, clarifications etc.
- Proposal due dates changed to twice a year.
- Registration Requirements – updated information link for SAM registration.
- Section I.E. Applications Specifically Not Of Interest – updated to include heavy water moderated technology and the use of thorium and updated language concerning isotopes.
- Section II.D Expected Number of Awards Table – updated.
- Section III.A Eligible Applicants - clarification
- Section III.D. Percentage Of Work Completed By Applicant – clarification.
- Section III.E Number of Submittals Eligible for Review – clarifies when applicants are eligible to

apply if they already have the maximum number of active awards.

- Section IV.C. Updated table listing application requirements. (clarified requirement for subaward budget justification requirement and removed Current and Pending Support page limit).
- Section IV.D.10 R&R Budget Form (Total Fed + Non-Fed) updated instructions
- Section IV.E Applications for Pathway 3 – added required forms if FFRDC is included.
- Section IV.O.2 Registration process – One Time Registration Process – Updated instructions.
- Section V.D.3. Added Program Policy Factor

The following changes were incorporated in Amendment 009 (02/10/2021)

- Clarify on cover page that the FOA will remain open with an anticipated closure date of December 2022 or earlier if funding is unavailable.
- Proposal due date changed from February 28 to April 30.
- Proposal due date changed from August 31 to September 30.
- Section I.E. Applications Specifically Not of Interest – updated to clarify that technologies for which the Government would be a primary customer are not of interest. Targeted technologies are for the commercial nuclear power marketplace.

The following changes were incorporated in Amendment 010 (03/17/2021)

- Cover Page, Section I.B, and Section IV.H - added note: There will only be one application cycle for FY2021, due April 30
- Section II.B Estimated Funding – revised to reflect anticipated federal funding
- Section II.C Anticipated Minimum and Maximum Award Size – revised to reflect new federal floor and federal ceiling for Pathway 1
- Section II.D Expected Number of Awards – revised anticipated number of awards for pathways 2 and 3
- Section II.E Anticipated Maximum Federal Cost Share – revised maximum federal cost share for pathway 1
- Section III.A Eligible Applicants – added language to describe eligibility under iFOA and other DOE programs
- Section IV.E Application for Pathway 3 – revised to include explanation of collaborator
- Section V.C Responsiveness Criteria – revised to clarify types of submissions that may be deemed nonresponsive to include requesting higher federal cost share and inadequate past performance evidence
- Section V.E Anticipated Notice of Selection – revised to 120 days
- Section VI.A.5 Unsuccessful Applicants – clarified intent of notice
- Section V.D Review and Selection Process – Policy Factor for diversity
- Section VII.J Informational Webinar – revised to include link for webinar

The following changes were incorporated in Amendment 011 (04/22/2021)

- Cover Page, Section I.B, and Section IV.H - added note: **The April 30, 2021, due date is extended to May 28, 2021, at 5:00:00 p.m. ET.**

The following changes were incorporated in Amendment 012 (04/13/2022)

- Cover Page, Section I.B, and Section IV.H – Extended due date from April 30, 2022, to June 29, 2022, and provided information that this will be the final due date and last cycle of this FOA.
- Section II.C – Changed the Federal Floor on pathway 1 from \$5,000,000 to \$1,000,000.

The following changes were incorporated in Amendment 013 (06/23/2022)

- Cover Page, Section I.B, and Section IV.H – Extended due date from June 29, 2022, to September 14, 2022.

The following changes were incorporated in Amendment 014 (08/11/2022)

- Cover Page, Section I.B, and Section IV.H – Extended due date from September 14, 2022, to October 11, 2022.

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SECTION I - FUNDING OPPORTUNITY DESCRIPTION

A. BACKGROUND/DESCRIPTION

The primary mission of the Office of Nuclear Energy (NE) is to advance nuclear power as a resource capable of meeting the Nation's energy, environmental, and national security needs. This is accomplished by resolving technical, cost, safety, proliferation resistance, and security barriers through research, development, and demonstration, as appropriate. The development of improved advanced nuclear reactor designs and technologies, as well as improvements in the operation of the existing domestic fleet of nuclear power plants, is the most important aspect of assuring that nuclear power will be a viable option for the United States (U.S.) energy needs for generations to come.

The fundamental premise behind this FOA is to provide a direct vehicle to support innovative, domestic nuclear industry-driven designs and technologies that have high potential to improve the overall economic outlook for nuclear power in the U.S. The investment provided by the Government will accelerate development of these designs and technologies so that the existing domestic fleet of nuclear power plants remains viable and the most mature new, advanced U.S. designs can be deployed as early as mid-to-late 2020s, and be globally competitive. Funding for this FOA will be provided from the Department of Energy (DOE) through multiple existing NE programs currently conducting innovative research and development (R&D) activities supporting the existing fleet and the development of new and next-generation reactor designs and technologies. These advanced reactor designs and technologies will further the state of the U.S. commercial nuclear capability by improving the competitiveness of nuclear power and promoting its continued contribution to meeting our Nation's economic, energy security, and environmental challenges. The FOA is envisioned to provide support for the revitalization and expansion of the U.S. nuclear industry by encouraging growth of a pipeline for advanced nuclear reactors, specifically through the employment of key private-public partnerships.

This FOA is a key implementing component of the DOE Gateway for Accelerated Innovation in Nuclear (GAIN) initiative (see <https://gain.inl.gov>), which provides the nuclear energy community with access to the technical, regulatory, and financial support necessary to move new advanced nuclear reactor designs toward commercialization while ensuring the continued safe, reliable, and economic operation of the existing U.S. nuclear fleet.

B. OBJECTIVES

The objective of this FOA is to support innovation and competitiveness of the U.S. nuclear industry through cost-shared, cross-cutting basic/fundamental, applied R&D, and demonstration/commercial application R&D activities for all aspects of existing and advanced reactor development. These activities may include development of technologies that improve the capability of the existing fleet, methods to improve the timelines for advanced reactor deployments, the cost and schedule for delivery of nuclear products, services, and capabilities supporting these nuclear technologies, design and engineering processes, and resolution of regulatory/certification issues potentially impeding the introduction of these technologies into the marketplace. The cost-shared activities envisioned under this FOA would address industry-identified projects from a very broad scope of technical topical areas including, but not limited to, innovations and improvements in:

- Advanced nuclear reactor designs, including small modular reactors of various technology types;
- Engineering, analyses and experimentation that would address first-of-a-kind reactor design, certification, and licensing issues;
- Advanced manufacturing, fabrication and construction techniques for nuclear parts, components, and full-scale plants, or integrated efforts that could positively impact the domestic nuclear manufacturing enterprise;
- Sensors, instrumentation and control systems;
- Plant auxiliary and support systems;
- Operational inspection and monitoring capabilities;
- Modeling and simulation of various elements of plant life cycle;
- Procedures, processes, and methodologies that can impact operational efficiencies;
- Integration of nuclear energy into micro-grid, non-electric, and/or hybrid applications;
- Other components, systems, processes, or capabilities, including dynamic convection technologies, that could result in performance and economic improvements in advanced nuclear reactor designs; and,
- Efforts to address regulatory and licensing issues with the NRC.

In general, NE is seeking applications for unique/new ideas that will improve the existing fleet, the potential for future U.S. nuclear power deployment, U.S. nuclear technology leadership, and U.S. industry competitiveness. It is also the intent of the Department that this FOA will serve to improve the outlook for manufacturing enterprise development in the U.S. Applicants will be asked to provide applications under the specific pathways detailed below. Indicators of a successful project may include evidence of attributes such as:

- Broad domestic industry support for the proposed effort;
- Broad applicability to multiple reactor technologies and types;
- Technology delivery timelines and schedules that align with industry needs;
- Reasonable and defensible cost estimates; and,
- Manageable and achievable project plans.

This FOA is expected to be continuously open (with modifications as needed) through December 2022 and will provide applicants the opportunity to submit new applications for consideration at any time while the solicitation is open. These applications will be reviewed on a nominal 2 times a year basis (i.e., the Department will commence reviews on submitted applications and continue until yearly award limits have been reached for each year that the FOA remains open). Applicants may submit multiple applications under this FOA (with limit of 2 applications per review cycle). Each application submitted by a single U.S. nuclear industry entity must describe a unique project under one of the pathways listed and described below, with distinct applicability to industry needs.

In order to be eligible for DOE review, applications should be submitted in accordance with the due date below each year the FOA remains open, as follows:

Final Due Date: October 11, 2022, at 5:00:00 p.m. ET

C. INDUSTRY APPLICATION PATHWAYS

This FOA provides award opportunities to U.S. owned industry entities as defined in Section III, Paragraph A.

For U.S. industry entities meeting the definition of Section III, Paragraph A, this FOA contains three (3) separate funding opportunity pathways as described below:

1. Pathway 1 - First of a Kind Nuclear Demonstration Readiness Projects

The Department believes that nuclear energy holds significant promise as a safe, clean and economical solution to the Nation's future energy needs. The Department recognizes that much work remains to assure the successful introduction of U.S.-based advanced reactor designs into the marketplace and subsequent deployment. It is also recognized that industry may have innovative technologies that require additional development in order for them to be demonstrated in the existing fleet. This pathway provides opportunities for the development of a broad range of nuclear projects that are expected to result in operational improvements of the existing fleet, or the deployment of new, innovative designs. The Department defines "deployment" for the purposes of new plant designs as a state where a plant has been constructed and is operational.

This application pathway is meant to address major advanced reactor design development projects or complex technology advancements for existing plants which have significant technical and licensing risk. The pathway will provide support for one or more advanced reactor projects that have the potential to be deployed by the mid-to-late 2020s for commercial demonstration of the proposed technology. The pathway is open to any advanced reactor design or technology that has a rational and achievable plan to meet these goals. Cost shared awards will be provided for (but will not be limited to) the following types of scope that can improve the commercialization potential of advanced reactor designs and technologies:

- Any new technology that has the ability to improve operations and extend the life of the existing fleet of domestic reactors;
- Completion of certification and licensing activities for advanced reactor designs;
- Design development, testing, analyses, first-of-a-kind engineering, and efforts leading to design finalization;
- Development of fabrication capabilities, supply chains, procurement tasks, and other efforts that assure the ability to economically manufacture and construct advanced reactors; and,
- Efforts involved in identifying, characterizing, permitting, and licensing sites associated with the proposed advanced reactor projects.

Awards for these projects will be made in the form of cost-shared cooperative agreements with a domestic technology developer and/or utility customer(s), with provisions for appropriately selected team members as subrecipients (see eligibility requirements listed in Section III A).

2. Pathway 2 - Advanced Reactor Development Projects

This application pathway is expected to lead directly to advances in the innovation and competitiveness of a broad set of domestic nuclear reactor designs and technologies. The scope of the FOA is purposely very broad to allow U.S. industry stakeholders to request Government support for applications involving concepts and ideas that they believe are best suited to improving the capabilities and commercialization

potential of advanced reactor designs and technologies. Proposed projects in response to this area of the FOA should clearly meet one or more of the objectives listed in Section I.B. above or provide a basis for how the proposed efforts meet the stated objectives. Awards for these projects will be made in the form of cost shared cooperative agreements with a nuclear industry partner, with provisions for appropriately selected team members as subrecipients (see eligibility requirements listed in Section III A).

3. Pathway 3 - Regulatory Assistance Grant and Technology Development Opportunities

Regulatory Assistance Grants:

A new opportunity for regulatory support to U.S. industry is available through this FOA. Cost shared grants will be awarded for applicants seeking funds in support of work with the U.S. Nuclear Regulatory Commission (NRC) to resolve design regulatory issues, to review topical reports or papers, and other efforts focused on obtaining certification and licensing approvals. The Department recognizes that the development of advanced reactor designs and technologies involves addressing both the regulatory requirements and the certification and licensing processes that are required for the commercial industry to successfully bring these designs and technologies to market. Thus, one element of this grant pathway will be to help U.S. industry to bring capabilities and expertise together to address the challenges and opportunities associated with the regulatory environment. With support for early interactions with the regulator, the NRC will be in a better position to evaluate U.S. industry ideas and establish appropriate processes to assure regulatory acceptance of the advanced capabilities of the new U.S. advanced reactor designs and technologies. Regulatory support cost shared grants will be awarded directly to selected U.S. industry applicants to support:

- Analysis, testing, computation or engineering required to develop regulatory positions that will be presented to the NRC in reports, papers, meetings, applications, or other media;
- Development of regulatory documentation, including topical reports and papers, permits, applications, and any other NRC deliverable;
- Costs to support interactions with the NRC, including informational meetings, technical and topical report reviews, and pre- and post-applications reviews; and,
- Other proposed activities that show promise for resolving regulatory issues.

Nuclear Energy Vouchers:

DOE NE is also continuing to provide support for nuclear technology development similar to that provided by the GAIN Small Business Voucher Pilot Program that was initiated in 2016. This program was very successful in supporting nuclear energy innovation to develop advanced nuclear energy technologies. DOE-NE has expanded this program to provide similarly-sized award vouchers to all types of U.S. companies, regardless of size, to assist applicants seeking access to DOE National Laboratories expertise and capabilities.

Although currently not part of this FOA, the NE Voucher Program is now available to assist U.S. industry to support nuclear energy innovation. If you are interested in access to these capabilities utilizing the NE Voucher Program, please visit the link:

<https://gain.inl.gov/SitePages/Nuclear%20Energy%20Vouchers.aspx> for information on how to apply.

D. AUTHORIZING STATUTES AND REGULATIONS

The programmatic authorizing statutes are 42 U.S.C. 2011 §§ 2011, 2013-2014, 2051-2053, Atomic Energy Act of 1954, as amended by the Department of Energy Organization Act of 1977, as amended.

Awards made under this announcement will fall under the purview of 2 CFR Part 200 as amended by 2 CFR Part 910.

E. APPLICATIONS SPECIFICALLY NOT OF INTEREST

Examples of the types of applications which will be deemed nonresponsive to this FOA and will not be reviewed or considered (also see Section III of the FOA), include:

- Applications that fall outside of the technical topical areas specified in Section I.B of the FOA, to include nuclear reactor technologies for which the Government would be a primary customer. Applications should target technologies for the commercial nuclear power marketplace;
- Applications involving the limited work authorization or construction phase of a reactor project;
- Applications for projects having a scope for which funding has been provided through another Federal Award. However, applications for the further advancement/development of activities/projects previously funded under another Federal award may be eligible for funding;
- Applications involving reactor technologies primarily for the purpose of producing industrial or medical isotopes, or other medical applications;
- Applications that involve the development of uranium enrichment technologies or associated research and development;
- Applications involving research, development, design, or licensing of fusion energy; and
- Technology Development Vouchers.
- Applications that involve the development or use of heavy water-moderated technology.
- Applications proposing a commercialization case within the next decade that is dependent on development of a large-scale domestic thorium fuel cycle infrastructure.

SECTION II - AWARD INFORMATION

A. TYPE OF AWARD INSTRUMENT

DOE anticipates awarding cooperative agreements and grants to U.S. nuclear industry partners under this announcement.

Updated funding projections will be provided as appropriate throughout the term of the FOA. DOE reserves the right to allocate funding in response to its periodic application review cycle, depending on the perceived value of the applications to support technology development and innovation.

B. ESTIMATED FUNDING

The total expected funding for all awards over the five-year period is approximately \$250 million, contingent upon congressional appropriations. Applications are to be written so each proposed task within a budget period is completed within the specified budget period.

C. ANTICIPATED MINIMUM AND MAXIMUM AWARD SIZE (For the life of each award)

Pathway	Anticipated Minimum and Maximum Award Size	Federal Floor (i.e., the anticipated minimum amount for an individual award made under this announcement)	Federal Ceiling (i.e., the anticipated maximum amount for an individual award made under this announcement)
<u>1</u>	<u>First of a Kind Nuclear Demonstration Readiness Projects</u>	\$1,000,000	\$20,000,000
<u>2</u>	<u>Advanced Reactor Development Projects</u>	\$500,000	\$20,000,000
<u>3</u>	<u>Regulatory Assistance Grants</u>	\$50,000	\$500,000

D. EXPECTED NUMBER OF AWARDS

Pathway 1 - First of a Kind Nuclear Demonstration Readiness Projects: Due to the minimum award size for this pathway, DOE will make awards commensurate with available budget. DOE may issue one or more, or may choose not to make any awards based on the current year budget situation, the merit of the applications received, and other selection factors contained in Section V. If selected, DOE may decide to fund only a portion of the application or the entire application for award. If only a portion of the application is selected for negotiations, a new application is required to be submitted for the portion that was not selected for negotiations.

Pathway 2 - Advanced Reactor Development Projects: DOE anticipates making approximately one to three cooperative agreement awards under this FOA each FY. DOE may issue one, multiple, or choose not to make any awards based on the merit of the applications received and the other selection and other program policy factors contained in Section V. If selected, DOE may decide to fund only a portion of the application or the entire application for award. If only a portion of the application is funded, a new application is required to be submitted for the portion that was not selected for negotiations.

Pathway 3 - Regulatory Assistance Grants: DOE anticipates making approximately 1-5 total grants under this FOA each FY. DOE may issue one, multiple, or choose not to make any awards based on the merit of

the applications received and the selection and other program policy factors contained in Section V.

EXPECTED NUMBER OF AWARDS

	Pathways	Expected Range
1	<u>First of a Kind Nuclear Demonstration Readiness Projects</u>	0-3 per FY
2	<u>Advanced Reactor Development Projects</u>	1-3 per FY
3	<u>Regulatory Assistance Grants</u>	1-5 per FY

E. ANTICIPATED MAXIMUM FEDERAL COST SHARE (Over the life of the award)

	Pathways	Maximum Federal Cost Share
1	<u>First of a Kind Nuclear Demonstration Readiness Projects</u>	\$20,000,000
2	<u>Advanced Reactor Development Projects</u>	\$20,000,000
3	<u>Regulatory Assistance Grants</u>	\$500,000

F. PERIOD OF PERFORMANCE

The period of performance for awards under this FOA is anticipated to start 30 days after issuance of an award.

Pathway 1 - First of a Kind Nuclear Demonstration Readiness Projects: DOE anticipates making cooperative agreement awards with an estimated project period of performance of up to three years*. (A continuation application is required**)

Pathway 2 - Advanced Reactor Development Projects: DOE anticipates making cooperative agreement awards with an estimated project period of performance of up to two years*. (A continuation application is required**)

Pathway 3 - Regulatory Assistance Grants: DOE anticipates making grant awards with an estimated project period of performance for approximately one year.

* Project continuation will be contingent upon 1) availability of funds appropriated by Congress for the purpose of this program; 2) the availability of future-year budget authority; 3) substantial progress towards meeting the objective of the approved application; 4) submittal of required reports/other deliverable; 5) compliance with the terms and conditions of the award; and 6) DOE approval of a continuation application. Included in the evaluation of whether the recipient is making substantial progress towards meeting the objectives of the approved application, DOE will evaluate demonstrative project performance, project schedule adherence, meeting of milestone objectives, quality of deliverables, compliance with reporting requirements, and overall contribution to the program goals and objectives. As a result of this evaluation, DOE will make an annual determination to continue the project, re-direct the project, or not approve the continuation application and discontinue funding the project.

****A continuation application is required to be submitted to the DOE Technical Project Officer and the DOE Contract Specialist for approval at least 90 days prior to the end of the current budget period. Upon approval of the continuation application, an amendment is issued to authorize the expenditure of funds for the project during the new budget period. The required content of the continuation application will be included in the terms and conditions of the initial agreement. Both fully funded or partially funded awards require a continuation application.**

G. TYPE OF APPLICATION

DOE will accept only new applications under this announcement.

SECTION III - ELIGIBILITY INFORMATION

A. ELIGIBLE APPLICANTS

To be considered for evaluation, an applicant's submission must meet the criteria set forth in this FOA. If the application does not meet these requirements, it will be considered nonresponsive, removed from further evaluation, and ineligible for an award. Throughout this document, unless stated otherwise, requirements of the "applicant" must be met by the prime recipient.

This FOA provides award opportunities to United States owned industry entities. United States means the several States, the District of Columbia, and all commonwealths, territories, and possessions of the United States.

United States-owned company means a company that is either -

- (i) A United States-owned company; or
- (ii) Incorporated or organized under the laws of any State and has a parent company which is incorporated or organized under the laws of a country which -
 - (a) Affords to the United States-owned companies opportunities, comparable to those afforded to any other company, to participate in any joint venture similar to those authorized under the Act¹;
 - (b) Affords to United States-owned companies local investment opportunities comparable to those afforded to any other company; and
 - (c) Affords adequate and effective protection for the intellectual property rights of United States-owned companies.

DOE has restricted eligibility for award in accordance with 2 CFR 910.126(b). It has been determined necessary to restrict eligibility to apply as a prime recipient to entities meeting the definition above, foreign entities, foreign public entities, foreign organizations, state and local governments, institutes of higher education and Federally Funded Research and Development Centers/National Laboratories (FFRDC/NL), are not eligible to participate as a prime applicant. This eligibility restriction does not apply to subrecipients, subawards, vendors, or team members of the prime/lead applicant.

Any reactor design developers who receive funds under DOE's Advanced Reactor Demonstration Funding Opportunity Announcement for advanced reactor demonstrations are not eligible to receive funds under this FOA. By applying to this FOA, applicants are certifying they comply with this requirement.

B. FFRDC/NL

An applicant may propose a DOE/NNSA FFRDC/NL contractor as a subrecipient to an entity's application subject to the following guidelines:

- Authorization for DOE/NNSA FFRDC/NL. As allowed per EPLRA 2005, Sections 2 and 989, the cognizant contracting officer for the FFRDC/NL must authorize in writing the use of a DOE/NNSA FFRDC/NL contractor on the proposed project and this authorization must be submitted with the application. The following wording is acceptable for this authorization:

¹ Energy Policy Act of 1992

"Authorization is granted for the [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."

- Conflict of Interest. Conflicts of interest may exist due to previous efforts performed by the FFRDC/NL or due to assistance provided in program direction and other mission related activities. Accordingly, for each FFRDC/NL proposed for a particular project, the FFRDC/NL shall include a statement identifying any potential conflicts of interest, a full explanation of the conflict, whether the FFRDC/NL feels it is significant or not, along with rationale, and, if significant, how the conflict of interest will be avoided, neutralized, or mitigated.
- Value/Funding. The value of, and funding for, the FFRDC/NL contractor portion of the work will not normally be included in the award to a successful applicant. DOE/NNSA will fund a DOE/NNSA FFRDC/NL contractor through the DOE field work proposal system.
- Cost Share. The applicant's cost share requirement will be based on the total cost of the project, including the applicant's and the FFRDC/NL contractor's portions of the effort, as well as the nature of the work being proposed (this is discussed below in Section C.).
- Scope. The scope of work to be performed by the FFRDC/NL contractor may not be more significant than the scope of work (**FFRDC/NL efforts may not exceed 49 percent of total funding**) to be performed by the applicant.
- Responsibility. The applicant, if successful, will be the responsible authority (Prime Recipient) 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/NL contractor.

C. COST SHARING

The cost share requirement is listed in EPLA 2005 Section 988. To determine the appropriate Pathway to apply under, refer to the additional information on Technology Readiness Level (TRL) in Appendix C. First, determine the phase of your technology development based on the identifiers in the "Relative Level of Technology Development" column of Appendix C. Then, crosscheck that the corresponding "TRL Definition" and "Description" support the phase of your technology development. If your technology does not meet the "TRL Definition" and "Description" identified, then increase or decrease the "Technology Readiness Level" until the Technology Readiness Level "TRL Definition" and "Description" provide the best fit for your phase of technology development.

Pathway 1: The recipient's cost share must be a minimum of 50 percent of the total allowable costs for technologically mature or demonstration projects.

Pathway 2: The recipient's cost share must be a minimum of 20 percent of the total allowable costs for applied research projects or other efforts that are lower on the TRL spectrum.

Pathway 3: The recipient's cost share must be a minimum of 20 percent for Regulatory Assistance Grants.

The sum of the Government share, including any FFRDC/NL costs (if applicable), and the recipient share of allowable costs equals the total allowable cost of the project. Recipient cost share must come from non-Federal sources unless otherwise allowed by law.

This cost share requirement applies to all project costs, including demonstration, R&D, or other activities, for all potential awards made under this FOA. (See 2 CFR 200.306 and 2 CFR 910.130 for the applicable cost sharing requirements). To assist applicants in calculating proper cost share amounts, NE has included a cost share information sheet and sample cost share calculation in Appendix A to this FOA.

In addition to the impartial review of the scientific and technical merits of the applications received, as stated in the EPAct 2005 Section 989, the Department will consider the type of research being proposed (i.e., basic, applied, or demonstration) and will make a final determination regarding the type of research being proposed and the percentage of cost-share to be provided. In these cases, the determination of the Department will be considered final. If interested applicants have questions regarding the appropriate percentage of cost sharing required for a particular proposed project, they are encouraged to engage with the DOE Contracting Officer early on in the application development process to seek a required cost share determination.

- Legal Responsibility of Cost Share Requirements

Applicants will be bound by the cost share proposed in their applications and the cost sharing requirements incorporated into the award.

The cost share requirement applies to the project as a whole, including work performed by members of the project team in addition to the Prime Recipient. The Prime Recipient is legally responsible for paying the entire cost share. The Prime Recipient's cost share obligation is expressed in the Assistance Agreement as a static amount in U.S. dollars (cost share amount) and as a percentage of the Total Project Cost (cost share percentage). If the funding agreement is terminated prior to the end of the project period, the Prime Recipient is required to contribute at least the cost share percentage of total expenditures incurred through the date of termination.

The Prime Recipient is solely responsible for managing cost share contributions by the Project Team and for enforcing cost share obligation(s) assumed by Project Team members in sub-awards or related agreements.

- Cost Share Allocation

Each Project Team is free to determine how best to allocate the cost share requirement among the team members. The amount contributed by individual Project Team members may vary, as long as the cost share requirement for the project as a whole is met.

- Cost Share Types and Allowability

Every cost share contribution must be allowable under the applicable Federal cost principles, as described in Section IV of the FOA. In addition, cost share must be verifiable upon submission of the Application. Project Teams may provide cost share in the form of cash, personnel costs, value of service or other in-kind contributions, indirect costs, or facilities and administrative costs, and any funds received under the power program of the Tennessee Valley Authority (except to the extent that such funds are made available under an annual appropriation). Cash contributions may be provided by the Prime Recipient or subrecipients. Allowable in-kind contributions are set forth in 2 CFR 200.306 and the Cost Principles of 2 CFR 200, Subpart E. Project teams may use funding or property received

from state or local governments to meet the cost share requirement, so long as the funding was not provided to the state or local government by the Federal Government. The Prime Recipient may not use the following sources to meet its cost share obligations including, but not limited to:

- Revenues or royalties from the prospective operation of an activity beyond the project period;
- Proceeds from the prospective sale of an asset of an activity;
- Federal funding or property (e.g., Federal grants, equipment owned by the Federal Government); or
- Expenditures that were reimbursed under a separate Federal Program.

Project Teams may not use the same cash or in-kind contributions to meet cost share requirements for more than one project or program. Cost share contributions must be specified in the project budget, verifiable from the Prime Recipient's records, and necessary and reasonable for proper and efficient accomplishment of the project. As all sources of cost share are considered part of total project cost, the cost share dollars will be scrutinized under the same Federal regulations as Federal dollars to the project. Every cost share contribution must be reviewed and approved in advance by the Contracting Officer and incorporated into the project budget before the expenditures are incurred. Applicants are encouraged to refer to 2 CFR 200.306 as amended by 2 CFR 910.130 for additional guidance on cost sharing.

- Cost Share Contributions by FFRDC/NL
Because FFRDC/NL are funded by the Federal Government, costs incurred by FFRDC/NL generally may not be used to meet the cost share requirement and are instead included as part of the DOE's cost share. FFRDC/NL may contribute cost share only if the contributions are paid directly from the contractor's Management Fee or another non-Federal source.
- Cost Share Verification
Applicants are required to provide written assurance of their proposed cost share contributions for the total project in their applications. Upon selection for award negotiations, applicants are required to provide additional information and documentation regarding their cost share contributions. Please refer to Appendix A of the FOA.
- Cost Share Payment
Unless the terms and conditions of the award state otherwise, DOE requires recipients to contribute the required cost share amount incrementally over the life of the award, as described below.

Standard Form 270, Request for Advance or Reimbursement (hereafter "Invoice"): If the recipient is required to submit an Invoice to DOE for payment (either in "Advance" or as "Reimbursement") the recipient's cost share amount listed for each billing period must always reflect at least the overall cost share ratio negotiated by the parties for the current Budget Period, i.e., the amount of cost sharing included on each Invoice – and the cumulative amount of cost sharing listed relative to the total costs billed - must always be at least equal to the figure calculated by multiplying the total costs of the project incurred to date (including costs incurred by the FFRDC/NL) by the cost sharing percentage negotiated. If the recipient has incurred a greater amount of cost sharing than is required at that point in the Budget Period, the higher amount of cost sharing may be reflected on the Invoice - but in no case may the Invoice ever reflect a lower amount of cost share than is required.

D. PERCENTAGE COMPLETED BY APPLICANT

Applicant is required to perform a minimum of 35 percent of the total project cost. Do not include efforts performed by subcontractors, subrecipients or FFRDC's when calculating the percentage.

E. NUMBER OF SUBMITTALS ELIGIBLE FOR REVIEW

Applicants may submit multiple applications under this FOA (with a limit of two applications per review cycle). Each application must describe a unique project, with distinct applicability to industry needs, and must clearly demonstrate that the applicant has sufficient resources (i.e., personnel, cost-share, facilities, etc.) to successfully manage the award.

The applicant is considered to be the prime recipient and is allowed no more than , two (2) active awards resulting from this FOA, unless one or more of the awards is a Pathway 3 award, in which case the applicant is allowed no more than three (3) active awards.

If an applicant currently has the maximum number of allowed awards, they are eligible to apply no earlier than 6 months prior to the end date of the period of performance of the award with the earliest end date. For example, if the applicant has the following awards:

Pathway 2 with an end date of January 2022
Pathway 2 with an end date of May 2023
Pathway 3 with an end date of July 2022

The applicant would be eligible to apply for the review cycle with a due date of August 31, 2021, since the Pathway 2 award expiring in January 2022 is within the 6-month window of the August review cycle. When determining when you are eligible to apply, remember to consider the maximum number of awards limit (see paragraph above).

Once the period of performance for a current award is complete and all reporting requirements have been met, the applicant is eligible to receive a new award if selected. There are no limitations to the number of awards as a non-prime recipient (i.e. subcontractor, contractor, or subrecipient).

F. FELONY CONVICTION AND TAX LIABILITIES

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

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

For purposes of these representations the following definition 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]. It includes both for-profit and non-profit organizations.

G. QUESTIONS REGARDING ELIGIBILITY

Questions regarding eligibility should be directed to the Agency contact identified in Section VII.B.

SECTION IV - APPLICATION AND SUBMISSION INFORMATION

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

A. ADDRESS TO REQUEST APPLICATION PACKAGE

Electronic applications and instructions are available at the <https://www.id.energy.gov/> website. To access these materials, (1) go to <https://www.id.energy.gov/>, (2) find information on page referencing FOA and select “DE-FOA-0001817 Application”, (3) select “Sign In” from the top right hand corner of the screen, (4) enter your user credentials, (5) select “Applications” from the menu, and (6) click on “Create New Application” for the type of application you are creating.

Paper copies of the application package can be requested at:

DOE – Idaho Operations Office
Attn: Andrew Ford
1955 Fremont Avenue, MS 1221
Idaho Falls, Idaho. 83415

Telephone: 208-526-3059

B. APPLICATION PROCESS

DOE performs an initial eligibility review of applicant submissions to determine whether they meet the eligibility requirements of Section III of the FOA. **DOE will not review or consider submissions that do not meet the eligibility requirements of Section III.**

Document Format Requirements

All submissions must conform to the following form and content requirements, including maximum page lengths (described below) and must be submitted as specifically stated. DOE will not review or consider submissions submitted through means other than specifically stated in the FOA, or any incomplete submissions.

Applications must conform to the following requirements:

- Each document must be submitted in Adobe PDF format, 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.
- Each document must be written in English.
- All non-budget documentation (use templates where provided) is to be prepared using standard 8.5” by 11” paper with 1” margins (top, bottom, left, right), using a font size no smaller than Times New Roman 11 point. Each submission must not exceed the specified maximum page limit, including cover page, charts, graphs, maps, and photographs when printed using the formatting requirements set forth above and single spaced. If applicants exceed the maximum page lengths indicated below, **DOE will review only the authorized number of pages and disregard any additional pages.**

C. APPLICATION FOR PATHWAY 1 - FIRST OF A KIND NUCLEAR DEMONSTRATION READINESS PROJECTS PATHWAY AND PATHWAY 2 - ADVANCED REACTOR DEVELOPMENT PROJECTS PATHWAY

Applicants must submit an application to be considered for funding under this FOA. Applicants must complete all mandatory forms and any applicable optional forms (e.g., SF-LLL- Disclosure of Lobbying Activities) in accordance with the instructions on the forms and the additional instructions below. Files that are attached to the forms must be in Adobe Portable Document Format (PDF) unless otherwise specified in this announcement.

Application Content and Form Requirements (First of a Kind Nuclear Demonstration Readiness Projects and Advanced Reactor Development Projects Pathways 1 and 2 only). Regulatory Grant Pathway 3 discussed in sections E and F, below)

DOE will not review or consider noncompliant applications (see Section III of the FOA). **Evaluators will not review pages above the specified limit.**

Each Application shall be limited to a single concept or technology. Unrelated concepts and technologies shall not be consolidated in a single application.

Applications must conform to the following requirements:

	Name of Document	Format	Required From
1	Conflict of Interest Acknowledgement	PDF	Affirmed by Lead Applicant for all Participants
2	SF 424 R&R Application	Form	Lead Applicant
3	Research and Related Other Project Information	Form	Lead Applicant
4	Project Summary/Abstract (2 page limit)	PDF	Lead Applicant
5	Project Narrative File <ul style="list-style-type: none"> • Pathway 1 - First of a Kind Nuclear Demonstration Readiness Projects (40 page limit) • Pathway 2 - Advanced Reactor Development (25 page limit) 	PDF	Lead Applicant
	Other Attachments		
6	Project Management Plan <ul style="list-style-type: none"> • Pathway 1 - First of a Kind Nuclear Demonstration Readiness Projects (20 page limit) • Pathway 2 - Advanced Reactor Development (10 page limit) 	PDF	Lead Applicant
7	Resume / Vitae – Technical Expertise and Qualifications (2 pages each)	PDF	All leads and collaborators*
8	Benefit of Collaborations (4 page limit)	PDF	Lead Applicant
9	Capabilities (5 page limit)	PDF	Lead Applicant
10	R&R Budget (Total Fed + Non-Fed)	Form	Lead Applicant

	Name of Document	Format	Required From
11	R&R Subaward Budget (Total Fed + Non-Fed), if applicable	Form	Collaborators*/ Subrecipients
12	Budget for DOE National Laboratory Contractor or FFRDC/NL, if applicable	PDF	National Laboratory Leads and Collaborators*
13	Budget Justification	PDF	Lead Applicant
14	Subaward Budget Justification	PDF	Collaborators*/ Subrecipient
15	Current and Pending Support	PDF	Lead Applicants and Collaborators*
16	Coordination and Management Plan (4 page limit)	PDF	Lead Applicant
17	Letter of Authorization from Cognizant Contracting Officer for DOE/NNSA FFRDC/NL, if applicable	PDF	National Laboratory Applicants (including non-funded collaborators*)
18	Project/Performance Site Location	PDF	All sites performing work
19	SF-LLL Disclosure of Lobbying Activities, if applicable	PDF	Lead Applicant
20	Certifications and Assurances	Form/PDF	Lead Applicant
21	Waiver Requests: Performance of Work in the United States, if applicable	PDF	Lead Applicant
22	Commitment Letters from Third Parties Contributing to Cost Sharing, if applicable	PDF	Lead Applicant
23	Past Performance	PDF	Lead Applicant and Collaborators*
24	Foreign Interest/Ownership Disclosure	PDF	Lead Applicant and Collaborators*

* 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 on the application form. **Any individuals that do not meet these criteria should not be listed as collaborators on the application.** The PI must certify that all collaborators are listed on the application form and have agreed to participate on the project.

Note: The maximum file size that can be uploaded to the <https://www.id.energy.gov/> website is 10MB. Files in excess of 10MB cannot be uploaded and cannot be submitted for review.

DOE will not accept late submissions that resulted from technical difficulties due to uploading files that exceed 10MB.

Detailed guidance on the content and form of each application component is listed below.

D. CONTENT AND APPLICATION FORMS FOR PATHWAY 1 - FIRST OF A KIND NUCLEAR DEMONSTRATION READINESS PROJECTS PATHWAY AND PATHWAY 2 - ADVANCED REACTOR DEVELOPMENT PROJECTS PATHWAY

Applicants must provide all information requested and can use forms and optional templates 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 at the www.grants.gov website.

1. Conflict of Interest (COI) Acknowledgement

Conflicts of interest may exist due to previous efforts performed by the Labs or assistance provided in program direction and other mission related activities. Check the appropriate box on the application signifying whether a potential COI exists. If a COI has been identified (for the lead PI or a collaborator), a file that explains the conflict must be attached, which includes a statement on how the potential conflict will be avoided, neutralized, or mitigated. This document must be attached even if the conflict appears to be insignificant. If no COI exists, check the box and proceed.

For each subapplicant that is DOE/NNSA FFRDC/NL or non-DOE FFRDC, identify any potential conflicts of interest, fully explain the conflict, whether you feel it is significant or not, along with your rationale and, if significant, how you will avoid, neutralize, or mitigate the potential conflict.

Name File: IND FOA FY20__ COI Acknowledgment “Insert ID #.pdf”

2. SF 424 R&R Application

Applicants shall complete the SF-424 R&R form available at the application site document library and upload a completed PDF copy of the form with the application.

Name File: IND FOA FY20__ SF424RR “Insert ID #.pdf”

3. Research and Related Other Project Information

Applicants shall complete items 1–6 on the R&R Other Project Information form available at the application site document library 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: IND FOA FY20__ R&R Other Project Information “Insert ID #.pdf”

4. Project Summary/Abstract

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 PI and Co-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 major participants (for collaborative projects). This document must not include any proprietary or sensitive business information

as the DOE may make it available to the public if selected for negotiations. The template is available at the application site document library.

2 page limit, Name File: IND FOA FY20__ Summary-Abstract "Insert ID #.pdf"

5. Project Narrative File

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

- Application title.
- Final Technical Workscope Identification (Pathway 1 - First of a Kind Nuclear Demonstration Readiness or Pathway 2 - Advanced Reactor Development).
- Project Objectives: Provide a clear, concise statement of specific objectives/aims of the proposed project.
- Proposed Scope Description.
- Technical Description
 - For the Pathway 1 - First of a Kind Nuclear Demonstration Readiness Projects, applicants should provide a detailed technical description of the proposed innovative technology for projects other than reactor designs. For new reactor designs, the applicant should provide a general description of the plant configuration, the thermal conversion system, the envisioned fuel cycle (e.g., fuel type, fuel supply chain, and high level waste management), safety features, containment type, the decay heat removal system and advantages of the proposed advanced reactor concept relative to the current light water reactor technology and other advanced reactor concepts.

For either type of project, the applicant should provide detail addressing these attributes, if applicable:

- i) Safety - Describe design features that address defense-in-depth, accident prevention and mitigation strategies.
- ii) Operations - Describe operational features that simplify operation, minimize radioactive waste, reduce maintenance and staffing requirements, provide for improved reliability, resiliency, and enhance safeguards and security.
- iii) Economics - Describe unique features that provide for improved economics.
- For Pathway 2 - Advanced Reactor Development projects, applicants should include a technical description that provides a general understanding of the technology being proposed, and how the technology will be implemented into the existing fleet or advanced reactor design.

For both types of projects, the applicant should identify the logical path to accomplishing the proposed scope, including descriptions of required tasks.

- All applicable elements of Section I must be addressed, including adequate information to indicate applicant understanding and commitment to meeting the statement of objectives for all aspects of the project.
- This Project Narrative File section should be formatted to address each of the merit review criterion listed in Section V.C.2 Provide sufficient information so that reviewers will be able to evaluate the

application in accordance with these merit review criteria (cross reference in your discussion which criteria is being addressed) . **DOE has the right to evaluate and consider only those applications that separately address each of the merit review criteria.**

- Identify technology readiness level of the project based on Technology Readiness Level table listed in Appendix C.
- Relevance and Outcomes/Impacts: This section will explain the program relevance/priority of the effort to the objectives in the program announcement and the expected outcomes and/or impacts.
- Schedule: Define timelines for executing the specified workscope, 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 workscope. Describe the role and work to be performed by each participant/investigator/key personnel, 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.

NOTE: References are included in the page limits.

Bibliography and References Cited Appendix: Provide a bibliography of any references cited in the Project Narrative. Each reference must include the names of all authors (in the same sequence in which they appear in the publication), the article and journal title, book title, volume number, page numbers, and year of publication. Include only bibliographic citations. Applicants should be especially careful to follow scholarly practices in providing citations for source materials relied upon when preparing any section of the application. In order to reduce the number of files attached to your application, please provide the Bibliography and References Cited information as an appendix to your project narrative.

The project narrative must not exceed 40 pages for Pathway 1 - First of a Kind Nuclear Demonstration Readiness Projects or 25 pages for Pathway 2 - Advanced Reactor Development Projects, including, cover page, table of contents, charts, graphs, maps, photographs, tables, and other pictorial presentations while complying with the document format instructions in Section IV. Do not include any Internet addresses (URLs) that provide information necessary to review the application. **Evaluators will not review pages above the specified limit.**

40 or 25 page limit, Name File: IND FOA FY20__ Technical Narrative "Insert ID #.pdf"

6. Project Management Plan

The Project Management Plan (PMP) should be formatted to include the following sections with each section to include the information as described below:

- a) Executive Summary. Provide a description of the project that includes the objective, project goals, and expected results. For purposes of the application, this information is included in the Project Narrative and should be simply copied to this document for completeness, so that the PMP is a stand-alone document.

- b) Risk Management. Provide a summary description of the proposed approach to identify, analyze, and respond to perceived risks associated with the proposed project. Project risk events are uncertain future events that, if realized, could impact the success of the project. As a minimum, include the initial identification of significant technical, resource, and management issues that have the potential to impede project progress and strategies to minimize impacts from those issues.
- c) Milestone Log. Provide milestones for each budget period (or phase) of the project. Each milestone should include a title and planned completion date. When submitting the Milestone Log in your application, do not use calendar dates, use number of weeks or months after receipt of award (ARA), for example do not use “January 15, 2019” instead use “5 weeks ARA” or “3 months ARA”. Milestones should be quantitative and show progress toward budget period and/or project technology goals. During project performance, the recipient will report the Milestone Status as part of the required quarterly Progress Report. The Milestone Status will present actual performance in comparison with Milestone Log, and include:
 - i) the actual status and progress of the project;
 - ii) specific progress made toward achieving the project’s milestones; and,
 - iii) any proposed changes in the project’s schedule required to complete milestones.
- d) Funding and Costing Profile. Provide a table (the Project Funding Profile) that shows, by budget period, the amount of government funding going to each project team member, as well as projected total amounts per member. Also, provide a table (the Project Costing Profile) that projects, by month, the expenditure of government funds for the first budget period, at a minimum.
- e) Project Timeline. Provide a timeline of the project (similar to a Gantt chart) broken down by each task and subtask, as described in the Statement of Project Objectives. The timeline should include for each task, a start date, and end date. The timeline should show interdependencies between tasks and include the milestones that are identified in the Milestone Log above.
- f) Success Criteria at Decision Points. Provide success criteria for each decision point in the project, including go/no-go decision points and the conclusions of budget periods and the entire project. The success criteria should be objective and stated in terms of specific, measurable, and repeatable data. Usually, the success criteria pertain to desirable outcomes, results, and observations from the project.

As the first task, successful applicants will revise the version of the PMP that is submitted with their applications by including details from the negotiation process. This PMP will be updated by the recipient as the project progresses, and the recipient must use this plan to report schedule and budget variances. The PMP will contain the project cost and schedule baseline and will be used as a basis to report budget and schedule variances.

The Project Management Plan must not exceed 20 pages for Pathway 1 - First of a Kind Nuclear Demonstration Readiness Projects or 10 pages for Pathway 2 - Advanced Reactor Development, including, cover page, table of contents, charts, graphs, maps, photographs, tables, and other pictorial presentations while complying with the document format instructions in Section IV. Do not include any Internet addresses (URLs) that provide information necessary to review the application. Evaluators will not review pages above the specified limit.

20 or 10 page limit, Name File: IND FOA FY20__ Project Management Plan “Insert ID #.pdf”

7. Resume / Vitae - Technical Expertise and Qualifications

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

- Contact information.
- Education and Training: Provide institution, major/area, degree, and year for undergraduate, graduate, and postdoctoral training.
- 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 five professional and scholarly activities related to the effort proposed.

Technical expertise and qualifications are to be provided for individual participants, whether the participant is receiving funding or not (including consultants or national laboratory personnel). All participants making a defined, material contribution that is critical to the success of the project must be listed on the online application. A separate resume/vitae for each individual collaborator must be uploaded to the application website.

2-page limit per person, Name File: IND FOA FY20__ Resume “Last Name of Individual” “Insert ID #.pdf”

8. Benefit of Collaborations

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 if the application has benefit or influence on other ongoing or proposed NE R&D projects.

4-page limit, Name File: IND FOA FY20__ Benefit of Collaboration “Insert ID#.pdf”

9. Capabilities

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 its location, availability, capabilities, and how it 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.

See the electronic application submission instructions for document guidance. This 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 available and explain why it cannot be used. See Part M – Equipment and Supplies, of this section.

Facilities & Other Resources Appendix: This information is used to assess the capability of the organizational resources, including subrecipient resources, available to perform the effort proposed. Identify the facilities to be used (Laboratory, Animal, Computer, Office, Clinical, and Other). If appropriate, indicate capacities, pertinent capabilities, relative proximity, and extent of availability to the project. Describe only those resources that are directly applicable to the proposed work. Describe other resources available to the project (e.g., machine shop, electronic shop) and the extent to which it would be available to the project.

Equipment Appendix: List major items of equipment already available for this project and, if appropriate identify location and pertinent capabilities.

5-page limit, Name File: IND FOA FY20__ Capabilities “Insert ID#.pdf”

10. R&R Budget Form (Total Fed + Non-Fed) (Required for all lead institutions)

Complete the Research and Related Budget (Total Fed and Non-Fed) form available at the application site in accordance with the following instructions. A separate budget for each year of support requested must be completed. The form will generate a cumulative budget for the total project period. Funds may be requested under any of the categories listed 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.

NOTE:

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

Item “J – Fee” in the budget sheets must be left blank. In accordance with 2 CFR 200.400 (g) payment of profit or fee is unallowable under federal financial assistance (i.e. grants and cooperative agreements). This includes fee as a component of a Time and Materials based labor rate.

If Fee or Profit is included in the budget, the Fee or Profit will be deducted from the requested Total Federal Funds Requested amount. For example:

Estimated Project Funding:

Total Federal Funds Requested: \$2,000,000

Total Non-Federal Funds: \$500,000

Total Federal and Non-Federal Funds: \$2,500,000

The applicant included Fee or Profit in the amount of \$250,000, this will be reduced from the federal share as follows:

The Total Federal Funds Requested: \$1,750,000

The Total Non-Federal Funds remains at \$500,000

Total Federal and Non-Federal Funds is \$2,250,000

Name File: IND FOA FY20__ Budget "Insert ID#.xls"

11. R&R Subaward Budget Form (Total Fed + Non-Fed)

If other entities/collaborators will receive funding under the proposed project, a determination must be made if they will be a subrecipient or a contractor. Please reference 2 CFR 200.330 *Subrecipient and contractor determinations*, for guidance on making the determination.

Budgets for subrecipients (other than DOE FFRDC/NL Contractors): Applicant must provide a separate R&R budget form available at the application site document library for each subrecipient that is expected to perform work estimated to be more than \$250,000 or 35% of the total-work effort (whichever is less).

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

Use up to 10 letters of the subrecipient institution's name as the file name.

Name File: IND FOA FY20__ Subaward "Insert ID #.xls"

12. Budget for DOE National Laboratory Contractor or FFRDC/NL (Required for FFRDC/NL)

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

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

Name File: IND FOA FY20__ FWP "Insert ID#.pdf"

13. Budget Justification (Required for lead applicants)

For each budget submitted, provide the Budget Justification Supporting Documentation; an instruction document is available at the application site document library. Provide the required supporting information for all costs required to accomplish the project, including the following costs: labor; equipment; domestic 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.

For indirect costs:

- a. Specify whether your proposed indirect rates been audited and approved (i.e., whether you have an approved federally recognized indirect cost rate negotiated between the applicant and the Federal Government); include a copy of the rate agreement, audit or information on where the audit can be obtained by DOE.
- b. If you do not have an approved federally recognized indirect cost rate and are opting to use the de minimis rate per 2 CFR 200.414 Indirect (F&A) costs, so state. Include information explaining how you qualify to use the de minimis rate, per 2 CFR 200.414(f), i.e., that you are a non-Federal entity that has never received a negotiated indirect cost rate, etc.
- c. Explain how the indirect cost amount was calculated based on the applicant's federally negotiated rate with their cognizant federal agency.
- d. Provide the name of your cognizant/oversight agency and the name and phone number of the individual responsible for negotiating your indirect rates.

For subrecipients, include the above information in a – d; if a Federally recognized indirect cost rate negotiated between the subrecipient and the Federal Government does not exist, provide either a rate negotiated between the pass-through entity and the subrecipient (in compliance with §200.331) along with justification for how it is reasonable, or a de minimis indirect cost rate as defined in §200.414 Indirect (F&A) costs, paragraph (f)

Provide an explanation of the source, nature, amount, and availability of any proposed cost sharing.

Name File: IND FOA FY20__ Budget Justification "Insert ID#.pdf"

14. Sub-Award Budget Justification

For each sub-award budget submitted, provide the Budget Justification Supporting Documentation; an instruction document is available at the application site document library. Provide the required supporting information for all costs required to accomplish the project, including the following costs: labor; equipment; domestic 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.

Name File: IND FOA FY20__ Sub-Award Budget Justification "Insert ID#.pdf"

15. Current and Pending Support (Required for all lead applicants and all collaborators)

As requested by the submission form, PI(s), subrecipients, and other senior/key persons for ongoing and pending applications shall identify all federal funding sources by agency source, project name, monetary amount (total award amounts for entire project period, including indirect costs), and length of term, person-months per year to be devoted to the project by the senior/key persons that are pending or currently in place for the PI or collaborators within the past five years. An instruction document is available at the application site document library.

Name File: IND FOA FY20__ Current and Pending Support "Insert ID#.pdf"

16. Coordination and Management Plan

Multiple PIs: The applicant, whether a single organization or team/partnership/consortium, must indicate if 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
- PIs’ roles and administrative, technical, and scientific responsibilities for the project.

4-page limit, Name File: IND FOA FY20__ CMP “Insert ID #.pdf”

17. Letter of Authorization from Cognizant Contracting Officer for DOE/NNSA FFRDC/NL (Required for FFRDC/NL listed on application regardless of funding level)

The cognizant contracting officer for the FFRDC/NL must authorize in writing the use of a DOE/NNSA FFRDC/NL 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 [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.”

Name File: IND FOA FY20__ CO Authorization “Insert ID#.pdf”

18. Project/Performance Site Location(s) Form

Indicate lead and collaborating site(s) where R&D work will be performed. Note the Project/Performance Site Congressional District is entered in the format of the 2-digit state code, following by the 3-digit Congressional district code (e.g., AA-001). A form is available at the application site document library

Name File: IND FOA FY20__ Site Location “Insert ID#.pdf”

19. SF-LLL Disclosure of Lobbying Activities Form

If applicable, complete SF-LLL. Applicability: If any funds other than Federal appropriated funds 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, you must complete and submit Standard

Form - LLL, "Disclosure Form to Report Lobbying" which is available at the application site document library

Name File: IND FOA FY20__ SF-LLL "Insert ID#.pdf"

20. Certifications and Assurances (Required for all lead applicants)

Applicants must complete and attach the Certifications and Assurances form available at the application site document library.

Name File: IND FOA FY20__ Certs and Assurances "Insert ID#.pdf"

21. Waiver Requests: Performance of Work in the United States

If applicable, as set forth in Section IV., all work under DOE funding agreements must be performed in the United States. This requirement does not apply to the purchase of supplies and equipment, so a waiver is not required for foreign purchases of these items. However, the Prime Recipient should make every effort to purchase supplies and equipment within the United States. Appendix B lists the necessary information that must be included in a request to waive the Performance of Work in the United States requirement.

Name File: IND FOA FY20__ Waiver "Insert ID#.pdf"

22. Commitment Letters from Third Parties Contributing to Cost Sharing

If applicable, at the time the application is submitted it must include a letter from each third party (i.e., a party other than the organization submitting the application). The letter must state that the third party is committed to providing a specific minimum dollar amount of cost sharing. Submitting 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 contribution 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; and (5) must be signed. Successful applicants must provide the signed letters of commitment as specified in Section IV.G, Submissions from Successful Applicants.

Name File: IND FOA FY20__ Commitment Letters "Insert ID #.pdf"

23. Past Performance

Applicants must submit data on past performance that demonstrates the applicant team (not required for FFRDC/NL) has 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 within budget and on time with no significant safety and quality issues.

Name File: IND FOA FY20__ Past Performance "Insert ID #.pdf"

24. Foreign Interest/Ownership Disclosure

Applicants must complete and attach the Foreign Interest/Ownership Disclosure template available at the application site document library.

Name File: IND FOA FY20__Foreign Interest/Ownership Disclosure “Insert ID #.pdf”

E. APPLICATION FOR PATHWAY 3 - REGULATORY ASSISTANCE GRANTS ONLY

Applicants must submit an application to be considered for funding under this FOA pathway. Applicants must complete all mandatory forms and any applicable optional forms (e.g., SF-LLL- Disclosure of Lobbying Activities) in accordance with the instructions on the forms and the additional instructions below. Files that are attached to the forms must be in Adobe Portable Document Format (PDF) unless otherwise specified in this announcement.

Content and Form Requirements of the Application

DOE will not review or consider noncompliant applications (see Section III of the FOA).

Each Application shall be limited to a single concept or technology. Unrelated concepts and technologies shall not be consolidated in a single application. **Evaluators will not review pages above the specified limit.**

Applications must conform to the following requirements:

	Name of Document	Format	Required From
1	Conflict of Interest Acknowledgement	PDF	Affirmed by lead applicant for all participants
2	SF 424 - Application for Federal Assistance	Form/PDF	All Lead Applicants
3	Project Summary/Abstract (1-page limit)	PDF	All Lead Applicants
4	Project Narrative File (8-page limit)	PDF	All Lead Applicants
5	Resume / Vitae (2-page each)	PDF	All Lead Applicants
6	SF424A, Budget Information, Non-Construction Programs File	Form/PDF	All Lead Applicants
7	Budget for DOE National Laboratory Contractor or FFRDC/NL, if applicable	PDF	National Laboratory Leads and Collaborators*
8	Budget Justification	PDF	All Lead Applicants
9	Current and Pending Support	PDF	All Lead Applicants and Collaborators*
10	Letter of Authorization from Cognizant Contracting Officer for DOE/NNSA FFRDC/NL, if applicable	PDF	National Laboratory Applicants (including non-funded collaborators*)
11	Project/Performance Site Location(s) Form	Form/PDF	All Lead Applicants
12	SF-LLL Disclosure of Lobbying Activities, if applicable	Form/PDF	All Lead Applicants
13	Certifications and Assurances	Form/PDF	All Lead Applicants

	Name of Document	Format	Required From
14	Commitment Letter from Third Parties Contributing to Cost Sharing	PDF	All Lead Applicants
15	Past Performance	PDF	All Lead Applicants
16	Foreign Interest/Ownership Disclosure	PDF	All Lead Applicants

* 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 on the application form. **Any individuals that do not meet these criteria should not be listed as collaborators on the application.** The PI must certify that all collaborators are listed on the application form and have agreed to participate on the project.

Note: The maximum file size that can be uploaded to the application website is 10MB. Files in excess of 10MB cannot be uploaded and cannot be submitted for review.

DOE will not accept late submissions that resulted from technical difficulties due to uploading files that exceed 10MB.

Detailed guidance on the content and form of each application component is listed below.

F. CONTENT AND APPLICATION FORMS FOR PATHWAY 3 - REGULATORY ASSISTANCE GRANTS ONLY

Applicants must provide all information requested and can use forms and optional templates 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 available at the application site document library.

1. Conflict of Interest (COI) Acknowledgement

Conflicts of interest may exist due to previous efforts performed by the Labs or assistance provided in program direction and other mission related activities. Check the appropriate box on the application signifying whether a potential COI exists. If a COI has been identified (for the lead PI or a collaborator), a file that explains the conflict must be attached, which includes a statement on how the potential conflict will be avoided, neutralized, or mitigated. This document must be attached even if the conflict appears to be insignificant. If no COI exists, check the box and proceed.

For each subapplicant that is a DOE/NNSA FFRDC/NL and/or non-DOE FFRDC, identify any potential conflicts of interest, fully explain the conflict, whether you feel it is significant or not, along with your rationale and, if significant, how you will avoid, neutralize, or mitigate the potential conflict.

Name File: IND FOA FY20__ COI Acknowledgment “Insert ID #.pdf”

2. 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 form available at the application site document library. 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.

Name File: IND FOA FY20__SF424 "Insert ID #.pdf"

3. Project Summary/Abstract

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). This document must not include any proprietary or sensitive business information as the Department may make it available to the public if selected for negotiations. 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) with Times New Roman font no smaller than 11 point. The template is available at the application site document library.

1-page limit, Name File: IND FOA FY20__ Summary-Abstract "Insert ID #.pdf"

4. Project Narrative File

Do not include any Internet addresses (URLs) that provide information necessary to review the application. See Section VIII.D for instructions on how to mark proprietary application information.

The project narrative must include the following:

A. Narrative Cover Page which must include:

- i. Name of organization;
- ii. Announcement number;
- iii. FOA Opportunity Title;
- iv. Technical and business points-of-contact for the applicant, denoting the names, titles, addresses, telephone and facsimile numbers, and electronic mail addresses;
- v. Principal Investigator's (PI's) name, telephone number, facsimile number, e-mail address, and organization name/unit; and
- vi. Names of team members or partnerships.

B. Project Objectives

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

Provide a narrative that describes how your application will further the development of a partnership with NRC and U.S. industry to bring capabilities and expertise together to address the challenges and opportunities associated with the regulatory environment.

C. Merit Review Criterion Discussion

This section should be formatted to address each of the merit review criterion and sub-criterion listed in greater detail in Section V, as well as selection and other program policy factors. Applicants shall provide sufficient information so that reviewers will be able to evaluate the application in accordance with the merit review criteria and selection (cross reference in your discussion which criteria is being addressed).

D. Project Timetable

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.

E. 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.

F. Roles of Participants

Describe the capabilities and qualifications of the PI, key personnel, 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.).

G. 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.

H. Equipment

- i. List important items of equipment already available for this project and, if appropriate, note the location and pertinent capabilities of each.
- ii. 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.
- iii. See Part M – Equipment and Supplies, of this section.

I. Utilization

- i. Provide a narrative that describes how your application will allow for researcher usage, both within the institution and by other entities.
- ii. If there is a preexisting capability, provide a description of how readily accessible and/or currently utilized the resource is by other entities.

8-page limit, Name File: IND FOA FY20__ Technical Narrative “Insert ID #.pdf”

5. Resume / Vitae (Technical expertise and qualifications)

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

- Contact information.
- Education and Training: Provide institution, major/area, degree, and year for undergraduate, graduate, and postdoctoral training.
- 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 five professional and scholarly activities related to the effort proposed.

Technical expertise and qualifications are to be provided for individual participants, whether the participant is receiving funding or not (including consultants or national laboratory personnel). All participants making a defined, material contribution that is critical to the success of the project must be listed on the online application. Separate resume/vitae for each individual collaborator must be uploaded to the application website

2-page limit/each, Name File: IND FOA FY20__ Resume “Last Name of Individual” “Insert ID #.pdf”

Technical expertise and qualifications are to be provided for individual participants, whether the participant is receiving funding or not (including consultants or national laboratory personnel). All participants making a defined, material contribution that is critical to the success of the project must be listed on the online application.

6. SF 424A, Budget Information – Non-Construction Programs File (Required for all lead applicants and collaborators)

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, "Budget Information - Non Construction Programs" form available at application site document library.

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 J).

Name File: IND FOA FY20__ Budget SF424A “Insert ID#.pdf”

7. Budget for DOE National Laboratory Contractor or FFRDC/NL (Required for FFRDC/NL)

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

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

Name File: IND FOA FY20__ FWP “Insert ID#.pdf”

8. Budget Justification File

For each budget (prime or subrecipient) the Budget Justification Supporting Documentation is available at the application site. Provide the required supporting information for all costs required to accomplish the project, including the following costs: labor; equipment; domestic 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.

For indirect costs:

- a. Specify whether your proposed indirect rates been audited and approved (i.e., whether you have an approved federally recognized indirect cost rate negotiated between the applicant and the Federal Government); include a copy of the rate agreement, audit or information on where the audit can be obtained by DOE.
- b. If you do not have an approved federally recognized indirect cost rate and are opting to use the de minimis rate per 2 CFR 200.414 Indirect (F&A) costs, so state. Include information explaining how you qualify to use the de minimis rate, per 2 CFR 200.414(f), i.e., that you are a non-Federal entity that has never received a negotiated indirect cost rate, etc.
- c. Explain how the indirect cost amount was calculated based on the applicant’s federally negotiated rate with their cognizant federal agency.
- d. Provide the name of your cognizant/oversight agency and the name and phone number of the individual responsible for negotiating your indirect rates.

For subrecipients, include the above information in a – d; if a Federally recognized indirect cost rate negotiated between the subrecipient and the Federal Government does not exist, provide either a rate negotiated between the pass-through entity and the subrecipient (in compliance with §200.331) along with justification for how it is reasonable, or a de minimis indirect cost rate as defined in §200.414 Indirect (F&A) costs, paragraph (f)

Provide an explanation of the source, nature, amount, and availability of any proposed cost sharing.

Name File: IND FOA FY20__ Budget Justification “Insert ID#.pdf”

9. Current and Pending Support

As requested by the submission form, PI(s), subrecipients, and other senior/key persons for ongoing and pending applications shall identify all federal funding sources by agency source, project name, monetary amount (total award amounts for entire project period, including indirect costs), and length of term, person-months per year to be devoted to the project by the senior/key persons that are pending or currently in place for the PI or collaborators within the past five years.

Name File: IND FOA FY20__ Current and Pending Support “Insert ID#.pdf”

10. Letter of Authorization from Cognizant Contracting Officer for DOE/NNSA FFRDC/NL (Required for FFRDC/NL listed on application regardless of funding level)

The cognizant contracting officer for the FFRDC/NL must authorize in writing the use of a DOE/NNSA FFRDC/NL 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 [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.”

Name File: IND FOA FY20__ CO Authorization “Insert ID#.pdf”

11. Project/Performance Site Location(s) Form

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.

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.

Name File: IND FOA FY20__ Site Location “Insert ID#.pdf”

12. SF-LLL Disclosure of Lobbying Activities Form

If applicable, complete Standard Form SF-LLL. Applicability: If any funds other than Federal appropriated funds 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, you must complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying."

Name File: IND FOA FY20__ SF-LLL “Insert ID#.pdf”

13. Certifications and Assurances

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: IND FOA FY20__ Certs and Assurances “Insert ID#.pdf”

14. Commitment Letters from Third Parties Contributing to Cost Sharing

If applicable, at the time the application is submitted it must include a letter from each third party (i.e., a party other than the organization submitting the application). The letter must state that the third party is committed to providing a specific minimum dollar amount of cost sharing. Submitting 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.

Name File: IND FOA FY20__ Cost Share Letter “Insert ID#.pdf”

15. Past Performance

Applicants must submit data on past performance that demonstrates the applicant team (not required for FFRDC/NL) has 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 within budget and on time with no significant safety and quality issues.

Name File: IND FOA FY20__ Past Performance “Insert”

16. Foreign Interest/Ownership Disclosure

Applicants must complete and attach the Foreign Interest/Ownership Disclosure template available at the application site document library.

Name File: IND FOA FY20__ Foreign Interest/Ownership Disclosure “Insert ID #.pdf”

G. 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
- Policies and Procedures (i.e., Procurement, Property, Travel, Financial Reporting, etc.) and other business information required to complete a risk assessment (and responsibility determination in accordance with 2 CFR 200, Subpart D).

H. SUBMISSION DATES AND TIMES

Submitting Applications: In order to be eligible for review, applications should be submitted prior to the due date listed below:

Due Date: October 11, 2022, at 5:00:00 p.m. ET

Note: This is the final application due date and last cycle of this FOA.

I. INTERGOVERNMENTAL REVIEW

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

J. FUNDING RESTRICTIONS (DECEMBER 2014)

Funding for all awards and future budget periods is contingent upon the availability of funds appropriated by Congress for the purpose of this program and the availability of future-year budget authority.

Cost Principles. Costs must be allowable, allocable and reasonable in accordance with the applicable Federal cost principles referenced in 2 CFR Part 200 as amended by 2 CFR Part 910 [DOE Financial Assistance Regulation]. The cost principles for commercial organizations are in FAR Part 31.

K. PRE-AWARD COSTS

Recipients must request and receive prior written approval from the contracting officer to incur any reimbursable pre-award costs. Pre-award costs are those incurred prior to the effective date of the Federal award, directly pursuant to the negotiation, and in anticipation of the Federal award, where such costs are necessary for efficient and timely performance of the scope of work. Such costs are allowable only to the extent they would have been allowable if incurred after the date of the Federal award, and only with the written approval of the Federal awarding agency, through the contracting officer assigned to the award.

After written approval has been granted from the contracting officer, 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, providing the costs are allowable in accordance with the applicable Federal cost principles referenced in 2 CFR Part 200 as amended by 2 CFR Part 910 [DOE Financial Assistance Regulation]. Recipients must obtain an additional prior written approval of the contracting officer for any pre-award costs that are for periods greater than this 90-day calendar period, which will be granted on a case-by-case basis.

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

Pre-award costs cannot be incurred prior to the Selection Official signing the Selection Statement and Analysis. Pre-award costs can only be incurred if such costs would be reimbursable under the agreement if incurred after award.

L. PERFORMANCE OF WORK IN THE UNITED STATES

1. Requirement

All work performed under DOE Awards must be performed in the United States. This requirement does not apply to the purchase of supplies and equipment; however, the Prime Recipient should make every effort to purchase supplies and equipment within the United States. The Prime Recipient must flow down this requirement to its subrecipients.

2. Failure to Comply

If the Prime Recipient fails to comply with the Performance of Work in the United States requirement, DOE may deny reimbursement for the work conducted outside the United States and such costs may not be recognized as allowable recipient cost share. The Prime Recipient is responsible should any work under this Award be performed outside the United States, absent a waiver, regardless if the work is performed by the Prime Recipient, subrecipients, contractors or other project partners.

3. Waiver

There may be limited circumstances where it is in the interest of the project to perform a portion of the work outside the United States. To seek a waiver of the Performance of Work in the United States requirement, the applicant must submit a written waiver request to DOE. See Appendix B for a list of the necessary information that must be included in a request to waive the Performance of Work in the United States requirement.

The applicant must demonstrate to the satisfaction of DOE that a waiver would further the purposes of the objectives set forth in this FOA and is in the economic interests of the United States. DOE may require additional information before considering a waiver request. Save the waiver request(s) in a single PDF file titled "Control Number Performance of Work Waiver". The applicant has no right to appeal DOE's decision concerning a waiver request.

M. EQUIPMENT AND SUPPLIES

To the greatest extent practicable, all equipment and products purchased with funds made available under this FOA should be American made. Provide an explanation of why non-domestic equipment or supplies will be required, if applicable. This requirement does not apply to used or leased equipment.

Property disposition will be required at the end of a project if the current fair market value of property exceeds \$5,000. The rules for property disposition are set forth in 2 CFR 200.310 – 200.316 as amended by 2 CFR 910.360.

N. LOBBYING

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.

All Federal grantees, whether subawardee or prime Federal recipient, at the initiation or receipt of an award, must complete this form when the recipient has paid or will pay 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. The form is available at <https://www.gsa.gov/forms-library/disclosure-lobbying-activities>

O. OTHER SUBMISSION AND REGISTRATION REQUIREMENTS

1. Where to Submit

Electronic submission is required; submit applications through <https://www.id.energy.gov/> to be considered for award.

Submit electronic applications through the “Applications” function at <https://www.id.energy.gov/> problems with completing the registration process or submitting your application, call 208-526-1602 or 208-526-8178 Monday through Thursday, between the hours of 8:00am and 5:00pm, Mountain Time.

2. Registration Process - One Time Registration Process

Applicants must COMPLETE the one-time registration process before you can submit your application(s). To complete the one-time registration, follow these steps:

- a. Go to <https://www.id.energy.gov/>
- b. Click on the red box - U.S. Industry Opportunities for Advanced Nuclear Technology Development Funding Opportunity Announcement (FOA) DE-FOA-0001817
- c. Click on the blue “Apply Now” button
- d. Click on "Log In" on the top right-hand corner of the page
- e. Click "Create New Account", create a user-name and password.
- f. Once logged-in, fill out the "General Account Information" Section and then press "Save and Continue"
- g. Click on the "Applications" tab from the menu to create a new application.

Once an application is saved, it will become available for editing under the header titled "Your Applications".

3. Late Submissions, Modifications, and Withdrawals of Application(s)

- a. Applicants are responsible for submitting any/all required submissions specified in this FOA, so as to reach the Government office designated in the FOA by the date/time specified in the FOA.
- b. Any required FOA submittal, modification, or withdrawal received at the Government office designated in the FOA after the exact time specified for receipt of that submittal is “late” and will not be considered unless it is received before award is made, the Contracting Officer determines that accepting the late submittal would not unduly delay the FOA award process; and—
 - (i) If it was transmitted through an electronic commerce method authorized by the FOA, it was received at the initial point of entry to the Government infrastructure not later than 5:00 p.m. mountain time one working day prior to the date specified for receipt of the submittal; or
 - (ii) There is acceptable evidence to establish that it was received at the Government installation designated for receipt of the submittal and was under the Government’s control prior to the time set for receipt of the required submittal.

- (iii) 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.
- c. 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.
- d. If an emergency or unanticipated event interrupts normal Government processes so that the required submittal cannot be received at the Government office designated for receipt of the submittal by the exact time specified in the FOA and urgent Government requirements preclude amendment of the FOA, the time specified for receipt of the required submittal will be deemed to be extended to the same time of day specified in the FOA on the first work day on which normal Government processes resume.
- e. Applications and other submittals may be withdrawn by written notice (sent electronically to <https://www.id.energy.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.

P. ELECTRONIC AUTHORIZATION OF APPLICATIONS AND AWARD DOCUMENTS

Submission of an application and supplemental information under this FOA through electronic systems used by the Department of Energy, including grants.gov, EERE Exchange and FedConnect.net, constitutes the authorized representative's approval and electronic signature.

Q. DATA MANAGEMENT PLAN

Submitted After Award

An applicant whose Full Application is selected for award will be required to submit a Data Management Plan within ninety (90) days of the award notification. The Data Management Plan is a document that outlines the proposed plan for data sharing or preservation. Instructions for submission of this plan will be identified in your award notification. Guidance for preparing a Data Management Plan is provided in the Appendix of the FOA. Failure to submit the Data Management Plan may result in the termination of the award.

R. FOREIGN TRAVEL

Foreign travel and associated costs are not allowable under this FOA.

SECTION V - APPLICATION REVIEW INFORMATION

A. CRITERIA

To be considered for evaluation, an applicant's submission must meet the criteria set forth below in Section V. If the application does not meet these requirements, it will be considered nonresponsive, removed from further evaluation, and ineligible for any award.

B. COMPLIANCE CRITERIA

All submitted information and documents must meet all Compliance Criteria listed in Section IV of this FOA or they will be considered noncompliant. DOE will not review or consider noncompliant submissions that were submitted through means other than <https://www.id.energy.gov/> or submitted with incomplete information.

Applications are deemed compliant if the application complies with the content and form requirements in Section IV of the FOA, and the applicant successfully uploaded all required documents located in <https://www.id.energy.gov/>.

C. RESPONSIVENESS CRITERIA

A preliminary technical review of the applications is performed to determine if the submissions are responsive to the FOA requirements.

The following types of submissions may be deemed nonresponsive and may not be reviewed or considered:

- Submissions for proposed technologies that are not based on sound scientific principles (e.g., violates a law of thermodynamics).
- Submissions that are not scientifically distinct from existing funded activities supported elsewhere, including within the Department of Energy.
- Submissions that describe a technology, but do not propose a R&D plan that allows DOE to evaluate the submission under the applicable merit review criteria provided in Section V.C.2 of the FOA.
- Submissions that describe R&D unrelated to plans to commercialize a technology for use in nuclear power applications.
- Submissions where evidence of a suitable cost share is not provided.
- Submissions that the requested federal cost share is higher than the anticipated maximum federal ceiling amount provided in the table in Section II.C. Anticipated Minimum and Maximum Award Size.
- Submissions where evidence of past performance is not provided for projects of similar size, scope and complexity.

All "Applications Specifically Not of Interest," as described in Section I of the FOA, are also deemed nonresponsive and are not reviewed or considered.

1. Initial Review Criteria

To be considered for evaluation, an applicant's submission must meet the criteria set forth below in Section V. If the application does not meet these requirements, it will be considered nonresponsive, removed from further evaluation, and ineligible for any award.

Prior to a comprehensive merit evaluation, DOE will perform an initial review to determine that: (1) the applicant is eligible for an award; (2) the information required by the funding opportunity announcement has been submitted; and (3) the proposed project is responsive to the objectives of the funding opportunity announcement. Applications that fail to pass the initial review will not be forwarded for merit review and will be eliminated from further consideration.

2. Merit Review Criteria

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

Merit reviews for the Pathway 1 - First of a Kind Nuclear Demonstration Readiness Projects, Pathway 2 - Advanced Reactor Development Projects, and Pathway 3 - Regulatory Assistance Grants will be conducted using separate merit review criteria, shown below. The review criteria are listed in descending order of importance, with the first criterion listed being the most important; sub-criteria under each criterion are not necessarily listed in descending order of importance.

Applications must be fully responsive to each of the criterion listed under the applicant's chosen pathway. All applications will be evaluated using an adjectival rating against the criterion identified for the designated pathway.

- a. **Pathway 1 - First of a Kind Nuclear Demonstration Readiness Projects** – Criteria focus on the project's ability to improve the capability of the existing fleet or improve the timelines for new, advanced reactor deployments; the potential strategic value of the project to the U.S.; the appropriateness of the approach that the applicant intends to take to complete the effort, and the strength of the team that will execute the work.

Criterion 1 - Strategic value of the project to U.S. technological and economic leadership.

- Importance of the proposed work to improving the current worldwide technological standing of the U.S. nuclear industry.
- How accomplishments of the proposed work will result in improvements to existing U.S. nuclear capabilities and associated tangible benefits to the public.
- Extent or degree to which project funds are allocated to U.S. companies, corporations or subsidiaries for project activities performed in the U.S., and the potential for sustained expansion of U.S. commercial nuclear capabilities.

Criterion 2 – Feasibility, quality, and timeliness of the applicant's plan to execute the proposed project.

- Feasibility of the plan to develop the proposed technology, including adequacy of cost and schedule justifications and the identification of high-risk challenges and mitigation strategies, to meet the goals and objectives of the proposal.
- The quality and completeness of the technology description and description of the proposed work.
- Timeliness of the plan to introduce the new technology and provide benefit to the industry, including a description of how the project fits into an overarching commercial deployment strategy.

Criterion 3 – Technical and Management Capabilities

- Credentials, capabilities, and experience of key personnel, including the strength of the team to successfully accomplish the project.
- Demonstrated past performance of the Applicant and its proposed sub recipients (not required for FFRDC/NL) in managing projects that meet project objectives, within budget and on schedule. (Note that in evaluating this criterion, DOE reserves the right to use information submitted with the application as well as past performance information obtained from any other source(s).)

- b. **Pathway 2 - Advanced Reactor Development Projects** – Criteria focus on the technological usefulness of the application to the industry and ease of commercialization; how well the technology will lead directly to advances in the innovation and competitiveness of domestic nuclear reactor designs, and to improving the capabilities and commercialization potential of advanced reactor designs; the appropriateness of the approach that the applicant intends to take to complete the effort; and, the strength of the team that will execute the work.

Criterion 1- Feasibility, Commercialization, and Utilization of the Technology

- Feasibility of the plan to develop the proposed technology, including adequacy of cost and schedule justifications and the identification of high-risk challenges and mitigation strategies, to meet the goals and objectives of the proposal.
- The degree to which proposed technologies, methodologies or capabilities fill a known, existing gap in domestic nuclear technology capability and/or provide for improved deployment potential of advanced reactor designs.
- The degree to which the proposed technologies, methodologies or capabilities can be commercialized and applied by industry to improve construction, commissioning, and/or operations of advanced reactor designs.

Criterion 2 – Technical and Management Capabilities

- Credentials, capabilities, and experience of key personnel, including the strength of the team to successfully accomplish the project.
- Demonstrated past performance of the Applicant and its proposed subrecipients (not required for FFRDC/NL) in managing projects that meet project objectives, within budget and on schedule. (Note that in evaluating this criterion, DOE reserves the right to use information submitted with the application as well as past performance information obtained from any other source(s).)

- c. **Pathway 3 - Regulatory Assistance Grants**–These criteria will be used to address regulatory projects grants only.

Criterion 1 – Economic Impact - The degree to which the scope and timeliness of the proposed work will improve the economic outlook and competitiveness of the U.S. nuclear energy industry.

Criterion 2 – Technical/Regulatory Merit - The degree to which the proposed work addresses technology gaps in domestic nuclear capability, resolve regulatory deficiencies, and/or accelerates the availability of advanced reactor designs.

D. REVIEW AND SELECTION PROCESS

1. Risk Assessment - Merit Review

Prior to making a Federal award, the DOE is required by 31 U.S.C. 3321 and 41 U.S.C. 2313 to review information available through any OMB-designated repositories of government-wide eligibility qualification or financial integrity information, such as SAM Exclusions and “Do Not Pay.”

In addition, DOE evaluates the risk(s) posed by applicants before they receive Federal awards. This evaluation may consider: results of the evaluation of the applicant's eligibility; the quality of the application; financial stability; quality of management systems and ability to meet the management standards prescribed in this part; history of performance; reports and findings from audits; and the applicant's ability to effectively implement statutory, regulatory, or other requirements imposed on non-Federal entities.

DOE must also comply with the guidelines on government-wide suspension and debarment in 2 CFR 180, and must require non-Federal entities to comply with these provisions. These provisions restrict Federal awards, subawards and contracts with certain parties that are debarred, suspended or otherwise excluded from or ineligible for participation in Federal programs or activities.

2. Reporting of Matters Related To Recipient Integrity and Performance (December 2015)

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

The applicant, at its option, may review information in the designated integrity and performance systems accessible through SAM and comment on any information about itself that a Federal awarding agency previously entered and 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.

3. Selection and Other Program Policy Factors

The Selection Official will consider the technical merit, the merit review board’s recommendation(s),

program policy factors, and the amount of funds available in arriving at selections for this FOA. The Selection Official will consider the following Program Policy Factors in the selection of application(s) for negotiation of award to receive DOE funding support:

- The application's 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.
- Applications that have the potential to enhance U.S. nuclear infrastructure may be given preferential consideration.
- DOE will consider foreign interest, as defined in this FOA, in the selection of application(s) for negotiation of award.
- The consistency and conformance of the work proposed in the application with current Office of Nuclear Energy Congressional appropriations.
- Application selection will be balanced to best optimize the selection of an appropriate mix of technologies to meet program goals.
- Whether the entity is located in an urban and economically distressed area including a Qualified Opportunity Zone (QOZ) or the proposed project will occur in a QOZ or otherwise advance the goals of QOZ. The goals include spurring economic development and job creation in distressed communities throughout the United States.
- Whether the proposed project may directly or indirectly benefit disadvantaged communities or exhibits team member diversity, with participants including but not limited to those from Minority Serving Institutions (e.g. Historically Black Colleges and Universities (HBCUs) /Other Minority Institutions (OMIs)), Minority Business Enterprises, Minority Owned Businesses, Woman Owned Businesses, Veteran Owned Businesses, or members within disadvantaged communities.

These factors, while not indicators of the Application's merit, e.g., technical excellence, applicant's ability, etc., may be essential to the process of selecting the application that, individually or collectively, will best achieve the program objectives. Such factors are often beyond the control of the Applicant. Each Applicant should recognize that some very good applications might not receive an award because they do not fit within a mix of projects that maximizes the probability of achieving the DOE's overall R&D objectives.

4. 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 that the recipient is capable of complying with the requirements in 2 CFR part 200 as amended by 2 CFR part 910 [DOE Financial Assistance Regulation]; and/or (4) special terms and conditions are required. Failure to satisfactorily resolve the issues identified by the Government will preclude award to the applicant.

For Pathway 1 - First of a Kind Nuclear Demonstration Readiness Projects Only:

Pre-Selection Clarifications

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.

If pre-selection clarifications are to be used, DOE will conduct them as follows:

Following the merit review of applications, DOE may assign First Round Merit Review Scores to all the applicants and establish a “First Round Finalist’s Line,” above which are “finalists” (those applications determined by the Federal Merit Review Panel to be meritorious and require pre-selection clarifications) and below which are “non-finalist” applicants (those applications deemed by the Federal Merit Review Panel to be not technically acceptable and therefore do not require any clarifications). NE may then invite all First Round Finalists to participate in pre-selection clarifications. Clarifications, if used, are specific to each review cycle.

The nature, format, and technical scope of the pre-selection clarifications will be determined for that specific review cycle and communicated to all finalists. Clarifications may take the form of one or more of the following procedures: written responses to written clarification questions, telephone conference calls, video conference calls, in-person meetings or presentations at DOE and/or at applicants’ sites. It is anticipated that if clarifications are used, NE will arrange to meet with each of the finalists in person at NE’s offices or a mutually agreed upon location. NE will not reimburse applicants for travel and other expenses relating to the Pre-Selection clarifications, nor will these costs be eligible for reimbursement as pre-award costs. Regardless of the format and method used, all finalists for that review cycle will be given the same opportunity to provide the same types of clarifying information to DOE within the same time limits and format parameters.

E. ANTICIPATED NOTICE OF SELECTION

DOE anticipates making selection announcements no later than 120 days after the applications are due.

SECTION VI - AWARD ADMINISTRATION INFORMATION

A. AWARD NOTICES

1. Notice of Selection

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. Applicants do not receive an award 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 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.

Please refer to Section IV of the FOA for guidance on pre-award costs.

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 which includes the project description and budget, as approved by DOE; (4) 2 CFR part 200 as amended by 2 CFR part 910 [DOE Financial Assistance Regulation]; (5) National Policy Assurances To Be Incorporated As Award Terms; (6) Budget Summary; and (7) Federal Assistance Reporting Checklist and Instructions, which identifies the reporting requirements; (8) Federal-wide Research Terms and Conditions; (9) Agency Specific Requirements; and (10) any award specific terms and conditions.

3. Ineligible Submission

Ineligible applications will not be further reviewed or considered for award. The Contracting Officer will send a notification of ineligibility letter, by email, to the technical and administrative points of contact designated by the applicant. The notification letter will state the basis upon which the Application is ineligible and not considered for further review.

4. Application Notifications

DOE will send applicants a notification letter of its determination to the technical and administrative points of contact designated by the applicant. The notification letter will inform the applicant whether or not its application was selected for award negotiations. Alternatively, DOE may notify one or more applicants that a final selection determination on particular applications will be made at a later date, subject to the availability of funds or other factors.

5. Unsuccessful Applicants (Non-selected Applicants Notifications)

DOE shall promptly notify in writing each applicant whose application has not been selected for negotiation or award. This notice will provide a summary review of the proposal and an explanation of why the application was not selected.

B. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS

1. Administrative Requirements (December 2014)

The administrative requirements for DOE grants and cooperative agreements are contained in 2 CFR Part 200 as amended by 2 CFR Part 910 [DOE Financial Assistance Regulation] (See: <http://www.eCFR.gov>). For awards subject to Title 2 CFR, awards made under this funding opportunity will include the government-wide Research Terms and Conditions.

2. UEI and SAM Requirements

Additional administrative requirements for DOE grants and cooperative agreements are contained in 2 CFR Part 25 (See: <http://www.eCFR.gov>). Prime awardees must keep their data at the System for Award Management (SAM) current at <http://www.sam.gov> current SAM is the government-wide system that replaced the CCR. If you had an active registration in the CCR, you have an active registration in SAM. Subawardees at all tiers must obtain UEI numbers and provide the UEI to the prime awardee before the subaward can be issued. The prime will provide this valid unique entity identifier in its application. DOE may not make a Federal award to an applicant until the applicant has complied with all applicable unique entity identifier 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.

3. 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 contained in 2 CFR, Part 170. (See <http://www.eCFR.gov>). Prime awardees must register with the new 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).

4. Statement of Federal Stewardship

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

5. Statement of Substantial Involvement for Cooperative Agreement

DOE has substantial involvement in work performed under cooperative agreements made as a result of this FOA. DOE does not limit its involvement to the administrative requirements of the Award. Instead,

DOE has substantial involvement in the direction and redirection of the technical aspects of the project as a whole. Substantial involvement includes, but is not limited to, the following:

- a) DOE shares responsibility with the recipient for the management, control, direction, and performance of the Project.
- b) DOE may intervene in the conduct or performance of work under this Award for programmatic reasons. Intervention includes the interruption or modification of the conduct or performance of project activities.
- c) DOE participates in major project decision-making processes.
- d) Promoting and facilitating technology awareness activities, including disseminating program results through presentations and publications.
- e) Serving as scientific/technical liaison between awardees and other project stakeholders.

6. Foreign National Access to DOE Sites

All applicants that ultimately enter into an award resulting from this FOA will be subject to the following requirement concerning foreign national involvement. Upon DOE's request, Prime Recipients must provide information to facilitate DOE's responsibilities associated with foreign national access to DOE sites, information, technologies, and equipment. A foreign national is defined as any person who was born outside the jurisdiction of the United States, is a citizen of a foreign government, and has not been naturalized under U.S. law. If the Prime Recipient or subrecipients, contractors or vendors under the award, anticipate utilizing a foreign national person in the performance of an award, the Prime Recipient is responsible for providing to the Contracting Officer specific information of the foreign national(s) to satisfy compliance with all of the requirements for access approval.

7. Environmental Review in Accordance with National Environmental Policy Act (NEPA)

DOE's decision whether and how to distribute federal funds under this FOA is subject to the National Environmental Policy Act (42 USC 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 <http://nepa.energy.gov/>.

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 costs to prepare the necessary records may be included as part of the project costs. Applicants selected for award will be required to submit an environmental check list.

8. Special Terms and Conditions and National Policy Requirements (December 2014)

The DOE Special Terms and Conditions for Use in Most Grants and Cooperative Agreements are located, under Award Terms at <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms>

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>

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

Lobbying Restrictions: By accepting funds under this award, you agree 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.

9. Corporate Felony Conviction and Federal Tax Liability Representations (March 2014)

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

(a) It is not a corporation that has been convicted of a felony criminal violation under any Federal law within the preceding 24 months; and

(b) It is not a corporation that has any unpaid assessed Federal tax liability, for which all judicial and administrative remedies have been exhausted or have lapsed, and for which the corporation is not paying the assessed tax liability in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

For purposes of these representations the following definition 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]. It includes both for-profit and non-profit organizations.

C. REPORTING

1. Reporting Requirements

Reporting requirements are identified on the Federal Assistance Reporting Checklist and Instructions, DOE F 4600.2, attached to the award agreement. The checklist is available at:

<https://www.energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms>.

2. Subject Invention Utilization Reporting

In order to ensure that Prime Recipients and subrecipients holding title to subject inventions are taking the appropriate steps to commercialize subject inventions, DOE may require that each Prime Recipient holding title to a subject invention submit annual reports for 10 years, from the date the subject invention

was disclosed to DOE, on the utilization of the subject invention and efforts made by Prime Recipient or their licensees or assignees to stimulate such utilization. The reports must include information regarding the status of development, date of first commercial sale or use, gross royalties received by the Prime Recipient, and such other data and information as DOE may specify.

3. Subaward and Executive Reporting

Prime Recipients awarded a new Federal financial assistance award greater than or equal to \$25,000 as of October 1, 2010, are subject to Federal Funding and Transparency Act of 2006 (FFATA) sub-award reporting requirements as outlined in 2 CFR Chapter 1, Part 170 REPORTING SUB-AWARD AND EXECUTIVE COMPENSATION INFORMATION.

The FFATA Subaward Reporting System (FSRS) is the reporting tool Federal prime awardees (i.e., prime contractors and prime grants recipients) use to capture and report subaward and executive compensation data regarding their first-tier subawards to meet the FFATA reporting requirements. Prime awardees must register with the new FSRS database and report the required data on their first tier subawardees at <http://www.fsrs.gov>

Prime awardees must report the executive compensation for their own executives as part of their registration profile in the System for Award Management (SAM). The sub-award information entered in FSRS will then be displayed on www.USASpending.gov associated with the prime award furthering Federal spending transparency.

Applicants must ensure they have the necessary processes and systems in place to comply with the reporting requirements should they receive funding.

D. APPLICANT REPRESENTATIONS AND CERTIFICATIONS

1. Lobbying Restrictions

By accepting funds under this award, the Prime Recipient 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.

2. Nondisclosure and Confidentiality Agreements Representations

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

(A) 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.

(B) 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 above 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 provision listed in paragraph (A), 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 United States 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 United States 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.

E. OTHER ADMINISTRATIVE REQUIREMENTS

1. Continuation Review

Each project selected under this FOA, except the grants, will be subject to a periodic project evaluation referred to as a Continuation Review. Federal funding beyond the continuation review decision point (continuation funding), is contingent on: (1) the availability of funds appropriated by Congress for the purpose of this program and the availability of future-year budget authority; (2) meeting the objectives, milestones, deliverables, and decision point criteria of recipient’s approved project and obtaining approval from DOE to continue work on the project; and (3) the submittal of required reports in accordance with the Statement of Project Objectives.

As a result of the Continuation Review, DOE may, at its discretion, authorize the following actions: (1) continue to fund the project, contingent upon the availability of funds appropriated by Congress for the purpose of this program and the availability of future-year budget authority; (2) recommend redirection of work under the project; (3) place a hold on federal funding for the project, pending further supporting data or funding; or (4) discontinue funding the project because of insufficient progress, change in strategic direction, or lack of funding.

The Continuation Review decision is distinct from a non-compliance determination. In the event a recipient fails to comply with the requirements of an award, DOE may take appropriate action, including but not limited to, redirecting, suspending or terminating the award.

SECTION VII - QUESTIONS/AGENCY CONTACTS

A. QUESTIONS

Questions regarding the content of the announcement must be emailed to IndustryFOA@id.doe.gov. DOE will try to respond to a question within 3 business days, unless a similar question and answer have already been posted on the <https://www.id.energy.gov/> website.

Questions relating to the Grants.gov registration process must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov. DOE cannot answer these questions.

If you have questions related to completing the registration process for submitting your application(s) at <https://www.id.energy.gov/>, call 208-526-1602 or 208-526-8178 between the hours of 8:00am and 5:00pm Mountain Time.

Approximately, fifteen days prior to the application due date, the Q&A will be suspended until the next review cycle. Questions submitted after that date may not allow the Government sufficient time to respond. Please ensure you submit your questions early each review cycle.

DOE will not be accepting any questions after September 26, 2022, for the final cycle.

B. AGENCY CONTACT

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

C. WEBINAR DATE AND TIME

DOE conducted its first webinar on January 9, 2018 covering project details and FOA application instructions. A two-day Industry Day webinar was conducted on October 29 and 30, 2019 covering application document training and lessons learned. All webinars can be viewed at <https://www.id.energy.gov/>.

SECTION VIII - OTHER INFORMATION

A. MODIFICATIONS

Notices of any modifications to this announcement will be posted on Grants.gov and the FedConnect portal. You can receive an email when a modification or an announcement message is posted by registering with FedConnect as an interested party for this FOA. It is recommended that you register as soon after release of the FOA as possible 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 or commit the Government to the expenditure of public funds. A commitment by other than the Contracting Officer, either explicit or implied, is invalid.

Funding for all awards and future budget periods are contingent upon the availability of funds appropriated by Congress for the purpose of this program and the availability of future-year budget authority.

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."

Applicants shall not identify the entire Project Narrative as proprietary and shall only identify those specific pages and lines that do indeed contain proprietary information.

E. TREATMENT OF APPLICATION INFORMATION

DOE will only use data and other information contained in applications for evaluation purposes, unless such information is generally available to the public or is already the property of the Government.

Applicants should not include trade secrets or commercial or financial information that is privileged or confidential in their application unless such information is necessary to convey an understanding of the proposed project or to comply with a requirement in the FOA. Applications containing trade secrets or commercial or financial information that is privileged or confidential, which the applicant does not want disclosed to the public or used by the Government for any purpose other than application evaluation, must be marked as described in this section.

The “Narrative Cover Page” must be marked as follows and identify the specific pages containing trade secrets or commercial or financial information that is privileged or confidential:

Notice of Restriction on Disclosure and Use of Data:

Pages [list applicable pages] of this document may contain trade secrets or commercial or financial information that is privileged or confidential and is exempt from public disclosure. Such information shall be used or disclosed only for evaluation purposes or in accordance with a financial assistance or loan agreement between the submitter and the Government. The Government may use or disclose any information that is not appropriately marked or otherwise restricted, regardless of source. [End of Notice]

The header and footer of every page that contains trade secrets or commercial or financial information that is privileged must be marked as follows: “May contain trade secrets or commercial or financial information that is privileged or confidential and exempt from public disclosure.”

In addition, each line or paragraph containing trade secrets or commercial or financial information that is privileged or confidential must be enclosed in brackets.

The above markings enable DOE to follow the provisions of 10 CFR 1004.11(d) in the event a Freedom of Information Act (FOIA) request is received for information submitted with an application. Failure to comply with these marking requirements may result in the disclosure of the unmarked information under a FOIA request or otherwise. The U.S. Government is not liable for the disclosure or use of unmarked information and may use or disclose such information for any purpose.

Subject to the specific FOIA exemptions identified in 5 U.S.C. 552(b), all information submitted to DOE by a FOA applicant is subject to public release under the Freedom of Information Act, 5 U.S.C. §552, as amended by the OPEN Government Act of 2007, Pub. L. No. 110-175. It is the applicant’s responsibility to review FOIA and its exemptions to understand (1) what information may be subject to public disclosure and (2) what information applicants submit to the Government that are protected by law. In some cases, DOE may be unable to make an independent determination regarding which information submitted by an applicant is releasable and which is protected by an exemption. In such cases, DOE will consult with the applicant, in accordance with 10 C.F.R. §1004.11, to solicit the applicant’s views on how the information should be treated.

F. INTELLECTUAL PROPERTY DEVELOPED UNDER THIS PROGRAM

1. Title to Subject Inventions

Ownership of inventions conceived or first actually reduced to practice under a DOE award, “subject invention,” is governed pursuant to the authorities listed below.

- Domestic Small Businesses, Educational Institutions, and Non-profits: Under the Bayh-Dole Act (35 U.S.C. § 200 et seq.), domestic small businesses, educational institutions, and non-profits may elect to retain title to their subject inventions. Such organizations will receive the patent rights clause, “Patent Rights (Small Business Firms and Nonprofit Organizations)” at 2 CFR 910, Appendix A to Subpart D
- All other parties: The Federal Non-Nuclear Energy Act of 1974, 42 U.S.C. § 5908, provides that the Government obtains title to subject inventions unless a waiver is granted (See “Notice of Right to Request Patent Waiver” in paragraph G below.)
- Class Patent Waiver: Under 42 U.S.C. § 5908, title to subject inventions vests in the U.S. Government and large businesses and foreign entities do not have the automatic right to elect to retain title to subject inventions. However, DOE may issue “class patent waivers” under which large businesses and foreign entities that meet certain stated requirements may elect to retain title to their subject inventions.

2. Government Rights in Subject Inventions

Where Prime Recipients and subrecipients retain title to subject inventions, the U.S. Government retains certain rights.

a. Preference for United States Industry

A Prime or subrecipient may not grant to any person the exclusive right to use or sell any subject invention in the U.S. unless such person agrees that any products embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the U.S.

b. March-In Rights

The U.S. Government retains march-in rights with respect to all subject inventions. Through “march-in rights,” the Government may require a Prime Recipient or subrecipient who has elected to retain title to a subject invention (or their assignees or exclusive licensees), to grant a license for use of the invention to a third party. In addition, the Government may grant licenses for use of the subject invention when a Prime Recipient, subrecipient, or their assignees and exclusive licensees refuse to do so.

DOE may exercise its march-in rights only if it determines that such action is necessary under any of the four following conditions:

- The owner or licensee has not taken or is not expected to take effective steps to achieve practical application of the invention within a reasonable time;

- The owner or licensee has not taken action to alleviate health or safety needs in a reasonably satisfied manner;
- The owner has not met public use requirements specified by Federal statutes in a reasonably satisfied manner; or
- The U.S. Preference requirement of the award has not been met.

Any determination that march-in rights are warranted must follow a fact-finding process in which the recipient has certain rights to present evidence and witnesses, confront witnesses and appear with counsel and appeal any adverse decision.

3. Rights in Technical Data

Normally, the government has unlimited rights in technical data produced under a DOE award, including the right make distribution to the public. An exception to the foregoing is that invention disclosures may be protected from public disclosure for a reasonable time to allow for filing of patent applications. The delivery of data developed solely at private expense outside of the award except as necessary to monitor technical progress and evaluate the potential of proposed technologies to reach specific technical and cost metrics.

Option 1: (with data protection)

Government rights in Technical Data Produced Under Awards: The U.S. Government normally retains unlimited rights in technical data produced under Government financial assistance awards, including the right to distribute to the public. However, pursuant to special statutory authority, certain categories of data generated under DOE awards may be protected from public disclosure for up to five years after the data is generated (“Protected Data”). For awards permitting Protected Data, the protected data must be marked as set forth in the awards intellectual property terms and conditions and a listing of unlimited rights data (i.e., non-protected data) must be inserted into the data clause in the award. In addition, invention disclosures may be protected from public disclosure for a reasonable time in order to allow for filing a patent application.]

Option 2: (without data protection)

Government Rights in Technical Data Produced Under Awards: The U.S. Government retains unlimited rights in technical data produced under Government financial assistance awards, including the right to distribute to the public. One exception to the foregoing is that invention disclosures may be protected from public disclosure for a reasonable time in order to allow for filing a patent application.

4. Copyright

The Prime 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.

G. 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 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.

H. 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 that may be granted is subject to certain terms and conditions in 10 CFR 784 see <http://www.energy.gov/gc/services/technology-transfer-and-procurement/office-assistant-general-counsel-technology-transf-1> for further information. Domestic small businesses and domestic non-profit organizations will receive the patent rights clause “Patent Rights (Small Business Firms and Nonprofit Organizations)” at 2 CFR 910, Appendix A to Subpart D, as stated above and do not need to request a waiver.

The objective of this FOA is to support the innovation and competitiveness of the U.S. nuclear industry with various types of basic and applied research and development. Accordingly, DOE includes the following U.S. Competitiveness provision in its standard patent waiver clause:

The recipient agrees that any products embodying any waived invention or produced through the use of any waived invention will be manufactured substantially in the United States, unless the recipient can show to the satisfaction of DOE that it is not commercially feasible to do so. In the event DOE agrees to foreign manufacture, there will be a requirement that the Government’s support of the technology be recognized in some appropriate manner. The recipient further agrees to make the above condition binding on any assignee or licensee or any entity otherwise acquiring rights to any waived invention, including subsequent assignees or licensees. Should the recipient or other such entity receiving rights in any waived invention undergo a change in ownership amounting to a controlling interest, then the waiver, assignment, license or other transfer of rights in any waived invention is suspended until approved in writing by DOE.

I. 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.

J. INFORMATIONAL WEBINAR

DOE has conducted informational webinars for this FOA and they can be viewed at <https://www.id.energy.gov/>

Attendance to the webinars is not mandatory and will not positively or negatively impact the overall review of any applicant submissions. As the webinar will be open to all applicants who wish to participate, applicants should refrain from asking questions or communicating information that would reveal confidential and/or proprietary information specific to their project.

K. NOTICE OF RIGHT TO CONDUCT A REVIEW OF FINANCIAL CAPABILITY

DOE reserves the right to conduct an independent third party review of financial capability for applicants that are selected for negotiation of award (including personal credit information of principal(s) of a small business if there is insufficient information to determine financial capability of the organization).

L. NOTICE OF POTENTIAL DISCLOSURE UNDER FREEDOM OF INFORMATION ACT

Applicants should be advised that identifying information regarding all applicants, including applicant names and/or points of contact, may be subject to public disclosure under the Freedom of Information Act, whether or not such applicants are selected for negotiation of award.

M. REQUIREMENT FOR FULL AND COMPLETE DISCLOSURE

Applicants are required to make a full and complete disclosure of all information requested. Any failure to make a full and complete disclosure of the requested information may result in:

- The termination of award negotiations;
- The modification, suspension, and/or termination of a funding agreement;
- The initiation of debarment proceedings, debarment, and/or a declaration of ineligibility for receipt of Federal contracts, subcontracts, and financial assistance and benefits; and
- Civil and/or criminal penalties.

N. RETENTION OF SUBMISSIONS

DOE expects to retain copies of all submissions. No submissions will be returned. By applying to DOE for funding, applicants consent to DOE's retention of their submissions.

O. PROTECTED PERSONALLY IDENTIFIABLE INFORMATION

Personally Identifiable Information (PII) provided in the resume/vitae will be protected according to DOE requirements and processes. Applicants must ensure that PII is not included in any of the other required application documents. These documents will be used by the Merit Review Committee in the review process to evaluate each application. PII is defined by the Office of Management and Budget (OMB) as:

Any information about an individual maintained by an agency, including but not limited to, education, financial transactions, medical history, and criminal or employment history and information that can be used to distinguish or trace an individual's identity, such as their name, social security number, date and

place of birth, mother's maiden name, biometric records, etc., including any other personal information that is linked or linkable to an individual.

This definition of PII can be further defined as: (1) Public PII and (2) Protected PII.

1. Public PII: PII found in public sources such as telephone books, public websites, business cards, university listing, etc. Public PII includes first and last name, address, work telephone number, email address, home telephone number, and general education credentials.

2. Protected PII: PII that requires enhanced protection. This information includes data that if compromised could cause harm to an individual such as identity theft.

Listed below are examples of Protected PII that applicants must not include in the application files listed above to be evaluated by the Merit Review Committee. This list is not all inclusive.

- Social Security Numbers in any form
- Place of Birth associated with an individual
- Date of Birth associated with an individual
- Mother's maiden name associated with an individual
- Biometric record associated with an individual
- Fingerprint
- Iris scan
- DNA
- Medical history information associated with an individual
- Medical conditions, including history of disease
- Metric information, e.g. weight, height, blood pressure
- Criminal history associated with an individual
- Employment history and other employment information associated with an individual
- Ratings
- Disciplinary actions
- Performance elements and standards (or work expectations) are PII when they are so intertwined with performance appraisals that their disclosure would reveal an individual's performance appraisal
- Financial information associated with an individual
- Credit card numbers
- Bank account numbers
- Security clearance history or related information (not including actual clearances held)

P. ANNUAL COMPLIANCE AUDITS

If an institute of higher education, non-profit organization, or state/local government is a Prime Recipient or subrecipient and has expended \$750,000 or more of Federal funds during the non-Federal entity's fiscal year, then a single or program-specific audit is required. For additional information, please refer to 2 C.F.R. § 200.501 and Subpart F.

If a for-profit entity is a Prime Recipient or subrecipient and has expended \$750,000 or more of DOE funds during the entity's fiscal year, an annual compliance audit performed by an independent auditor is required. For additional information, please refer to 2 C.F.R. § 910.501 and Subpart F.

Applicants and subrecipients (if applicable) should propose sufficient costs in the project budget to cover the costs associated with the audit. DOE will share in the cost of the audit at its applicable cost share ratio.

Q. CONFERENCE SPENDING

The recipient shall not expend any funds on a conference not directly and programmatically related to the purpose for which the grant or cooperative agreement 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.

R. 2 CFR 910, APPENDIX A OF SUBPART D, RIGHTS IN DATA - PROGRAMS COVERED UNDER SPECIAL DATA STATUTES

(a) Definitions

Computer Data Bases, as used in this clause, means a collection of data in a form capable of, and for the purpose of, being stored in, processed, and operated on by a computer. The term does not include computer software.

Computer software, as used in this clause, means

- (i) computer programs which are data comprising a series of instructions, rules, routines, or statements, regardless of the media in which recorded, that allow or cause a computer to perform a specific operation or series of operations and
- (ii) data comprising source code listings, design details, algorithms, processes, flow charts, formulae and related material that would enable the computer program to be produced, created or compiled. The term does not include computer data bases.

Data, as used in this clause, means recorded information, regardless of form or the media on which it may be recorded. The term includes technical data and computer software. The term does not include information incidental to administration, such as financial, administrative, cost or pricing or management information.

Form, fit, and function data, as used in this clause, means data relating to items, components, or processes that are sufficient to enable physical and functional interchangeability as well as data identifying source, size, configuration, mating and attachment characteristics, functional characteristics, and performance requirements except that for computer software it means data identifying source, functional characteristics, and performance requirements but specifically excludes the source code, algorithm, process, formulae, and flow charts of the software.

Limited rights data, as used in this clause, means data (other than computer software) developed at private expense that embody trade secrets or are commercial or financial and confidential or privileged.

Restricted computer software, as used in this clause, means computer software developed at private expense and that is a trade secret; is commercial or financial and confidential or privileged; or is published copyrighted computer software; including modifications of such computer software.

Protected data, as used in this clause, means technical data or commercial or financial data first produced in the performance of the award which, if it had been obtained from and first produced by a non-federal party, would be a trade secret or commercial or financial information that is privileged or confidential under the meaning of 5 U.S.C. 552(b)(4) and which data is marked as being protected data by a party to the award.

Protected rights, as used in this clause, mean the rights in protected data set forth in the Protected Rights Notice of paragraph (g) of this clause.

Technical data, as used in this clause, means that data which are of a scientific or technical nature. Technical data does not include computer software, but does include manuals and instructional materials and technical data formatted as a computer data base.

Unlimited rights, as used in this clause, means the right of the Government to use, disclose, reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, in any manner and for any purpose whatsoever, and to have or permit others to do so.

(b) Allocation of Rights

- (1) Except as provided in paragraph (c) of this clause regarding copyright, the Government shall have unlimited rights in—
 - (i) Data specifically identified in this agreement as data to be delivered without restriction;
 - (ii) Form, fit, and function data delivered under this agreement;
 - (iii) Data delivered under this agreement (except for restricted computer software) that constitute manuals or instructional and training material for installation, operation, or routine maintenance and repair of items, components, or processes delivered or furnished for use under this agreement; and
 - (iv) All other data delivered under this agreement unless provided otherwise for protected data in accordance with paragraph (g) of this clause or for limited rights data or restricted computer software in accordance with paragraph (h) of this clause.
- (2) The recipient shall have the right to—
 - (i) Protect rights in protected data delivered under this agreement in the manner and to the extent provided in paragraph (g) of this clause;
 - (ii) Withhold from delivery those data which are limited rights data or restricted computer software to the extent provided in paragraph (h) of this clause;

- (iii) Substantiate use of, add, or correct protected rights or copyrights notices and to take other appropriate action, in accordance with paragraph (e) of this clause; and
- (iv) Establish claim to copyright subsisting in data first produced in the performance of this agreement to the extent provided in paragraph (c)(1) of this clause.

(c) Copyright

- (1) Data first produced in the performance of this agreement. Except as otherwise specifically provided in this agreement, the recipient may establish, without the prior approval of the Contracting Officer, claim to copyright subsisting in any data first produced in the performance of this agreement. If claim to copyright is made, the recipient shall affix the applicable copyright notice of 17 U.S.C. 401 or 402 and acknowledgment of Government sponsorship (including agreement number) to the data when such data are delivered to the Government, as well as when the data are published or deposited for registration as a published work in the U.S. Copyright Office. For such copyrighted data, including computer software, the recipient grants to the Government, and others acting on its behalf, a paid-up nonexclusive, irrevocable, worldwide license to reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, by or on behalf of the Government, for all such data.
 - (2) Data not first produced in the performance of this agreement. The recipient shall not, without prior written permission of the Contracting Officer, incorporate in data delivered under this agreement any data that are not first produced in the performance of this agreement and that contain the copyright notice of 17 U.S.C. 401 or 402, unless the recipient identifies such data and grants to the Government, or acquires on its behalf, a license of the same scope as set forth in paragraph (c)(1) of this clause; provided, however, that if such data are computer software, the Government shall acquire a copyright license as set forth in paragraph (h)(3) of this clause if included in this agreement or as otherwise may be provided in a collateral agreement incorporated or made a part of this agreement.
 - (3) Removal of copyright notices. The Government agrees not to remove any copyright notices placed on data pursuant to this paragraph (c), and to include such notices on all reproductions of the data.
- (d) Release, Publication and Use of Data
- (1) The Receipt shall have the right to use, release to others, reproduce, distribute, or publish any data first produced or specifically used by the recipient in the performance of this contract, except to the extent such data may be subject to the Federal export control or national security laws or regulations, or unless otherwise provided in this paragraph of this clause or expressly set forth in this contract.
 - (2) The recipient agrees that to the extent it receives or is given access to data necessary for the performance of this agreement which contain restrictive markings, the recipient shall treat the data in accordance with such markings unless otherwise specifically authorized in writing by the Contracting Officer.

(e) Unauthorized Marking of Data

- (1) Notwithstanding any other provisions of this agreement concerning inspection or acceptance, if any data delivered under this agreement are marked with the notices specified in paragraph (g)(2) or (g)(3) of this clause and use of such is not authorized by this clause, or if such data bears any other restrictive or limiting markings not authorized by this agreement, the Contracting Officer may at any time either return the data to the recipient or cancel or ignore the markings. However, the following procedures shall apply prior to canceling or ignoring the markings.
- (i) The Contracting Officer shall make written inquiry to the recipient affording the recipient 30 days from receipt of the inquiry to provide written justification to substantiate the propriety of the markings;
 - (ii) If the recipient fails to respond or fails to provide written justification to substantiate the propriety of the markings within the 30-day period (or a longer time not exceeding 90 days approved in writing by the Contracting Officer for good cause shown), the Government shall have the right to cancel or ignore the markings at any time after said period and the data will no longer be made subject to any disclosure prohibitions.
 - (iii) If the recipient provides written justification to substantiate the propriety of the markings within the period set in subdivision (e)(1)(i) of this clause, the Contracting Officer shall consider such written justification and determine whether or not the markings are to be cancelled or ignored. If the Contracting Officer determines that the markings are authorized, the recipient shall be so notified in writing. If the Contracting Officer determines, with concurrence of the head of the contracting activity, that the markings are not authorized, the Contracting Officer shall furnish the recipient a written determination, which determination shall become the final agency decision regarding the appropriateness of the markings unless the recipient files suit in a court of competent jurisdiction within 90 days of receipt of the Contracting Officer's decision. The Government shall continue to abide by the markings under this subdivision (e)(1)(iii) until final resolution of the matter either by the Contracting Officer's determination become final (in which instance the Government shall thereafter have the right to cancel or ignore the markings at any time and the data will no longer be made subject to any disclosure prohibitions), or by final disposition of the matter by court decision if suit is filed.
- (2) The time limits in the procedures set forth in paragraph (e)(1) of this clause may be modified in accordance with agency regulations implementing the Freedom of Information Act (5 U.S.C. 552) if necessary to respond to a request thereunder.

(f) Omitted or Incorrect Markings

- (1) Data delivered to the Government without either the limited rights or restricted rights notice as authorized by paragraph (g) of this clause, or the copyright notice required by paragraph (c) of this clause, shall be deemed to have been furnished with unlimited rights, and the Government assumes no liability for the disclosure, use, or reproduction of such data. However, to the extent the data has not been disclosed without restriction outside the Government, the recipient may request, within 6 months (or a longer time approved by the Contracting Officer for good cause shown) after delivery of such data, permission to have notices placed on qualifying data at the

recipient's expense, and the Contracting Officer may agree to do so if the recipient—

- (i) Identifies the data to which the omitted notice is to be applied;
 - (ii) Demonstrates that the omission of the notice was inadvertent;
 - (iii) Establishes that the use of the proposed notice is authorized; and
 - (iv) Acknowledges that the Government has no liability with respect to the disclosure, use, or reproduction of any such data made prior to the addition of the notice or resulting from the omission of the notice.
- (2) The Contracting Officer may also:
- (i) Permit correction at the recipient's expense of incorrect notices if the recipient identifies the data on which correction of the notice is to be made, and demonstrates that the correct notice is authorized; or
 - (ii) Correct any incorrect notices.
- (g) Rights to Protected Data
- (1) The recipient may, with the concurrence of DOE, claim and mark as protected data, any data first produced in the performance of this award that would have been treated as a trade secret if developed at private expense. Any such claimed “protected data” will be clearly marked with the following Protected Rights Notice, and will be treated in accordance with such Notice, subject to the provisions of paragraphs (e) and (f) of this clause.

Protected Rights Notice

These protected data were produced under agreement no. with the U.S. Department of Energy and may not be published, disseminated, or disclosed to others outside the Government until (Note:) The period of protection of such data is fully negotiable, but cannot exceed the applicable statutorily authorized maximum), unless express written authorization is obtained from the recipient. Upon expiration of the period of protection set forth in this Notice, the Government shall have unlimited rights in this data. This Notice shall be marked on any reproduction of this data, in whole or in part.

(End of notice)

- (2) Any such marked Protected Data may be disclosed under obligations of confidentiality for the following purposes:
- (a) For evaluation purposes under the restriction that the “Protected Data” be retained in confidence and not be further disclosed; or
 - (b) To subcontractors or other team members performing work under the Government's (insert name of program or other applicable activity) program of which this award is a part, for information or use in connection with the work performed under their activity, and under the restriction that the Protected

Data be retained in confidence and not be further disclosed.

- (3) The obligations of confidentiality and restrictions on publication and dissemination shall end for any Protected Data:
 - (a) At the end of the protected period;
 - (b) If the data becomes publicly known or available from other sources without a breach of the obligation of confidentiality with respect to the Protected Data;
 - (c) If the same data is independently developed by someone who did not have access to the Protected Data and such data is made available without obligations of confidentiality; or
 - (d) If the recipient disseminates or authorizes another to disseminate such data without obligations of confidentiality.
- (4) However, the recipient agrees that the following types of data are not considered to be protected and shall be provided to the Government when required by this award without any claim that the data are Protected Data. The parties agree that notwithstanding the following lists of types of data, nothing precludes the Government from seeking delivery of additional data in accordance with this award, or from making publicly available additional non-protected data, nor does the following list constitute any admission by the Government that technical data not on the list is Protected Data. (Note: It is expected that this paragraph will specify certain types of mutually agreed upon data that will be available to the public and will not be asserted by the recipient/contractor as limited rights or protected data).
- (5) The Government's sole obligation with respect to any protected data shall be as set forth in this paragraph (g).
- (h) Protection of Limited Rights Data

When data other than that listed in paragraphs (b)(1)(i), (ii), and (iii) of this clause are specified to be delivered under this agreement and such data qualify as either limited rights data or restricted computer software, the recipient, if the recipient desires to continue protection of such data, shall withhold such data and not furnish them to the Government under this agreement. As a condition to this withholding the recipient shall identify the data being withheld and furnish form, fit, and function data in lieu thereof.

(i) Subaward/Contract

The recipient has the responsibility to obtain from its subrecipients/contractors all data and rights therein necessary to fulfill the recipient's obligations to the Government under this agreement. If a subrecipient/contractor refuses to accept terms affording the Government such rights, the recipient shall promptly bring such refusal to the attention of the Contracting Officer and not proceed with subaward/contract award without further authorization.

(j) Additional Data Requirements

In addition to the data specified elsewhere in this agreement to be delivered, the Contracting Officer may,

at any time during agreement performance or within a period of 3 years after acceptance of all items to be delivered under this agreement, order any data first produced or specifically used in the performance of this agreement. This clause is applicable to all data ordered under this subparagraph. Nothing contained in this subparagraph shall require the recipient to deliver any data the withholding of which is authorized by this clause or data which are specifically identified in this agreement as not subject to this clause. When data are to be delivered under this subparagraph, the recipient will be compensated for converting the data into the prescribed form, for reproduction, and for delivery.

- (k) The recipient agrees, except as may be otherwise specified in this agreement for specific data items listed as not subject to this paragraph, that the Contracting Officer or an authorized representative may, up to three years after acceptance of all items to be delivered under this contract, inspect at the recipient's facility any data withheld pursuant to paragraph (h) of this clause, for purposes of verifying the recipient's assertion pertaining to the limited rights or restricted rights status of the data or for evaluating work performance. Where the recipient whose data are to be inspected demonstrates to the Contracting Officer that there would be a possible conflict of interest if the inspection were made by a particular representative, the Contracting Officer shall designate an alternate inspector.

(End of clause)

2 CFR 910, Appendix A of Subpart D, Patent Rights - (Large Business Firms - No Waiver)

(a) Definitions

- DOE patent waiver regulations, as used in this clause, means the Department of Energy patent waiver regulations in effect on the date of award. See 10 CFR part 784.
- Invention, as used in this clause, means any invention or discovery which is or may be patentable or otherwise protectable under title 35 of the United States Code or any novel variety of plant that is or may be protectable under the Plant Variety Protection Act (7 U.S.C. 2321, et seq.).
- Patent Counsel, as used in this clause, means the Department of Energy Patent Counsel assisting the awarding activity.
- Subject invention, as used in this clause, means any invention of the recipient conceived or first actually reduced to practice in the course of or under this agreement.

(b) Allocations of Principal Rights

- (1) Assignment to the Government. The recipient agrees to assign to the Government the entire right, title, and interest throughout the world in and to each subject invention, except to the extent that rights are retained by the recipient under subparagraph (b)(2) and paragraph (d) of this clause.
- (2) Greater rights determinations. The recipient, or an employee-inventor after consultation with the recipient, may request greater rights than the nonexclusive license and the foreign patent rights provided in paragraph (d) of this clause on identified inventions in accordance with the DOE patent waiver regulation. Each determination of greater rights under this agreement shall be subject to paragraph (c) of this clause, unless otherwise provided in the greater rights determination, and to the reservations and conditions deemed to be appropriate by the Secretary of Energy or designee.

(c) Minimum Rights Acquired by the Government

With respect to each subject invention to which the Department of Energy grants the recipient principal or exclusive rights, the recipient agrees to grant to the Government: A nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced each subject invention throughout the world by or on behalf of the Government of the United States (including any Government agency); “march-in rights” as set forth in 37 CFR 401.14(a)(J)); preference for U.S. industry as set forth in 37 CFR 401.14(a)(I); periodic reports upon request, no more frequently than annually, on the utilization or intent of utilization of a subject invention in a manner consistent with 35 U.S.C. 202(c)(50); and such Government rights in any instrument transferring rights in a subject invention.

(d) Minimum Rights to the recipient

- (1) The recipient is hereby granted a revocable, nonexclusive, royalty-free license in each patent application filed in any country on a subject invention and any resulting patent in which the Government obtains title, unless the recipient fails to disclose the subject invention within the times specified in subparagraph (e)(2) of this clause. The recipient's license extends to its domestic subsidiaries and affiliates, if any, within the corporate structure of which the recipient is a part and includes the right to grant sublicenses of the same scope to the extent the recipient was legally obligated to do so at the time the agreement was awarded. The license is transferable only with the approval of DOE except when transferred to the successor of that part of the recipient's business to which the invention pertains.
- (2) The recipient may request the right to acquire patent rights to a subject invention in any foreign country where the Government has elected not to secure such rights, subject to the minimum rights acquired by the Government similar to paragraph (c) of this clause. Such request must be made in writing to the Patent Counsel as part of the disclosure required by subparagraph (e)(2) of this clause, with a copy to the DOE Contracting Officer. DOE approval, if given, will be based on a determination that this would best serve the national interest.

(e) Invention Identification, Disclosures, and Reports

- (1) The recipient shall establish and maintain active and effective procedures to assure that subject inventions are promptly identified and disclosed to recipient personnel responsible for patent matters within 6 months of conception and/or first actual reduction to practice, whichever occurs first in the performance of work under this agreement. These procedures shall include the maintenance of laboratory notebooks or equivalent records and other records as are reasonably necessary to document the conception and/or the first actual reduction to practice of subject inventions, and records that show that the procedures for identifying and disclosing the inventions are followed. Upon request, the recipient shall furnish the Contracting Officer a description of such procedures for evaluation and for determination as to their effectiveness.
- (2) The recipient shall disclose each subject invention to the DOE Patent Counsel with a copy to the Contracting Officer within 2 months after the inventor discloses it in writing to recipient personnel responsible for patent matters or, if earlier, within 6 months after the recipient becomes aware that a subject invention has been made, but in any event before any on sale, public use, or publication of such invention known to the recipient. The disclosure to DOE shall be in the form of a written report and shall identify the agreement under which the invention was made and the inventor(s). It shall be sufficiently complete in technical detail to convey a clear understanding, to the extent known at the time of the disclosure, of the nature, purpose, operation, and physical, chemical, biological, or

electrical characteristics of the invention. The disclosure shall also identify any publication, on sale, or public use of the invention and whether a manuscript describing the invention has been submitted for publication and, if so, whether it has been accepted for publication at the time of disclosure. In addition, after disclosure to DOE, the recipient shall promptly notify Patent Counsel of the acceptance of any manuscript describing the invention for publication or of any on sale or public use planned by the recipient. The report should also include any request for a greater rights determination in accordance with subparagraph (b)(2) of this clause. When an invention is disclosed to DOE under this paragraph, it shall be deemed to have been made in the manner specified in Sections (a)(1) and (a)(2) of 42 U.S.C.5908, unless the recipient contends in writing at the time the invention is disclosed that it was not so made.

- (3) The recipient shall furnish the Contracting Officer a final report, within 3 months after completion of the work listing all subject inventions or containing a statement that there were no such inventions, and listing all subawards/contracts at any tier containing a patent rights clause or containing a statement that there were no such subawards/contracts.
- (4) The recipient agrees to require, by written agreement, its employees, other than clerical and nontechnical employees, to disclose promptly in writing to personnel identified as responsible for the administration of patent matters and in a format suggested by the recipient each subject invention made under subaward/contract in order that the recipient can comply with the disclosure provisions of paragraph (c) of this clause, and to execute all papers necessary to file patent applications on subject inventions and to establish the Government's rights in the subject inventions. This disclosure format should require, as a minimum, the information required by subparagraph (e)(2) of this clause.
- (5) The recipient agrees, subject to FAR 27.302(j), that the Government may duplicate and disclose subject invention disclosures and all other reports and papers furnished or required to be furnished pursuant to this clause.
- (f) Examination of Records Relating to Inventions
 - (1) The Contracting Officer or any authorized representative shall, until 3 years after final payment under this agreement, have the right to examine any books (including laboratory notebooks), records, and documents of the recipient relating to the conception or first actual reduction to practice of inventions in the same field of technology as the work under this agreement to determine whether—(i) Any such inventions are subject inventions; (ii) The recipient has established and maintains the procedures required by subparagraphs (e)(1) and (4) of this clause; (iii) The recipient and its inventors have complied with the procedures.
 - (2) If the Contracting Officer learns of an unreported recipient invention which the Contracting Officer believes may be a subject invention, the recipient may be required to disclose the invention to DOE for a determination of ownership rights.
 - (3) Any examination of records under this paragraph will be subject to appropriate conditions to protect the confidentiality of the information involved.

(g) Subaward/Contract

- (1) The recipient shall include the clause PATENT RIGHTS (SMALL BUSINESS FIRMS AND NONPROFIT ORGANIZATIONS) (suitably modified to identify the parties) in all subawards/contracts, regardless of tier, for experimental, developmental, demonstration, or research work to be performed by a small business firm or domestic nonprofit organization, except where the work of the subaward/contract is subject to an Exceptional Circumstances Determination by DOE. In all other subawards/contracts, regardless of tier, for experimental, developmental, demonstration, or research work, the recipient shall include this clause (suitably modified to identify the parties), or an alternate clause as directed by the contracting officer. The recipient shall not, as part of the consideration for awarding the subaward/contract, obtain rights in the subrecipient's/contractor's subject inventions.
- (2) In the event of a refusal by a prospective subrecipient/contractor to accept such a clause the recipient: (i) Shall promptly submit a written notice to the Contracting Officer setting forth the subrecipient/contractor's reasons for such refusal and other pertinent information that may expedite disposition of the matter; and (ii) Shall not proceed with such subaward/contract without the written authorization of the Contracting Officer.
- (3) In the case of subawards/contracts at any tier, DOE, the subrecipient/contractor, and recipient agree that the mutual obligations of the parties created by this clause constitute a contract between the subrecipient/contractor and DOE with respect to those matters covered by this clause.
- (4) The recipient shall promptly notify the Contracting Officer in writing upon the award of any subaward/contract at any tier containing a patent rights clause by identifying the subrecipient/contractor, the applicable patent rights clause, the work to be performed under the subaward/contract, and the dates of award and estimated completion. Upon request of the Contracting Officer, the recipient shall furnish a copy of such subaward/contract, and, no more frequently than annually, a listing of the subawards/contracts that have been awarded.
- (5) The recipient shall identify all subject inventions of a subrecipient/contractor of which it acquires knowledge in the performance of this agreement and shall notify the Patent Counsel, with a copy to the contracting officer, promptly upon identification of the inventions.

(h) Atomic Energy

- (1) No claim for pecuniary award of compensation under the provisions of the Atomic Energy Act of 1954, as amended, shall be asserted with respect to any invention or discovery made or conceived in the course of or under this agreement.
- (2) Except as otherwise authorized in writing by the Contracting Officer, the recipient will obtain patent agreements to effectuate the provisions of subparagraph (h)(1) of this clause from all persons who perform any part of the work under this agreement, except nontechnical personnel, such as clerical employees and manual laborers.

(i) Publication

It is recognized that during the course of the work under this agreement, the recipient or its employees may from time to time desire to release or publish information regarding scientific or

technical developments conceived or first actually reduced to practice in the course of or under this agreement. In order that public disclosure of such information will not adversely affect the patent interests of DOE or the recipient, patent approval for release of publication shall be secured from Patent Counsel prior to any such release or publication.

(j) Forfeiture of Rights in Unreported Subject Inventions

- (1) The recipient shall forfeit and assign to the Government, at the request of the Secretary of Energy or designee, all rights in any subject invention which the recipient fails to report to Patent Counsel within six months after the time the recipient: (i) Files or causes to be filed a United States or foreign patent application thereon; or (ii) Submits the final report required by subparagraph (e)(3) of this clause, whichever is later.
- (2) However, the recipient shall not forfeit rights in a subject invention if, within the time specified in subparagraph (e)(2) of this clause, the recipient: (i) Prepares a written decision based upon a review of the record that the invention was neither conceived nor first actually reduced to practice in the course of or under the agreement and delivers the decision to Patent Counsel, with a copy to the Contracting Officer, or (ii) Contending that the invention is not a subject invention, the recipient nevertheless discloses the invention and all facts pertinent to this contention to the Patent Counsel, with a copy of the Contracting Officer; or (iii) Establishes that the failure to disclose did not result from the recipient's fault or negligence.
- (3) Pending written assignment of the patent application and patents on a subject invention determined by the Secretary of Energy or designee to be forfeited (such determination to be a final decision under the Disputes clause of this agreement), the recipient shall be deemed to hold the invention and the patent applications and patents pertaining thereto in trust for the Government. The forfeiture provision of this paragraph (j) shall be in addition to and shall not supersede other rights and remedies which the Government may have with respect to subject inventions.

(End of clause)

NOTE: In reading these provisions, any reference to “contractor” shall mean “recipient,” and any reference to “contract” or “subcontract” shall mean “award” or “subaward.”

SECTION IX - APPENDICES/REFERENCE MATERIAL

APPENDIX A – COST SHARE INFORMATION

APPENDIX B – WAIVER REQUESTS: PERFORMANCE OF WORK IN THE UNITED STATES

APPENDIX C – TECHNOLOGY READINESS LEVELS

APPENDIX D – DATA MANAGEMENT PLAN

APPENDIX A – COST SHARING INFORMATION

The terms “cost sharing” and “cost matching” are often used synonymously. Even the DOE Financial Assistance Regulations, 2 CFR 200.306, use both of the terms in the titles specific to regulations applicable to cost sharing. DOE almost always uses the term “cost sharing,” as it conveys the concept that non-federal share is calculated as a percentage of the Total Project Cost. An exception is the State Energy Program Regulation, 10 CFR 420.12, State Matching Contribution. Here “cost matching” for the non-federal share is calculated as a percentage of the Federal funds only, rather than the Total Project Cost.

How Cost Sharing Is Calculated

As stated above, cost sharing is calculated as a percentage of the Total Project Cost. FFRDC/NL costs must be included in Total Project Costs. Following is an example of how to calculate cost sharing amounts for a project with \$1,000,000 in federal funds with a minimum 20% non-federal cost sharing requirement:

- Formula: Federal share (\$) divided by Federal share (%) = Total Project Cost
Example: \$1,000,000 divided by 80% = \$1,250,000
- Formula: Total Project Cost (\$) minus Federal share (\$) = Non-federal share (\$)
Example: \$1,250,000 minus \$1,000,000 = \$250,000
- Formula: Non-federal share (\$) divided by Total Project Cost (\$) = Non-federal share (%)
Example: \$250,000 divided by \$1,250,000 = 20%

What Qualifies For Cost Sharing

While it is not possible to explain what specifically qualifies for cost sharing in one or even a couple of sentences, in general, if a cost is allowable under the cost principles applicable to the organization incurring the cost and is eligible for reimbursement under an DOE grant or cooperative agreement, then it is allowable as cost share. Conversely, if the cost is not allowable under the cost principles and not eligible for reimbursement, then it is not allowable as cost share. In addition, costs may not be counted as cost share if they are paid by the Federal Government under another award unless authorized by Federal statute to be used for cost sharing.

The rules associated with what is allowable as cost share are specific to the type of organization that is receiving funds under the grant or cooperative agreement, though are generally the same for all types of entities. The specific rules applicable to:

- FAR Part 31 for For-Profit entities, (48 CFR Part 31); and
- 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.

In addition to the regulations referenced above, other factors may also come into play such as timing of donations and length of the project period. For example, the value of ten years of donated maintenance on a project that has a project period of five years would not be fully allowable as cost share. Only the value for the five years of donated maintenance that corresponds to the project period is allowable and may be counted as cost share.

Additionally, DOE generally does not allow pre-award costs for either cost share or reimbursement when these costs precede the signing of the appropriation bill that funds the award. In the case of a competitive award, DOE generally does not allow pre-award costs prior to the signing of the Selection Statement by the DOE Selection Official.

DOE Financial Assistance Rules 2 CFR Part 200 as amended by 2 CFR Part 910

As stated above, the rules associated with what is allowable cost share are generally the same for all types of organizations. Following are the rules found to be common, but again, the specifics are contained in the regulations and cost principles specific to the type of entity:

(A) **Acceptable contributions.** All contributions, including cash contributions and third party in-kind contributions, must be accepted as part of the Prime Recipient's cost sharing if such contributions meet all of the following criteria:

- (1) They are verifiable from the recipient's records.
- (2) They are not included as contributions for any other federally-assisted project or program.
- (3) They are necessary and reasonable for the proper and efficient accomplishment of project or program objectives.
- (4) They are allowable under the cost principles applicable to the type of entity incurring the cost as follows:
 - a. For-profit organizations. Allowability of costs incurred by for-profit organizations and those non-profit organizations listed in Attachment C to OMB Circular A-122 is determined in accordance with the for-profit cost principles in 48 CFR Part 31 in the Federal Acquisition Regulation, except that patent prosecution costs are not allowable unless specifically authorized in the award document. (v) Commercial Organizations. FAR Subpart 31.2—Contracts with Commercial Organizations
 - b. Other types of organizations. For all other non-federal entities, allowability of costs is determined in accordance with 2 CFR Part 200 Subpart E.
- (5) They are not paid by the Federal Government under another award unless authorized by Federal statute to be used for cost sharing or matching.
- (6) They are provided for in the approved budget.

(B) Valuing and documenting contributions

- (1) Valuing recipient's property or services of recipient's employees. Values are established in accordance with the applicable cost principles, which mean that amounts chargeable to the project are determined on the basis of costs incurred. For real property or equipment used on the project, the cost principles authorize depreciation or use charges. The full value of the item may be applied when the item will be consumed in the performance of the award or fully depreciated by the end of the award. In cases where the full value of a donated capital asset is to be applied as cost sharing or matching, that full

value must be the lesser or the following:

- a. The certified value of the remaining life of the property recorded in the recipient's accounting records at the time of donation; or
 - b. The current fair market value. If there is sufficient justification, the Contracting Officer may approve the use of the current fair market value of the donated property, even if it exceeds the certified value at the time of donation to the project. The Contracting Officer may accept the use of any reasonable basis for determining the fair market value of the property.
- (2) Valuing services of others' employees. If an employer other than the recipient furnishes the services of an employee, those services are valued at the employee's regular rate of pay, provided these services are for the same skill level for which the employee is normally paid.
- (3) Valuing volunteer services. Volunteer services furnished by professional and technical personnel, consultants, and other skilled and unskilled labor may be counted as cost sharing or matching if the service is an integral and necessary part of an approved project or program. Rates for volunteer services must be consistent with those paid for similar work in the recipient's organization. In those markets in which the required skills are not found in the recipient organization, rates must be consistent with those paid for similar work in the labor market in which the recipient competes for the kind of services involved. In either case, paid fringe benefits that are reasonable, allowable, and allocable may be included in the valuation.
- (4) Valuing property donated by third parties.
- a. Donated supplies may include such items as office supplies or laboratory supplies. Value assessed to donated supplies included in the cost sharing or matching share must be reasonable and must not exceed the fair market value of the property at the time of the donation.
 - b. Normally only depreciation or use charges for equipment and buildings may be applied. However, the fair rental charges for land and the full value of equipment or other capital assets may be allowed, when they will be consumed in the performance of the award or fully depreciated by the end of the award, provided that the Contracting Officer has approved the charges. When use charges are applied, values must be determined in accordance with the usual accounting policies of the recipient, with the following qualifications:
 - i. The value of donated space must not exceed the fair rental value of comparable space as established by an independent appraisal of comparable space and facilities in a privately-owned building in the same locality.
 - ii. The value of loaned equipment must not exceed its fair rental value.
- (5) Documentation. The following requirements pertain to the recipient's supporting records for in-kind contributions from third parties:
- a. Volunteer services must be documented and, to the extent feasible, supported by the same methods used by the recipient for its own employees.
 - b. The basis for determining the valuation for personal services and property must be documented.

APPENDIX B – WAIVER REQUESTS: PERFORMANCE OF WORK IN THE UNITED STATES

As set forth in Section IV.L., all work under DOE funding agreements must be performed in the United States. This requirement does not apply to the purchase of supplies and equipment, so a waiver is not required for foreign purchases of these items. However, the Prime Recipient should make every effort to purchase supplies and equipment within the United States. There may be limited circumstances where it is in the interest of the project to perform a portion of the work outside the United States. To seek a waiver of the Performance of Work in the United States requirement, the applicant must submit an explicit waiver request in the Application. A separate waiver request must be submitted for each entity proposing performance of work outside of the United States.

Overall, a waiver request must demonstrate to the satisfaction of DOE that it would further the purposes of this FOA and is otherwise in the economic interests of the United States to perform work outside of the United States. A request to waive the *Performance of Work in the United States* requirement must include the following:

- The rationale for performing the work outside the U.S. (“foreign work”);
- A description of the work proposed to be performed outside the U.S.;
- An explanation as to how the foreign work is essential to the project;
- A description of the anticipated benefits to be realized by the proposed foreign work and the anticipated contributions to the US economy;
- The associated benefits to be realized and the contribution to the project from the foreign work;
- How the foreign work will benefit U.S. research, development and manufacturing, including contributions to employment in the U.S. and growth in new markets and jobs in the U.S.;
- How the foreign work will promote domestic American manufacturing of products and/or services;
- A description of the likelihood of Intellectual Property (IP) being created from the foreign work and the treatment of any such IP;
- The total estimated cost (DOE and recipient cost share) of the proposed foreign work;
- The countries in which the foreign work is proposed to be performed; and
- The name of the entity that would perform the foreign work.

DOE may require additional information before considering the waiver request.

The applicant does not have the right to appeal DOE’s decision concerning a waiver request.

APPENDIX C - TECHNOLOGY READINESS LEVELS

Relative Level of Technology Development	Technology Readiness Level	TRL Definition	Description
System Operations	TRL 9	Actual system operated over the full range of expected mission conditions.	The technology is in its final form and operated under the full range of operating mission conditions. Examples include using the actual system with the full range of wastes in hot operations.
System Commissioning	TRL 8	Actual system completed and qualified through test and demonstration.	The technology has been proven to work in its final form and under expected conditions. In almost all cases, this TRL represents the end of true system development. Examples include developmental testing and evaluation of the system with actual waste in hot commissioning. Supporting information includes operational procedures that are virtually complete. An Operational Readiness Review (ORR) has been successfully completed prior to the start of hot testing.
	TRL 7	Full-scale, similar (prototypical) system demonstrated in relevant environment	This represents a major step up from TRL 6, requiring demonstration of an actual system prototype in a relevant environment. Examples include testing full-scale prototype in the field with a range of simulants in cold commissioning ¹ . Supporting information includes results from the full-scale testing and analysis of the differences between the test environment, and analysis of what the experimental results mean for the eventual operating system/environment. Final design is virtually complete.
Technology Demonstration	TRL 6	Engineering/pi lot-scale, similar (prototypical) system validation in relevant environment	Engineering-scale models or prototypes are tested in a relevant environment. This represents a major step up in a technology's demonstrated readiness. Examples include testing an engineering scale prototypical system with a range of simulants. ¹ Supporting information includes results from the engineering scale testing and analysis of the differences between the engineering scale, prototypical system/environment, and analysis of what the experimental results mean for the eventual operating system/environment. TRL 6 begins true engineering development of the technology as an operational system. The major difference between TRL 5 and 6 is the step up from laboratory scale to engineering scale and the determination of scaling factors that will enable design of the operating system. The prototype should be capable of performing all the functions that will be required of the operational system. The operating environment for the testing should closely represent the actual operating environment.
Technology Development	TRL 5	Laboratory scale, similar system validation in relevant environment	The basic technological components are integrated so that the system configuration is similar to (matches) the final application in almost all respects. Examples include testing a high-fidelity, laboratory scale system in a simulated environment with a range of simulants ¹ and actual waste ² . Supporting information includes results from the laboratory scale testing, analysis of the differences between the laboratory and eventual operating system/environment, and analysis of what the experimental results mean for the eventual operating system/environment. The major difference between TRL 4 and 5 is the increase in the fidelity of the system and environment to the actual application. The system tested is almost prototypical.

Relative Level of Technology Development	Technology Readiness Level	TRL Definition	Description
Technology Development	TRL 4	Component and/or system validation in laboratory environment	The basic technological components are integrated to establish that the pieces will work together. This is relatively "low fidelity" compared with the eventual system. Examples include integration of ad hoc hardware in a laboratory and testing with a range of simulants and small scale tests on actual waste ² . Supporting information includes the results of the integrated experiments and estimates of how the experimental components and experimental test results differ from the expected system performance goals. TRL 4-6 represent the bridge from scientific research to engineering. TRL 4 is the first step in determining whether the individual components will work together as a system. The laboratory system will probably be a mix of on hand equipment and a few special purpose components that may require special handling, calibration, or alignment to get them to function.
Research to Prove Feasibility	TRL 3	Analytical and experimental critical function and/or characteristic proof of concept	Active research and development (R&D) is initiated. This includes analytical studies and laboratory-scale studies to physically validate the analytical predictions of separate elements of the technology. Examples include components that are not yet integrated or representative tested with simulants. ¹ Supporting information includes results of laboratory tests performed to measure parameters of interest and comparison to analytical predictions for critical subsystems. At TRL 3 the work has moved beyond the paper phase to experimental work that verifies that the concept works as expected on simulants. Components of the technology are validated, but there is no attempt to integrate the components into a complete system. Modeling and simulation may be used to complement physical experiments.
	TRL 2	Technology concept and/or application formulated	Once basic principles are observed, practical applications can be invented. Applications are speculative, and there may be no proof or detailed analysis to support the assumptions. Examples are still limited to analytic studies. Supporting information includes publications or other references that outline the application being considered and that provide analysis to support the concept. The step up from TRL 1 to TRL 2 moves the ideas from pure to applied research. Most of the work is analytical or paper studies with the emphasis on understanding the science better. Experimental work is designed to corroborate the basic scientific observations made during TRL 1 work.
	TRL 1	Basic principles observed and reported	This is the lowest level of technology readiness. Scientific research begins to be translated into applied R&D. Examples might include paper studies of a technology's basic properties or experimental work that consists mainly of observations of the physical world. Supporting Information includes published research or other references that identify the principles that underlie the technology.
Basic Technology Research			

APPENDIX D – DATA MANAGEMENT PLAN

A Data Management Plan (“DMP”) explains how data generated in the course of the work performed under a DOE award will be shared and preserved or, when justified, explains why data sharing or preservation is not possible or scientifically appropriate.

DMP Requirements

In order for a DMP to be considered acceptable, the DMP must address the following:

At a minimum, the DMP must describe how data sharing and preservation will enable validation of the results from the proposed work, or how results could be validated if data are not shared or preserved.

The DMP must provide a plan for making all research data displayed in publications resulting from the proposed work digitally accessible 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 in accordance with the principles stated above. This requirement could be met by including the data as supplementary information to the published article, or through other means. The published article should indicate how these data can be accessed.

The DMP should consult and reference available information about data management resources to be used in the course of the proposed work. In particular, a DMP that explicitly or implicitly commits data management resources at a facility beyond what is conventionally made available to approved users should be accompanied by written approval from that facility. In determining the resources available for data management at DOE User Facilities, researchers should consult the published description of data management resources and practices at that facility and reference it in the DMP. Information about other DOE facilities can be found in the additional guidance from the sponsoring program.

The DMP 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 laws (i.e., export control laws), and DOE regulations, orders, and policies.

Data Determination for a DMP

The Principal Investigator should determine which data should be the subject of the DMP and, in the DMP, propose which data should be shared and/or preserved in accordance with the DMP Requirements noted above.

For data that will be generated through the course of the proposed work, the Principal Investigator should indicate what types of data should be protected from immediate public disclosure by DOE (referred to as “protected data”) and what types of data that DOE should be able to release immediately. Similarly, for data developed outside of the proposed work at private expense that will be used in the course of the proposed work, the Principal Investigator should indicate whether that type of data will be subject to public release or kept confidential (referred to as “limited rights data”). Any use of limited rights data

or labeling of data as “protected data” must be consistent with the DMP Requirements noted above.

Suggested Elements for a DMP

The following list of elements for a DMP provides suggestions regarding the data management planning process and the structure of the DMP:

Data Types and Sources: A brief, high-level description of the data to be generated or used through the course of the proposed work and which of these are considered digital research data necessary to validate the research findings or results.

Content and Format: A statement of plans for data and metadata content and format including, where applicable, a description of documentation plans, annotation of relevant software, and the rationale for the selection of appropriate standards. Existing, accepted community standards should be used where possible. Where community standards are missing or inadequate, the DMP could propose alternate strategies for facilitating sharing, and should advise the sponsoring program of any need to develop or generalize standards.

Sharing and Preservation: A description of the plans for data sharing and preservation. This should include, when appropriate: the anticipated means for sharing and the rationale for any restrictions on who may access the data and under what conditions; a timeline for sharing and preservation that addresses both the minimum length of time the data will be available and any anticipated delay to data access after research findings are published; any special requirements for data sharing, for example, proprietary software needed to access or interpret data, applicable policies, provisions, and licenses for re-use and re-distribution, and for the production of derivatives, including guidance for how data and data products should be cited; any resources and capabilities (equipment, connections, systems, software, expertise, etc.) requested in the research proposal that are needed to meet the stated goals for sharing and preservation (this could reference the relevant section of the associated research proposal and budget request); and whether/where the data will be preserved after direct project funding ends and any plans for the transfer of responsibilities for sharing and preservation.

Protection: A statement of plans, where appropriate and necessary, to 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; and avoid significant negative impact on innovation, and U.S. competitiveness.

Rationale: A discussion of the rationale or justification for the proposed data management plan including, for example, the potential impact of the data within the immediate field and in other fields, and any broader societal impact.

Additional Guidance

In determining which data should be shared and preserved, researchers must consider the data needed to validate research findings as described in the Requirements, and are encouraged to consider the potential benefits of their data to their own fields of research, fields other than their own, and society at large.

DMPs should reflect relevant standards and community best practices and make use of community accepted repositories whenever practicable.

Costs associated with the scope of work and resources articulated in a DMP may be included in the proposed research budget as permitted by the applicable cost principles.

To improve the discoverability of and attribution for datasets created and used in the course of research, DOE encourages the citation of publicly available datasets within the reference section of publications, and the identification of datasets with persistent identifiers such as Digital Object Identifiers (DOIs). In most cases, DOE can provide DOIs free of charge for data resulting from DOE-funded research through its Office of Scientific and Technical Information (OSTI) DataID Service.

Definitions

Data Preservation: Data preservation means providing for the usability of data beyond the lifetime of the research activity that generated them.

Data Sharing: Data sharing means making data available to people other than those who have generated them. Examples of data sharing range from bilateral communications with colleagues, to providing free, unrestricted access to anyone through, for example, a web-based platform.

Digital Research Data: The term digital data encompasses a wide variety of information stored in digital form including: experimental, observational, and simulation data; codes, software and algorithms; text; numeric information; images; video; audio; and associated metadata. It also encompasses information in a variety of different forms including raw, processed, and analyzed data, published and archived data.

Research Data: The recorded factual material commonly accepted in the scientific community as necessary to validate research findings, but not any of the following: preliminary analyses, drafts of scientific papers, plans for future research, peer reviews, or communications with colleagues. This 'recorded' material excludes physical objects (e.g., laboratory samples). Research data also do not include:

(A) Trade secrets, commercial information, materials necessary to be held confidential by a researcher until they are published, or similar information which is protected under law; and

(B) Personnel and medical information and similar information the disclosure of which would constitute a clearly unwarranted invasion of personal privacy, such as information that could be used to identify a particular person in a research study.”

Validate: In the context of DMPs, validate means to support, corroborate, verify, or otherwise determine the legitimacy of the research findings. Validation of research findings could be accomplished by reproducing the original experiment or analyses; comparing and contrasting the results against those of a new experiment or analyses; or by some other means.