

**FINANCIAL ASSISTANCE
FUNDING OPPORTUNITY ANNOUNCEMENT**



U. S. Department of Energy

Advanced Reactor Demonstration

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Website for Additional Information Related to the FOA, click [here](#)

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May 29, 2020

Industry Day:

Jun 02 - 03, 2020

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Application Due Date/Time (for all applicants):

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IMPORTANT NOTE: See Section 4 for registration and submission information!

Section 1 – PROGRAM/FUNDING OPPORTUNITY DESCRIPTION

1.1 Description

This program is intended to facilitate the development of U.S. private industry advanced nuclear reactor demonstrations. It will provide funding for several advanced reactors that are reliable, cost effective, licensable, and commercially viable. These designs are expected to enable a market environment in which commercial reactor services are available that are safe and affordable to both construct and operate when compared to competing, alternative sources of energy in the near- and mid-term. These designs are expected to provide significant improvements in safety, security, economics, and environmental impacts over current nuclear power plant designs.

As a part of its mission, the United States (U.S.) Department of Energy (DOE), Office of Nuclear Energy (NE) has a long and successful history of working with the domestic nuclear industry, national laboratories, and academia to support the development of advanced reactor designs and capabilities over a continuum of technology maturity levels. DOE currently supports research and development (R&D) activities for a variety of advanced reactor technologies that are expected to improve on the safety, security, economics, and/or environmental impacts of current nuclear power plant designs. DOE undertakes these activities in support of the Administration's objectives to maintain the Nation's technological leadership position in the global nuclear industry and ensure national energy security. DOE recognizes that work remains to ensure continued U.S. leadership in the research, design, and development of advanced reactors and to ensure the successful deployment of these reactors in the U.S. and international marketplaces. As part of the FY2020 Further Consolidation Appropriations Act, (H.R. 1865), Congress has provided funding for NE to address advanced reactor development at various stages of the technology maturity continuum.

This Funding Opportunity Announcement (FOA) is comprised of three separate pathways. The Advanced Reactor Demonstration Program (ARDP) has a goal of focusing DOE and non-federal resources (through cost shared agreements with industry) on the actual construction of real demonstration reactors that are safe and affordable to build in the near- to mid-term. ARDP identifies two separate pathways to meet this goal: 1) **Advanced Reactor Demonstrations**, which supports two reactor designs to be operational in 5-7 years; and, 2) **Risk Reduction for Future Demonstration** awards which supports 2-5 additional diverse advanced reactor designs that have a commercialization horizon that is approximately 5 years longer than the Advanced Reactor Demonstrations. A third path, identified in H.R. 1865, **Advanced Reactor Concepts – 20**, will support development of at least two new public-private partnership awards focused on advancing reactor designs toward the demonstration phase; these have a commercialization horizon that is approximately 5 years longer than the Risk Reduction for Future Demonstration awards.

Accordingly, this FOA focuses on these three separate pathways:

- 1.1.1. **Advanced Reactor Demonstrations (Demos)**. This pathway provides funding for two awards to build and achieve initial operations of Demos in the U.S. For the purposes of this FOA, a demonstration is defined as an advanced reactor operated as part of the power generation facilities of an electric utility system or in any other manner for the purpose of demonstrating the suitability for commercial application of the advanced nuclear reactor.
- 1.1.2. **Risk Reduction for Future Demonstrations (Risk Reduction)**. This pathway provides funding for between two and five awards for a diverse set of advanced nuclear reactors to address technical risks challenging the development of these reactor designs to get them ready for future demonstration.

- 1.1.3. **Advanced Reactor Concepts – 20 (ARC-20)**. This pathway provides funding for at least two awards to support advanced reactor concepts for further development in the areas of safety, operations, and economics with the potential of being demonstrated in the 2035 timeframe.

Further descriptions of these three pathway areas are provided in paragraphs 1.2, 1.3 and 1.4 below. Each applicant is requested to self-identify the maturity of its proposed technology based on technical, design and licensing maturity, as well as its manufacturing readiness, and to submit a single application in the appropriate area, avoiding duplication of submittals by the Applicant.

To facilitate applicant ability to reference these pathways, the different pathway sections of the FOA are color coded, with those in **BLUE** pertaining specifically to the **Demos**, those in **RED** pertaining specifically to the **Risk Reductions**, and those in **GREEN** pertaining specifically to the **ARC-20**.

All awards will be executed using financial assistance procedures in 2 Code of Federal Regulations (CFR) 200 and 2 CFR 910, and awarded as cooperative agreements. Applicants may apply for funding under either the **Demos**, or the **Risk Reduction**, or for both the **Demos** and **Risk Reduction**. Applications submitted for Demos, and not selected for one of the two demonstration project awards, will automatically be considered for Risk Reduction unless the Applicant specifically states in its application that it does NOT want to be considered for a Risk Reduction award. Accordingly, applicants need not submit multiple applications of the same concept/project for Demos and Risk Reduction, if they have submitted a Demos application. Applicants may also choose to submit a single application under the **ARC-20**. However, as stated above, applicants may only submit a single application in the appropriate area for any specific reactor project.

1.2 Demos Description (i.e., *technology in final design phases*).

The primary objective of the new ARDP program is to focus DOE and non-federal resources on actual construction and initial operation of real demonstration reactors in the U.S. that are safe and affordable to both build and operate in the near and mid-term. To be successful, the advanced reactor must be designed, sited, licensed by the U.S. Nuclear Regulatory Commission (NRC), constructed and operational within 5 – 7 years from the date of award of the cooperative agreement.

Accordingly, *the expectation is that **Demos will be licensed by the NRC; if applicants wish to propose a different approach, a compelling justification must be provided in the application.*** DOE's intent is for the Awardee to own the plant/reactor upon completion of the award.

Demos will be executed through cost-shared partnerships (at least 50% of costs from non-Federal sources) with DOE and be deployed either at a federal site or a non-federal site under a license with the NRC.

The Applicant must describe its approach to addressing the environmental requirements in 10 CFR 51, as well as the specific NRC licensing safety process selected, such as a construction permit and operating license under 10 CFR Part 50 or a combined license under 10 CFR Part 52.

Demos are expected to be the most technologically mature of the designs proposed, and closest to a final design (e.g., at a Technology Readiness Level (TRL) of TRL 6 or higher – see TRL scale from [DOE Guide 413.3-4](#), U.S. Department of Energy Technology Readiness Assessment Guide in Appendix H). For the purposes of this FOA, being in a final design state indicates that the design is sufficiently mature to begin procurement or construction activities. For a Demo project, DOE expects that the Applicant will be able to clearly exhibit that in 5-7 years it would be able to complete the

appropriate permitting, certification and licensing reviews/activities with the regulator, establish final design configurations, execute long-lead procurements, develop operational programs and complete operator training, demonstrate supply chain readiness, establish an engineering, procurement, and construction (EPC) contract, construct the reactor, and perform start-up and testing to assure the advanced reactor is operational and functioning (e.g., producing electricity, process heat, etc.). Demo applications must show a path to achieving commercial operation with a customer. With the aggressive 5-7-year deployment schedule, it is anticipated that a potentially successful Applicant would likely need to have commenced conducting these activities by the time of application.

1.3 Risk Reduction Description (i.e., *technology in preliminary design phases or nearing final design*).

The ARDP also provides funding to improve the commercial readiness for a set of diverse advanced nuclear reactor designs. These cost-shared awards will focus on technical, operational and regulatory risks challenging the development of proposed advanced reactor designs to prepare for future demonstration opportunities.

The primary objective of the Risk Reduction awards is to focus DOE and non-federal resources on preparing/maturing those reactor designs and technologies that are nearly, but not yet fully, ready for demonstration so that they can be demonstrated in the near- to mid-term (i.e., approximately five years later than the Demos), including completing any needed applied R&D activities. This pathway will provide funding to address and reduce/eliminate technical and regulatory risks for moving innovative advanced reactor designs into the marketplace on aggressive timelines, in leveraging DOE assets to support advanced reactor developers where gaps exist, and accelerating the path to demonstration, including final design, licensing, construction, testing, and operation.

Risk Reduction awards will be executed through cost-shared partnerships (at least 20% of costs from non-Federal sources) with DOE.

The end state of a Risk Reduction project is expected to position the proposed reactor design to achieve a demonstration reactor state approximately 5 years beyond the Demo project window of 5-7 years. Projects would include any and all efforts intended to mature the design/technology toward commercialization. Projects to reduce risk on the proposed designs could include, but would not be limited to:

- development of a thermal hydraulic test facility, and conduct of experiments;
- modeling and simulation of the design to address operational and safety issues;
- development of innovative plant safety systems;
- development and submittal of a design certification application, construction permit, and/or site license application, depending on the preferred licensing pathway;
- major component or system prototyping and/or manufacture, proving the ability to design and operate innovative capabilities;
- development of plant control and protection systems, including plant simulators and operator training programs; and
- demonstrating a prototype, sub-scale reactor, or a portion of the reactor as part of an overall reactor system.

For Risk Reduction projects, DOE expects that the proposed design would be somewhere between the preliminary design phase and the final design phase (e.g., at a TRL 4 or higher – see TRL scale from [DOE Guide 413.3-4](#), U.S. Department of Energy Technology Readiness Assessment Guide in Appendix H). For the purposes of this FOA, preliminary design refers to the period where the designer is in the process of converting concepts to a more detailed design, and more detailed and reliable cost and schedule estimates can be developed. Activities that would occur in the preliminary design stage could include, but are not limited to:

- initiation of license application development (e.g., a design certification application), pre-application engagement with the regulator, and/or submittal of a license application to the regulator, design of plant safety-related structures, systems, and components (SSCs),
- development of schematics, diagrams, and layouts of the plant configuration,
- identification of quality assurance requirements,
- executing first-of-a-kind engineering efforts,
- developing plant protection systems and simulators,
- early development of plant operations and maintenance programs,
- developing intermediate confidence level plant cost estimates,
- interfacing with supply chain entities and further developing them, and
- efforts to establish overall confidence in the reactor design development, licensing and commercialization schedule.

1.4 ARC-20 Description (i.e., *technology in the early/conceptual design phase*).

ARC-20 is a new R&D funding opportunity pathway to support further development of innovative and diverse advanced reactor concepts that are lower in the TRL scale (e.g., at a TRL 3 or higher – see TRL scale from [DOE Guide 413.3-4](#), U.S. Department of Energy Technology Readiness Assessment Guide in Appendix H) than Demos or Risk Reduction projects, and that have a commercialization horizon that may be 5-10 years beyond Risk Reduction projects.

The goal of this pathway is to assist the progression of advanced reactor designs through engagement between DOE and industry in the development of advanced reactor concepts in their earliest phases of design. In support of that goal, DOE seeks to partner with industry to fund at least two cost-shared awards for advanced reactor concepts with the potential of being demonstrated in the 2035 timeframe. The awards resulting from this FOA shall support the overall design concept but include only those activities in the Applicant's proposed work scope that can be completed within the next five years.

This pathway will focus on an industry-led competition that will include both industry and DOE's Federally Funded Research and Development Centers/National Laboratories (FFRDCs/NLs) participants in the development of two advanced reactor projects. This FOA pathway allows use of business arrangements among reactor designers, vendors and suppliers that have the potential to license and build an advanced reactor concept in the U.S.

ARC-20 awards will be executed through cost-shared partnerships (at least 20% of costs from non-Federal sources) with DOE.

The end state for an ARC-20 project is expected to mature innovative advanced reactor concepts and technologies out of the conceptual design phase toward eventual demonstration and construction.

For ARC-20 awards, DOE is seeking technologies that are entering or already in the conceptual design phase. For the purposes of the FOA, conceptual design is defined as the period when essential functions and capabilities of the technology are being identified, design specifications are being solidified, and early licensing requirements are being established. Activities anticipated to be addressed in this phase could include, but not be limited to:

- development of a conceptual design report,
- modeling and simulation,
- design analysis,
- selection and testing of materials and fuel forms to be used in the reactor,
- identification of key SSCs,
- design and execution of scaled experiments, and

- development of early licensing topical reports to address regulatory treatment of novel design concepts that are intended to be incorporated in the technology, or on smaller, higher output reactors features that support a wide variety of industry and commercial needs.

Pre-application engagement with the regulator would be a positive consideration for an ARC-20 project, but not required.

Although there may be some overlap in activities conducted in these design phases (particularly between the ARC-20 and Risk Reduction areas), applicants must carefully evaluate each, determine the funding opportunity or pathway to which their design is most suited, and apply for funding accordingly.

1.5 Definitions (applicable to Demos, Risk Reduction and ARC-20)

For purposes of this FOA

- 1.5.1 A demonstration is defined as an advanced reactor operated as part of the power generation facilities of an electric utility system or in any other manner for the purpose of demonstrating the suitability for commercial application of the advanced nuclear reactor.
- 1.5.2 Advanced reactors are defined as any light water or non-light water fission reactor with significant improvements compared to the current generation of operational reactors in the U.S. fleet. Examples of significant improvements that may be proposed include, but are not limited to:
- inherent safety features,
 - lower waste yields,
 - greater fuel utilization,
 - superior reliability,
 - resistance to proliferation,
 - increased thermal efficiency, and
 - the ability to integrate with electric and nonelectric applications.

This FOA is intended to be “technology neutral”, meaning that any advanced fission nuclear power reactor that is licensable and commercially viable may be proposed for award consideration.

NOTES:

1. Applying for but not being selected for a Demos award does not guarantee the Applicant will be selected for a Risk Reduction award. Also, being selected for a Risk Reduction or for an ARC-20 award does not guarantee or imply future funding or award for a future Demos award, if future similar funding opportunities are issued.
2. *Applicants will be required to establish a plan by which they would obtain the fuel/special nuclear material needed for their projects.* Accordingly, how the applicant proposes to obtain fuel/special nuclear material for their project is to be described in the application. Follow the application instructions for Demos and Risk Reduction projects as given in FOA paragraph 15.g regarding application submission requirements related to fuel. Appendix A is an informational attachment to this FOA and describes current considerations for High-Assay Low-Enriched Uranium (HALEU) supply in the United States and provides links to information about DOE’s efforts to address HALEU supply challenges.

1.6 Authorizing Statutes and Other Applicable Statutes (applicable to **Demos, **Risk Reduction** and **ARC-20**)**

The activities to be supported under this FOA are authorized under § 951 (a) of the Energy Policy Act of 2005, as codified at 42 U.S.C. § 16271(a). Congress appropriated \$230 M for NE to develop the Advanced Reactor Demonstration Program and an additional \$20 M for Advanced Reactor Technologies in the Further Consolidation Appropriations Act, 2020 (H.R. 1865). Energy Policy Act of 1992, 42 U.S.C. 13525, also applies to this action. Energy Policy Act of 1992 (EPAAct 92) is (Pub. L. 102-486 (Oct. 24, 1992) 106 STAT 2951)

Further Consolidated Appropriations Act of 2020, Pub. L. 116-94 (Dec. 2019), Division C, Nuclear Energy.

Section 4 of the Act incorporates the Explanatory Statement, which is published in the Congressional Record. Citation: 165 Cong. Rec. H11246 (daily ed. Dec. 17, 2019) (Explanatory Statement regarding H.R. 1865, Further Consolidated Appropriations Act 2020).

Section 2 – FEDERAL AWARD INFORMATION

(Applicable to **Demos**, **Risk Reduction** and **ARC-20**)

2.1 Type of Award Instrument

DOE intends to issue financial assistance cooperative agreements as a result of selecting applications submitted in response to this FOA. Cooperative agreements have substantial Federal involvement in the projects awarded. DOE may also award/amend an interagency agreement as a result of selecting applications submitted in response to this FOA.

Demos	See Appendix B for a draft Statement of Substantial Involvement intended for use on Demos awards
Risk Reduction	See Appendix C for a draft Statement of Substantial Involvement intended for use on Risk Reduction awards
ARC-20	See Appendix D for a draft Statement of Substantial Involvement intended for use on ARC-20 awards

2.2 Expected Number of Awards (applicable to **Demos**, **Risk Reduction** and **ARC-20**)

2.2.1 DOE anticipates making awards from this FOA as follows:

PATHWAY	# Awards
Demos	2
Risk Reduction	2 – 5
ARC-20	2

2.2.2 Additional Possible Awards

Should an awarded project not be completed for any reason prior to the end of the award's project period of performance, DOE may make additional award(s) from applications submitted under this FOA. These new awards will be considered as competitively reviewed and awarded under this FOA, so long as the new awards from applications submitted in response to this competitive FOA remain within the programmatic boundaries of the FOA and were otherwise considered meritorious under the merit review criteria of the FOA.

2.3 Estimated Funding

Total funding over the entire project period will be dependent on the needs of each project selected. 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. The amounts below are FY 2020 funds appropriated to initiate projects under each pathway.

Demos	\$160 Million; DOE will use this between the two awards, with \$80 Million to initiate each award
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Risk Reduction \$30 Million; DOE will use this to initiate the 2 to 5 awards selected

ARC-20 Approximately \$20 Million; DOE will use this to initiate at least two ARC-20 awards

2.4 Anticipated Award Size

The below amounts include both Federal and non-Federal cost share for each award. These are the anticipated individual award sizes, but individual awards may be higher or lower, as proposed by the Applicant. Total project funding is contingent on availability of funding of additional future appropriations.

Demos Between \$400 Million to \$4 Billion

Risk Reduction Between \$40 Million - \$400 Million

ARC-20 Between \$10 Million - \$40 Million

2.5 Period of Performance

The anticipated period of performance (project period) from the time of award, by pathway, is specified below. Performance beyond the near-term is contingent on additional future appropriations, an evaluation of satisfactory progress, and DOE's approval of a continuation application.

Demos 5 - 7 years*, but may be shorter depending on how soon the reactor/technology can be demonstrated

Risk Reduction Up to 5 – 7 years, but may be shorter depending on how soon the reactor/technology is ready to be demonstrated

ARC-20 Up to 5 years, but may be shorter depending on how soon the proposed project objectives can be attained

* **Demos** awards are for 5 – 7 years, as proposed by the Applicant and approved by DOE. Demos awards may be extended during performance (see Award Terms and Conditions, Appendix O, provision entitled *Award Period Duration and Extension*). However, the objective of the Demos awards is to have the Demos reactors designed, sited, NRC licensed, constructed and operational within 5 – 7 years; accordingly, applicants should neither propose nor plan for project durations longer than 5 – 7 years.

2.6 Type of Application

Applicants who have applied for and/or received prior awards under other FOAs or programs desiring to be considered for awards under this FOA (DE-FOA-0002271) must submit applications for consideration as follows:

Demos DOE will only accept new applications under this announcement

Risk Reduction Except as stated below, DOE will only accept new applications under this announcement

Applicants who have applied for the Demos but are not selected for a Demos award will be considered for a Risk Reduction award; the application as originally submitted for the Demos will automatically be considered for a Risk Reduction award, unless the Applicant specifically states it does not want to be considered for a Risk Reduction award in its Letter of Intent (see paragraph 4.4 of this FOA).

ARC-20

DOE will accept only new applications under this announcement. For applicants wanting to be considered under both ARC-20 and Risk Reduction, applicants must submit their separate applicable project ideas under the applicable pathway.

Section 3 – ELIGIBILITY INFORMATION (Applicable to **Demos**, **Risk Reduction** and **ARC-20**)

3.1 Eligible Applicants

Applications are requested from all interested U.S. sources (other than individuals), including nuclear industry entities (e.g., reactor vendors, fuel manufacturers, utilities and power producers, supply chain vendors, engineering, procurement, and construction contractors, etc.), companies using non-electric power from reactors, universities, and/or teams/consortia capable of designing, building, and operating an advanced nuclear reactor demonstration. Federal, tribal, state, and municipal utilities are also eligible to apply for these awards. Direct beneficiaries or program participants, i.e., prime recipients must be located and/or based in the U.S. DOE encourages interested parties to join in teams/joint ventures to ensure the successful commercial deployment for the Demo awards. In keeping with the Administration's priorities, DOE only plans to consider awards with prime awardees/recipients that are owned, organized, and operated within the U.S. Applicants must submit information in their submitted Letter of Intent (see paragraph 4.4 of this FOA) to show that they meet the eligibility requirements set forth in 2 CFR 910.124. Foreign sub-recipients and vendors may be proposed as part of an applicant team; however, see Appendix F.

Certain NRC requirements apply to the **Demos** pathway of this FOA since NRC is the licensing agency for domestic reactor operation. Applicants must submit information to show that they are not owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government as set forth in the NRC's regulations at 10 CFR 50.38, and that their application would not be inimical to the common defense and security or public health and safety as required by 10 CFR 50.40.

DOE and non-DOE FFRDC/NLs are not eligible to participate as a lead or prime recipient. These entities are eligible to participate as subrecipients, subawards, vendors, or team members of the prime/lead Applicant.

Eligible entities at all pathways may apply as participants in multiple applications and under multiple pathways under this FOA.

Demos and **Risk Reduction** Any prime applicant that receives fiscal year 2020 funds of more than \$200,000 under the DOE's Advanced Small Modular Reactor R&D program is not eligible to receive fiscal year 2020 funds from the ARDP. By applying for this FOA, applicants are certifying they comply with this requirement.

Risk Reduction Any entity selected as one of the two Demos is not eligible to receive funding for a Risk Reductions project associated with the same advanced reactor design as selected for the Demos.

Applicants must meet eligibility criteria to apply for funding under this FOA. An Applicant's failure to meet any eligibility criterion by the time of an application deadline will result in DOE returning the application without review or, even though an application may be reviewed, will preclude DOE from making a Federal award.

3.2 Using a DOE FFRDC/NL

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

3.2.1 Authorization for DOE FFRDC/NL. As allowed per the Energy Policy Act of 2005, Sections 2 and 989, the cognizant Contracting Officer for the DOE FFRDC/NL must authorize in writing the use of a DOE 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 assigned programs at the laboratory, and will not place the laboratory in direct competition with the domestic private sector."

3.2.2 Conflicts of interest may exist due to previous efforts performed by the DOE FFRDC/NL or assistance provided in program direction and other mission related activities. Indicate whether a potential COI exists. If a COI has been identified (for the lead Project Manager [PM] or a collaborator), explain the conflict and include 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 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: COI Acknowledgment [insert application ID#] .pdf

3.2.3 Value/Funding. The value of, and funding for, the DOE FFRDC/NL contractor portion of the work is considered to be Government cost share, and will not normally be included as awardee cost share in the award to a successful applicant. DOE will fund a DOE FFRDC/NL contractor through the DOE field work application system.

3.2.4 Cost Share. The Applicant's cost share requirement will be based on the total cost of the project, including the Applicant's and the DOE FFRDC/NL contractor's portions of the effort, as well as the nature of the work being proposed (this is discussed below).

3.2.5 Scope. The scope of work to be performed by the DOE FFRDC/NL contractor may not be more significant (e.g. funding ratio) than the scope of work to be performed by the Applicant.

3.2.6 Responsibility. The Applicant, if successful, will be the responsible authority (Awardee) 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 DOE FFRDC/NL contractor.

3.2.7 National Reactor Innovation Center (NRIC)

- a. NRIC assists technology developers with access to the strategic infrastructures and assets of the DOE national laboratories and with assistance in accessing other federally-owned or federally-accepted private sites to use these resources for commercial nuclear energy research, development, demonstration, and deployment activities. These capabilities will ultimately support a path to the licensing and commercialization of new nuclear energy systems. NRIC's role under the ARDP is to support testing, demonstration, and performance assessment to accelerate deployment of advanced reactors, including with assistance accessing DOE FFRDC/NL resources and capabilities. NRIC has developed a generically-applicable Memorandum of Understanding (MOU) for applicants to this FOA; this MOU indicates that NRIC will cooperate on facilitating applicant/recipient access to sites, facilities, expertise, etc., as described above.
- b. Applicants to this FOA are not required to use NRIC in support of their proposed work but may do so if

desired by contacting NRIC directly to access its support for their projects. For the purposes of this FOA, any support from NRIC must adhere to the requirements of DOE FFRDC/NLs as specified in this FOA, unless the entity establishes a separate direct agreement or support from NRIC outside of the FOA.

- c. NRIC is led by DOE's Idaho National Laboratory (INL), 2525 Fremont Ave, Idaho Falls, ID 83415. For more information please click [here](#) or email nric@inl.gov

3.3 Cost Sharing

Awards under this FOA are subject to cost sharing requirements of Section 988 of the Energy Policy Act of 2005. The below information regarding Cost Sharing is applicable to all applicants under all three pathways; specific cost sharing percentage requirements for each pathway are specified within each specific pathway section of the FOA.

If during award performance, the Awardee discovers that it may be unable to provide the required cost sharing, the Awardee will be required to immediately provide written notification to the DOE Contracting Officer indicating whether it will continue or phase out the project. If the Awardee plans to continue the project, the notification must describe how replacement cost sharing will be secured.

The Awardee will be required to maintain records of all project costs claimed as cost sharing, including in-kind costs, as well as records of costs to be paid by DOE. Such records are subject to audit.

Total Estimated Project Cost is the sum of the Government share, including FFRDC contractor costs, and Awardee share of the estimated project costs. DOE FFRDC contractor costs will not be included in the total approved budget for the award because DOE will pay the DOE FFRDC contractor portion of the effort under an existing DOE contract. The Awardee will not be responsible for reporting on that portion of the total estimated cost that is paid directly to the DOE FFRDC contractor.

3.3.1 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 requirements apply to the project as a whole, including work performed by members of the project team in addition to the Awardee, who is legally responsible for paying the cost share. The Awardee'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 Awardee is required to contribute at least the required minimum cost share percentage of total expenditures incurred through the date of termination.

The Awardee 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 subawards or related agreements.

3.3.1.1 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 (e.g., 2 CFR 200 Subpart E; 2 CFR 910 Subpart 3; 48 CFR 31.2). 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 Federal appropriations or property (e.g., Federal grants or other federal monies, equipment owned by the Federal Government)).

Cash contributions may be provided by the Awardee 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 Awardee 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).

Project Teams may not use the same cash or in-kind contributions to meet cost share requirements for multiple projects or programs. Cost share contributions must be specified in the project budget, verifiable from the Awardee'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.

3.3.1.3 Cost Share Contributions by DOE FFRDC/NL. Because DOE FFRDC/NL are funded by the Federal Government, costs incurred by DOE FFRDC/NL may not be used to meet the cost share requirement and are instead included as part of the DOE's cost share. DOE FFRDC/NL may contribute cost share only if the contributions are paid directly from the contractor's Management Fee or another non-Federal source.

3.3.1.4 Cost Share Verification. Applicants are required to provide written assurance of their proposed cost share contributions for the total project in their applications, to the extent possible. Upon selection for award negotiations, applicants may be required to provide additional information and documentation regarding their cost share contributions.

3.3.1.5 Cost Share Payment. 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"): The Recipient's cost share amount listed for each invoice 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 DOE 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.

Demos. The cost share for the Demos shall be up to 50 percent from the DOE and not less than 50 percent from non-federal sources for the total estimated project cost. The recipient cost sharing minimum obligation is to be met throughout the life of the project, with every invoice submitted having at least the 50 percent minimum cost sharing of total project costs incurred to date by the Recipient.

Applications for **Demos** but that also desire consideration for **Risk Reduction**. These applications must provide not less

than 50 percent from non-federal sources for the total estimated **Demo** project cost; the applicant may also propose a separate cost share of not less than 20 percent from non-federal sources for the total estimated **Risk Reduction** project cost based on the scope and costs proposed for the Risk Reduction project proposed should the applicant not be selected for a Demos award.

Risk Reduction and **ARC-20**. The cost share required shall be up to 80 percent from DOE and no less than 20 percent from non-federal sources. The minimum 20 percent level of non-Federal cost sharing must be maintained throughout the entire project, with every invoice submitted having at least the 20 percent minimum cost sharing of total project costs incurred to date by the Recipient.

Applicants are encouraged to refer to 2 CFR 200.306 as amended by 2 CFR 910.130 for additional guidance on cost sharing. Additionally, Appendix E of the FOA is an informational document that provides further information and guidance to help applicants understand cost sharing.

3.4 Other Eligibility Requirements

There is no limit on the number of applications an applicant may submit under the FOA; this applies to the submitting organization and the individual program manager. DOE will only consider applications for projects related to different advanced reactor designs from the same applicant. However, applicants are strongly encouraged to submit only their best project for consideration.

Applicants may apply under more than one pathway. Applicants can submit more than one application as long as each application is a unique technology solution.

Subapplicants, subcontractors and vendors may participate in applications submitted by multiple prime organizations.

Section 4 – SUBMISSION AND REGISTRATION REQUIREMENTS (applicable to **Demos**, **Risk Reduction**, and **ARC-20**)

4.1 Address to Request Application Package

Application forms and information can be found on the FOA website [here](#).

If the potential applicant does not have access to the internet, potential applicants may request a paper copy of the FOA, and associated appendices and application forms, by sending a post card making the request, including the FOA title and number and address to which the FOA should be mailed to: US Department of Energy, Idaho Operations Office, Contracts Management Division, Attn: Andrew Ford, MS 1221, 1955 Fremont Ave, Idaho Falls ID 83402.

4.2 FOA Modifications

Notices of any modifications to this FOA will be posted on Grants.gov, the FedConnect portal, and the [application website](#). 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.

4.3 Industry Day

DOE will conduct an Industry Day for this FOA. The purpose of the Industry Day will be to review program and FOA requirements with applicants, as well as for both DOE and interested parties to share information, and for DOE to answer questions posed by interested parties. DOE's intent is to also permit limited "one-on-one" meetings with interested parties. DOE anticipates that the industry day will not be held in person but will be held via video teleconference due to the Coronavirus (COVID-19) outbreak. Should circumstances change, DOE will attempt to schedule an in-person industry day.

Attendance at Industry Day is optional but recommended. There is no charge to attend Industry Day, but pre-registration will be required.

Plenary Industry Day proceedings will be available via live Webinar for those who cannot attend in person. Additionally, plenary Industry Day presentations, questions and answers will be published for public access soon after the event at the same website indicated above.

Please see additional information, including registration requirements, at the [FOA website](#).

4.4 Letter of Intent

Submission of a Letter of Intent is **mandatory** for each applicant (not applicable for subapplicants) desiring to submit an application for consideration by DOE. Failure to submit a Letter of Intent by the due date will preclude the Applicant from further consideration for award.

Although Letters of Intent are required from applicants that wish to submit applications for consideration by DOE, by submitting a Letter of Intent the applicant is neither committed nor required to proceed and submit a full application.

Letters of Intent must include the following:

- a. Prime or lead Applicant name, address, point of contact information (name, title, telephone and email address).
- b. Team member(s) and/or subapplicant(s) name, address, point of contact information (name, title, telephone and email address), for as many team members and subapplicants as are known at this stage
- c. Specification of the pathway you intend to apply under (i.e., Demos only; Demos with additional consideration for Risk Reduction; Risk Reduction only; or ARC-20). Applicants submitting for Demos do not need to submit a separate application for a Risk Reduction project associated with the same advanced reactor design, since if an application submitted for a Demo is not selected, it will be automatically considered for a Risk Reduction (unless the Applicant specifically states it does not want to be considered for a Risk Reduction award). If an applicant intends to submit under different pathways or for a different unique technology solution, a separate Letter of Intent is required.
- d. A brief project/technology description.
- e. This FOA provides award opportunities to United States owned entities. Applicants must submit information to show that the prime Applicant meets the eligibility requirements set forth in 2 CFR § 910.124 as follows:
 - i. Submit evidence for DOE to consider in making findings required under 2 CFR § 910.124 (c)(1) and findings concerning ownership status under 2 CFR § 910.124(c)(2).
 - ii. If an applicant is submitting evidence relating to future undertakings, such as an agreement under §910.124(d)(3) to promote manufacture in the United States of products resulting from a technology developed with financial assistance or to procure parts and materials from competitive suppliers, the Applicant shall submit a representation affirming acceptance of these undertakings. The Applicant must briefly describe its plans, if any, for any manufacturing of products arising from the program-supported research and development, including the location where such manufacturing is expected to occur.
 - iii. If an applicant is claiming to be a United States-owned company, the Applicant must submit a representation affirming that it falls within the definition of that term provided in §910.124(b). This may be done by submitting a certificate of good standing with the state in which you are organized, for your company and, where applicable, your parent company.
 - iv. DOE may require submission of additional information deemed necessary to make any portion of the determination required by §910.124(b).
- f. Applicants are also to submit information to show that the planned NRC licensee under a Demos project is not owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government as set forth in the NRC's regulations at 10 CFR 50.38, and that their application would not be inimical to the common defense and security or public health and safety as required by 10 CFR § 50.40.

Submit Letters of Intent by June 11, 2020 to: <https://www.id.energy.gov/>

To submit the Letter of Intent, (1) go to <https://www.id.energy.gov/>, (2) Click the green box "Advanced Reactor Demonstration Funding Opportunity Number: DE-FOA-0002271, (3) Click "Submit a Letter of Intent" (4) enter your user credentials, (5) select "Applications" from the menu, and (6) Find "Advanced Reactor Demonstration Letter of Intent" and click on "Create New Application".

NOTE: Update of Letter of Intent Information Between the Time of Letter of Intent Submission and the Submission of Full Applications.

All information (including prime and sub information) submitted in the Letter of Intent items a through f – other than the project itself described in paragraph d above - may be updated with the submission of the full application. It is understood that the project description information in paragraph d above will be provided in full detail in the final application submittal. If any information in the Letter of Intent is changed between the time the original Letter of Intent was submitted, and the time the full application is submitted, the applicant must clearly specify what has changed along with a brief explanation. This will be submitted in a .pdf format; there will be a separate field on the ARD Website Application submission screen for this upload. This will not be counted towards page limitations or page counts of the full application document.

4.5 Registration Process for Submitting Applications

4.5.1 Registration Requirements/Other Information. There are several one-time actions you must complete in order to submit an application in response to this FOA (e.g., obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number, register with the System for Award Management (SAM), register with Grants.gov, register with FedConnect, and set up an account at the [application website](#). 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.

4.5.2 DUNS number. Applicants must obtain a DUNS number or a UEI. DUNS website: <http://fedgov.dnb.com/webform>.

4.5.3 SAM. Applicants must register with the SAM. See <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_v1.7.pdf.

During the SAM registration process, you will be asked to designate an E-Business Point of Contact (EBIZ POC). The EBIZ POC must obtain a special password called "Marketing Partner Identification Number" (MPIN). The EBIZ POC will need the MPIN to complete the Grants.gov registration process.

4.5.4 Grants.gov. Applicants must register with Grants.gov. This process has 3 steps:

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>

4.5.5 Applicants must set up a username and password at the application submission site located through <https://www.id.energy.gov/>.

Note: Applicants may have already set up a username and password if they have previously applied under DE-FOA-0001817.

4.6 Where to Submit Applications

Not later than 48 hours prior to the date and time set for receipt of applications, DOE will contact the Point of Contact from each previously submitted applicant Letter of Intent to provide detailed instructions about how the application is to be submitted.

4.7 Indirect Rates

Applicants are put on notice that DOE financial assistance awards are required to include indirect cost rate(s) for prime and subrecipients. Applicant teams are advised to immediately begin steps to get federally approved rate agreements in place for this FOA so as not to delay award negotiations.

4.8 Foreign Disclosure

Applicants (including team members and subapplicants) must disclose to the DOE all foreign interest in the Applicant's company or corporation, which for purposes of this FOA 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 the senior 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 corporate levels, regardless of the Applicant entity's place of incorporation and operation. It does not apply to individual employees of the company, unless they are at the executive or board levels. 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 this in writing.

See Appendix K for instructions.

Name File: FOCI Disclosure [insert application ID#]

4.9 FOA Informational Website

DOE has established an informational [FOA website](#). It contains FOA documents and is the location where DOE will post questions and answers related to the FOA, as well as other information.

The website provides interested parties the means to list their entity name and contact information, a brief summary of their capabilities and interests; the purpose of this is to help facilitate teaming and partnering among parties interested in responding to the FOA. Posting information on this site is completely voluntary; DOE reserves the right to remove or prohibit any information and/or block users for any information it solely deems inappropriate. For entities posting information on this site, DOE does not in any way endorse or advocate these entities, their personnel, services, or products.

4.10 Submission Dates and Times ([Demos](#), [Risk Reduction](#) And [ARC-20](#))

Requested Due Date for FOA Questions:	May 29, 2020
Letter of Intent Due Date (required for all applicants):	Jun 11, 2020
Application Due Date/Time (required for all applicants)	Aug 19, 2020, 4:00 PM EDT

All submissions are due to 11:59 PM Eastern, unless otherwise specified. The deadlines for Letters of Intent and Applications are the dates and times by which DOE must receive these submissions electronically. Failure to submit by this deadline will result in late submittals neither being reviewed nor considered, unless the Contracting Officer determines that accepting the late submission would not unduly delay the FOA 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. one working day prior to the date specified for receipt of the submission; or
- (ii) There is acceptable evidence to establish that it was received at the Government installation designated for receipt of the submission and was under the Government's control prior to the time set for receipt; or
- (iii) It is the only submission received.

No separate acknowledgement of receipt of the submission will be provided by DOE; however, applicants can request DOE acknowledgement after submission by sending an email to Andrew Ford, Contract Specialist, e-mail: fordaj@id.doe.gov

Section 5 OTHER APPLICATION AND SUBMISSION INFORMATION AND REQUIREMENTS (Applicable to **Demos**, **Risk Reduction** and **ARC-20**, unless otherwise specified)

IMPORTANT NOTE: See Section 4 for registration and submission information!

5.1 Application Process General Information (applicable to **Demos**, **Risk Reduction** and **ARC-20**)

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. Most required forms to be used for the application process are located at the [FOA website library](#).

Applications must conform to the following requirements:

5.1.1 Each document must be submitted in Adobe PDF format, except for spreadsheets.

5.1.2 All spreadsheets are to be uploaded in Excel file format using an .xlsx extension, or earlier MS Excel version to the online application. Do **NOT** lock any cells in the spreadsheet.

5.1.3 Each document must be written in English.

5.1.4 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, single spaced. Note that 11-point Times New Roman font in exhibits may prevent the ability to fully depict concept technical solutions as required by the FOA. Accordingly, a smaller than 11-point Times New Roman font and the use of a sans serif font (e.g., Arial Narrow) for exhibits only (tables and figures), which will increase the legibility to depict complex concepts, may be used. 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.**

5.2 Application Validity Timeframe

(applicable to **Demos**, **Risk Reduction** and **ARC-20**)

By submitting an application in response to this FOA, applicants agree that their applications are valid for at least one year from the date set forth for receipt of applications to this FOA.

5.3 Proprietary Application Information

(applicable to **Demos**, **Risk Reduction** and **ARC-20**)

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 each application submission document if wishes to be protected 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.

5.4 Nondisclosure and Confidentiality Agreements Representations

(applicable to **Demos**, **Risk Reduction** and **ARC-20**)

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

(1) 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.

(2) 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:

a. "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."

b. 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 U.S. Government, may contain provisions appropriate to the particular activity for which such document is to be used. Such form or agreement shall, at a minimum, require that the person will not disclose any classified information received in the course of such activity unless specifically authorized to do so by the U.S. Government. Such nondisclosure or confidentiality forms shall also make it clear that they do not bar disclosures to Congress, or to an authorized official of an executive agency or the Department of Justice, that are essential to reporting a substantial violation of law.

5.5 Content and Application Forms

(applicable to **Demos**, **Risk Reduction** and **ARC-20**, except as specifically otherwise noted)

Applicants must complete the mandatory forms and any applicable optional forms in accordance with the instructions on the forms and the additional instructions below. **Most forms required for the application process are located at the application website library.**

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

NOTES:

1. The **Demos** merit review criteria and associated application instructions also apply to **Risk Reduction** applications. *It is recognized by DOE that Risk Reduction applications may not have complete or full information for each of the criteria as the technology requires additional risk reduction activities to permit future demonstrations. Accordingly, applications for Risk Reduction should address the criteria to the extent possible but should specify if complete or full information is not currently available based on the current maturity of the design and the currently known information.*
2. **Demos** applicants who wish to have their Demo application also be considered for **Risk Reduction** awards should they not be selected for a Demo award are required to submit additional specific information regarding the proposed Risk Reduction activity. These specific additional information requirements are clearly specified in this FOA and apply to the Project Narrative, Project Management Plan, Risk Management Plan, Business Plan, Budget and Budget Justification, and Cost Sharing information.

Summary of Application documents

Demos

	Name of Document	Format	Required From
1	SF 424 (see paragraph 5.6)	Form	Lead Applicant
2	Project Summary/Abstract (1-page limit) (see paragraph 5.13)	PDF	Lead Applicant
3	Project Narrative File (included in 150-page and 170 page limits) (see paragraph 5.15) Includes: <ul style="list-style-type: none"> • Narrative Cover Page (see paragraph 5.15 a) • Table of Contents (see paragraph 5.15) • Project Objectives (see paragraph 5.15 b) • Project/Performance Site Location (see paragraph 5.8) • Coordination and Management Plan (see paragraph 5.15 p) • Maturity of Advanced Reactor Design (see paragraph 5.15 d) 	PDF	Lead Applicant

	Name of Document	Format	Required From
	<ul style="list-style-type: none"> • Advanced Reactor Technology Description (see paragraph 5.15 e) • Design Approach (see paragraph 5.15 f) • Advanced Reactor Fuel and Fuel Cycle (see paragraph 5.15 g) • Project Siting, Permitting, and Licensing (see paragraph 5.15 h) • Manufacturing and Construction (see paragraph 5.15 i) • Start Up and Testing (see paragraph 5.15 j) • Reactor End of Life (see paragraph 5.15 k) • Project Cost Information (see paragraph 5.15 l) • Commercialization Efforts, including Business Plan (see paragraph 5.15 m) • Team Identification and Expertise (see paragraph 5.15 n) • Facilities and Resources (see paragraph 5.15 o) • Project Management Plan (see paragraph 5.15 q; see also Appendix J) • Risk Management Plan (see paragraph 5.15 r; see also Appendix I) • Data Management Plan (see paragraph 5.15 s; see also Appendix X) • Merit Review Discussion (see paragraph 5.15 u) 		
4	Resume / Vitae – Technical Expertise and Qualifications (2-page limit each) (see paragraph 5.15 n) (See Appendix M)	PDF	All leads and collaborators
5	Budget (total Fed + Non-Fed) (see paragraph 5.14) (see Appendix G) Applicants must submit two budget forms – one for the non-construction portions of the award using the R&R Budget form, and another for the specific construction portion of the award using the SF 424C.	Forms	Lead Applicant
6	Subaward Budget (Total Fed + Non-Fed), if applicable (see paragraph 5.14.2) Applicants must submit two budget forms, as applicable – one for the non-construction portions of the award using the R&R Budget form, and another for the specific construction portion of the award using the SF 424C (note: a separate SF 424 C will be required for each budget year of the	Form	Collaborators/ subrecipients

	Name of Document	Format	Required From
	construction activity).		
7	Budget for DOE National Laboratory Contractor or DOE FFRDC/NL (if applicable) (see paragraph 5.14.3)	PDF	FFRDC/NL Subapplicants (including non-funded collaborators)
8	Budget Justification (see paragraph 5.14.4)	PDF	Lead Applicants and Collaborators
9	Current and Pending Support (see paragraph 5.15 n, subparagraph ii).	PDF	Lead Applicants and Collaborators
10	Letter of Authorization from Cognizant Contracting Officer for DOE FFRDC/NL (if applicable) (see paragraph 5.7)	PDF	FFRDC/NL Subapplicants (including non-funded collaborators)
11	SF-LLL Disclosure of Lobbying Activities (if applicable) (see paragraph 5.10)	Form	Lead Applicant
12	Certifications and Assurances (see paragraph 5.11) a. Assurances for Non-Construction Programs (SF-424B) (for non-construction portion of work) b. Assurances for Construction Programs (SF-424D) (for construction portion of work)	Form	Lead Applicant
13	Waiver Requests: Performance of Work in the U.S. (if applicable) (see paragraph 5.12) (See Appendix F)	PDF	Lead Applicant
14	Cost Sharing Funding Commitment Letters, including Cost Sharing Commitment Letters from Third Parties (if applicable)–(see Appendix G)	PDF	Lead Applicant
15	Past Performance (see paragraph 5.9) (See Appendix N)	PDF	Lead Applicant and Collaborators
16	Foreign Government Ownership, Control, or Influence Disclosure (see paragraph 4.8) (see Appendix K)	PDF	Lead Applicant and Collaborators
17	COI Acknowledgement (see paragraph 3.2)	PDF	FFRDC/NL Subapplicants (including non-funded collaborators)

Risk Reduction

	Name of Document	Format	Required From
1	SF 424 (see paragraph 5.6)	Form	Lead Applicant
2	Project Summary/Abstract (1-page limit) (see paragraph 5.13)	PDF	Lead Applicant
3	Project Narrative File (included in 150-page and 170 page limits) (see paragraph 5.15) Includes:	PDF	Lead Applicant

	Name of Document	Format	Required From
	<ul style="list-style-type: none"> • Narrative Cover Page (see paragraph 5.15 a) • Table of Contents (see paragraph 5.15) • Project Objectives (see paragraph 5.15 b) • Project/Performance Site Location (see paragraph 5.8) • Coordination and Management Plan (see paragraph 5.15 p) • Maturity of Advanced Reactor Design (see paragraph 5.15 d) • Advanced Reactor Technology Description (see paragraph 5.15 e) • Design Approach (see paragraph 5.15 f) • Advanced Reactor Fuel and Fuel Cycle (see paragraph 5.15 g) • Project Siting, Permitting, and Licensing (see paragraph 5.15 h) • Manufacturing and Construction (see paragraph 5.15 i) • Start Up and Testing (see paragraph 5.15 j) • Reactor End of Life (see paragraph 5.15 k) • Project Cost Information (see paragraph 5.15 l) • Commercialization Efforts, including Business Plan (see paragraph 5.15 m) • Team Identification and Expertise (see paragraph 5.15 n) • Facilities and Resources (see paragraph 5.15 o) • Project Management Plan (see paragraph 5.15 q; see also Appendix J) • Risk Management Plan (see paragraph r; see also Appendix I) • Data Management Plan (see paragraph 5.15 s; see also Appendix X) • Merit Review Discussion (see paragraph 5.15 u) 		
4	Resume / Vitae – Technical Expertise and Qualifications (2-page limit each) (see paragraph 5.15 n) (See Appendix M)	PDF	All leads and collaborators
5	Budget (total Fed + Non-Fed) (see paragraph 5.14) (see Appendix G)	Form	Lead Applicant
6	Subaward Budget (Total Fed + Non-Fed), if applicable (see paragraph 5.14.2)	Form	Collaborators/ subrecipients
7	Budget for DOE National Laboratory Contractor or DOE FFRDC/NL (if applicable) (see paragraph 5.14.3)	PDF	FFRDC/NL Subapplicants (including non-funded

	Name of Document	Format	Required From
			collaborators)
8	Budget Justification (see paragraph 5.14.4)	PDF	Lead Applicants and Collaborators
9	Current and Pending Support (see paragraph 5.15 n, subparagraph ii).	PDF	Lead Applicants and Collaborators
10	Letter of Authorization from Cognizant Contracting Officer for DOE FFRDC/NL (if applicable) (see paragraph 5.7)	PDF	FFRDC/NL Subapplicants (including non-funded collaborators)applicants
11	SF-LLL Disclosure of Lobbying Activities (if applicable) (see paragraph 5.10)	Form	Lead Applicant
12	Certifications and Assurances (see paragraph 5.11) Assurances for Non-Construction Programs (SF-424B)	Form	Lead Applicant
13	Waiver Requests: Performance of Work in the U.S. (if applicable) (see paragraph 5.12) (See Appendix F)	PDF	Lead Applicant
14	Cost Sharing Funding Commitment Letters, including Cost Sharing Commitment Letters from Third Parties (if applicable) (see Appendix G)	PDF	Lead Applicant
15	Past Performance (see paragraph 5.9) (See Appendix N)	PDF	Lead Applicant and Collaborators
16	Foreign Government Ownership, Control, or Influence Disclosure (see paragraph 4.8) (see Appendix K)	PDF	Lead Applicant and Collaborators
17	COI Acknowledgement (see paragraph 3.2)	PDF	FFRDC/NL Subapplicants (including non-funded collaborators)

ARC-20

	Name of Document	Format	Required From
1	SF 424 (R&R) (Application) (see paragraph 5.6)	Form	Lead Applicant
2	Project Summary/Abstract (1-page limit) (see paragraph 5.13)	PDF	Lead Applicant
3	Project Narrative File (50-page limit) (see paragraph 5.16). Includes: <ul style="list-style-type: none"> • Cover Page • Table of Contents • Relevance and Outcomes/Impacts • Roles of Participants and Key Personnel • Co-Project Manager (Co-PM), Coordination and Management Plan • Capabilities, Facilities and Other Resources 	PDF	Lead Applicant

	Name of Document	Format	Required From
	<ul style="list-style-type: none"> • Benefit of Collaborations • Current and Pending Support • Equipment • Statement of Project Objectives • 		
4	Resume / Vitae – Technical Expertise and Qualifications (2-page limit each) (see paragraph 5.16 b) (See Appendix M)	PDF	All leads and collaborators
5	R&R Budget (see paragraph 5.14)	Form	Lead Applicant
6	R&R Subaward Budget (Total Fed + Non-Fed), if applicable (see paragraph 5.14.2)	Form	Collaborators/ subrecipients
7	Budget for DOE National Laboratory Contractor or DOE FFRDC/NL (if applicable) (see paragraph 5.14.3)	PDF	FFRDC/NL Subapplicants (including non-funded collaborators)
8	Budget Justification (see paragraph 5.14.4)	PDF	Lead Applicants and Collaborators
9	Current and Pending Support (see paragraph 5.16 f).	PDF	Lead Applicants and Collaborators
10	Letter of Authorization from Cognizant Contracting Officer for DOE FFRDC/NL (if applicable) (see paragraph 5.7)	PDF	FFRDC/NL Subapplicants (including non-funded collaborators)
11	SF-LLL Disclosure of Lobbying Activities (if applicable) (see paragraph 5.10)	Form	Lead Applicant
12	Certifications and Assurances for Non-Construction Programs (SF-424B) (see paragraph 5.11)	Form/PDF	Lead Applicant
13	Waiver Requests: Performance of Work in the U.S. (if applicable) (see paragraph 5.12) (See Appendix F)	PDF	Lead Applicant
14	Cost Sharing Funding Commitment Letters, including Cost Sharing Commitment Letters (if applicable) (see Appendix G)	PDF	Lead Applicant
15	Past Performance (see paragraph 5.9) (See Appendix N)	PDF	Lead Applicant and Collaborators
16	Foreign Government Ownership, Control, or Influence Disclosure (see paragraph 4.8) (see Appendix K)	PDF	Lead Applicant and Collaborators
17	COI Acknowledgement (see paragraph 3.2)	PDF	FFRDC/NL Subapplicants (including non-funded collaborators)

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.

5.6 Application for Federal Assistance Form

Applicants shall complete the SF-424 R&R or SF-424 form, as applicable, available in document library at the [FOA website](#) and upload a completed PDF copy of the form with the application.

Demos and **Risk Reduction** Complete form SF 424

Name File: SF424 [Insert Application ID#]

ARC-20 Complete form SF 424 (R&R)

Name File: SF424_R&R [Insert Application ID#]

5.7 Letter of Authorization from Cognizant Contracting Officer for DOE FFRDC/NL

(applicable to **Demos**, **Risk Reduction** and **ARC-20**)

(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: CO Authorization [insert application ID#]

5.8 Project/Performance Site Location.

(applicable to **Demos**, **Risk Reduction** and **ARC-20**)

Indicate lead and collaborating site(s) where 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).

Work performed (i.e., purchases and labor) under awards must be performed in the U.S., unless otherwise approved as part of the original application, or during performance, by DOE in accordance with the thresholds set forth in this clause.

- Below \$1M: This requirement does not apply to the foreign purchase of supplies and equipment or for foreign labor (cumulative) performed below \$1M; however, the Awardee should make reasonable efforts to perform labor and/or purchase supplies and equipment within the U.S. below this threshold.
- At \$1M or above, up to \$5M, the awardee must notify DOE at least 30 days prior to foreign purchase of

supplies and equipment or for foreign labor (cumulative) performed, using the Special Status report specified in the award's Reporting Requirements checklist.

- Over \$5M, the awardee must obtain prior written DOE approval using the Waiver Request for Non-US Work at Appendix F, at least 30 days prior to the foreign purchase of supplies and equipment or for foreign labor (cumulative) performed.

In adherence to the above thresholds, applications proposing foreign purchase of supplies and equipment or for foreign labor performed must clearly specify what work is to be done, by which entity, where the work is to be performed, the estimated time period for the work, the estimated dollar value of the work and the rationale for doing the work outside the U.S. This work will be evaluated as part of the selection of the applicants.

The Awardee must flow down these requirement to its subrecipients.

After award, for any work outside of the U.S. not already proposed by the Applicant during the FOA process and by DOE on any subsequent award, DOE Contracting Officer prior written approval must be given for work conducted outside the U.S. DOE may deny cost reimbursement for the work conducted outside the U.S. and such costs may not be recognized as allowable recipient cost share, if prior approval is not obtained. The Awardee is responsible should any work under this Award be performed outside the U.S., absent a waiver, regardless if the work is performed by the Awardee, subrecipients, contractors or other project partners. There may be limited circumstances where it is in the interest of the project to perform a portion of the work outside the U.S.

Demos. Indicate the primary site where the work will be done for pre-construction activities to be performed under the award. If a portion of the project will be performed at any other site(s), identify the site location(s) in the blocks provided. Indicate the actual construction location (if different than the location for the pre-construction activities and if this information is available at this time).

Risk Reduction and **ARC -20.** 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.

This file is submitted as part of the Project Narrative File, and is included as part of its page count limit. Applicants should use the .pdf form provided in the document library on the FOA website for this submission and include it as part of the Project Narrative File.

5.9 Past Performance Information

(applicable to **Demos**, **Risk Reduction** and **ARC-20**)

This section of the application must include past performance information only. Please note that past performance and experience are different. Having relevant "experience" means that an applicant has done similar work before. "Past performance" describes how well the Applicant performed in accomplishing that work. Effective performance is not demonstrated by experience.

- Describe recent (within the past 5 years), relevant (see paragraph b below) past performance of the team as an indicator of the Applicant's ability to perform the project successfully. See Appendix N for a Past Performance application information submission template to use in completing this information.
- Relevant Past Performance Information. Past Performance information must be relevant, i.e., closely connected or

appropriate to what is being done or considered; similar in nature, size, complexity, etc. Past performance information should demonstrate capabilities for producing reactors and/or other facilities of similar complexity, and/or materials and manufacturing of reactor components and systems to the American Society of Mechanical Engineers (ASME) Nuclear Quality Assurance (NQA) quality standards, or equivalent (if equivalent is proposed, explain how and why this is considered equivalent). This may include past performance in successfully completing federally and/or non-federally funded projects similar in size, scope, and relevance to the proposed project.

- c. Show that you have a successful history of meeting reporting requirements on prior or current assistance agreements with federal and/or non-federal organizations and submitting acceptable final technical reports.
- d. Show that you have the organizational past performance for timely and successful achievement of the objectives of the project.
- e. Submit past performance information that demonstrates the applicant team (not required for DOE FFRDC/NL) has demonstrated successful 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; if there were difficulties in cost, schedule or performance issues, explain how these were resolved.
- f. Specify when the past performance occurred. Explain how the past performance is relevant to the Demos.
- g. Applicants may use past performance information regarding predecessor companies, key personnel who have relevant experience, or subrecipients and subcontractors that will perform major or critical aspects of the requirement when such information is relevant to the project.

Name File: Past Performance [insert application ID#]

5.10 SF-LLL Disclosure of Lobbying Activities Form

(applicable to **Demos**, **Risk Reduction** and **ARC-20**)

If applicable, complete Disclosure of Lobbying Activities SF- LLL (see [application website library](#)).

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: SF-LLL [insert application ID#]

5.11 Certifications and Assurances

(applicable to **Demos**, **Risk Reduction** and **ARC-20**)

Applicants must complete and attach the Certifications and Assurances form available at the [application website library](#).

Demos. Note that Demos are required to complete two sets of Certifications and Assurances – one for the non-construction portion of the work (SF-424B), and another for the construction portion of the work (SF-424D).

Name File: Certs and Assurances [insert application ID#]

5.12 Waiver Requests: Performance of Work in the United States

(applicable to **Demos**, **Risk Reduction** and **ARC-20**)

As set forth in this FOA, all work under DOE funding agreements must be performed in the U.S., unless otherwise waived by DOE. See paragraph 5.8. For foreign equipment purchases or for labor over the thresholds specified in paragraph 5.8 to be done outside the U.S., a waiver is necessary. Appendix F lists the necessary information that must be included in a request to waive the Performance of Work in the U.S. requirement. This waiver request process applies both pre-award as part of the application, and post-award during performance for foreign purchases or work that was not proposed/approved as part of the application process.

Name File: US Waiver Request [insert application ID#]

5.13 Project Summary/Abstract File

(applicable to **Demos**, **Risk Reduction** and **ARC-20**)

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 manager, 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 DOE may make it available to the public if an award is made. The project summary must not exceed one (1) page per application pathway.

Applications for **Demos** but that also desire consideration for **Risk Reduction**: the application must include two each one-page Project Summaries - one for **Demos**, and one for **Risk Reduction**.

Name File: Summary-Abstract [insert application ID#]

5.14 Application Preparation Instructions for Project Budget

(applicable to **Demos**, **Risk Reduction** and **ARC-20**)

For application instructions and requirements for the proposed budget, budget justification, subaward budgets and DOE FFRDC/NL budgets, see Appendix G.

5.14.1 Budget (Total Fed + Non-Fed)

See Appendix G for instructions to complete the budget form.

Name File: Budget [insert application ID#]

5.14.2 Subaward Budget Form (Total Fed + Non-Fed)

See Appendix G for instructions to complete the subaward budget form.

Name File: Subaward_[Insert Name of subrecipient] [insert application ID#]

5.14.3 Budget for DOE National Contractor or DOE FFRDC/NL

See Appendix G for instructions.

Name File: FWP [insert application ID#]

5.14.4 Budget Justification

See Appendix G for instructions.

Name File: Budget Justification [insert application ID#]

5.15 Project Narrative File

(applicable to **Demos**, **Risk Reduction**)

The project narrative must not exceed the below indicated number of pages, including cover page, charts, graphs, maps, photographs, and other pictorial presentations; however, if the Applicant can address the required application items in fewer pages, it is encouraged to do so. A **table of contents** is required, but is NOT included in the page limitation. Note also that the application overall total page limit is comprised of several documents, including the Project Narrative, Project Management Plan, Risk Management Plan, Data Management Plan, Business Plan and Merit Review Discussion. Applicants are to use the overall page limitation as needed in providing these application documents.

File Name: Project Narrative [Insert Application ID#]

EVALUATORS WILL REVIEW ONLY THE NUMBER OF PAGES SPECIFIED BELOW. Do not include any Internet addresses (URLs) that provide information necessary to review the application. See FOA paragraph 5.4 for instructions on how to mark proprietary application information.

PATHWAY	PAGE LIMIT
Demos:	150
Demos, with consideration for Risk Reduction:	170
Risk Reduction ONLY:	150

The project narrative must include:

- a. **Narrative Cover Page.** Indicate the following:
 - i. The name and type of organization;
 - ii. The FOA announcement number;
 - iii. The project title;
 - iv. The Project Manager, technical and business points of contact for the Applicant, denoting the names, titles, addresses, telephone and facsimile numbers, and electronic mail addresses; and
 - v. Names of team/partnership/consortium members and approximate funding split.
- b. **Project Objectives.** This section must provide a clear, concise statement of the specific objectives/aims of the proposed project, including a brief description of the proposed advanced reactor to be demonstrated.

Applications for **Demos** but that also desire consideration for **Risk Reduction**: The application must include two clearly marked separate statements - one for Demos, and one for Risk Reduction project objectives.

- c. RESERVED

- d. **Maturity of Advanced Reactor Design.** Provide an assessment of the maturity of the design and the technology readiness level of systems and major subsystems using the DOE TRL scale (see DOE G 413.3-4A, Technology Readiness Assessment Guide at Appendix H to this FOA). Provide supporting information for the TRL level specified and how this level of maturity will allow the Applicant to:
- i. For **Demos** - Achieve commercial operation within 5 – 7 years
 - ii. For **Risk Reduction** - Achieve a demonstration reactor state approximately 5 years beyond the Demo project window of 5-7 years
- e. **Advanced Reactor Technology Description.** Provide the following characteristics of your technology/design (where applicable and known). In addition, for each of these characteristics that offer significant improvements compared to the current generation of operational reactors, please specify this and explain and provide detail of this improvement.
- i. Advanced reactor design and technology.
 - A. Reactor type, including spectrum type (thermal, fast, etc.)
 - B. Product reactor will produce (e.g., electricity, process heat, etc.)
 - C. Reactor coolant
 - D. Cooling system options and requirements (wet or dry)
 - E. Water requirement in gallons per day for conventional cooling
 - F. Thermal power output (MWth)
 - G. Electrical power output (net of station load, MWe)
 - H. Heat transfer mechanism
 - I. Safety features and systems
 - J. Safeguards and security considerations
 - K. Anticipated safe shutdown - earthquake (ground acceleration)
 - L. Anticipated coping time with station blackout
 - M. Design basis for other environmental hazards for which the reactor has been designed (e.g., tornado, projectiles, severe flooding, etc.)
 - N. Planned design life
 - O. Transportability and/or manufacturing approach
 - P. Reactor control features; major reactor materials
 - ii. Site characteristics/balance of plant.
 - A. Scalability – number of potential reactors per site
 - B. Switchyard / interconnection requirements
 - C. Structures / buildings
 - D. Area, in acres, inside the security fence
 - E. Total area in acres for all structures
 - F. Anticipated Emergency Planning Zone
 - G. Unique approaches to plant operations, maintenance, repairs and upgrades
 - iii. Other desirable plant characteristics.
 - A. Ability to provide non-electric power
 - B. Cyber security capabilities
 - C. Resistance to electromagnetic pulse (EMP) and geomagnetic disturbances (GMD)
 - D. Black start capability
 - E. Suitability for connection to micro-grids
- f. **Design Approach.** Describe activities undertaken in the development of the advanced reactor design process,

including research, development, analysis, engineering, and testing, leading to a final reactor design product, including, but not limited to:

- i. Material testing
- ii. Major system, structure and component design, including safety systems
- iii. System and component testing, including integral tests
- iv. Core design and neutronics
- v. Modeling and simulation
- vi. Simulator development
- vii. Develop operational programs and operator training

g. **Advanced Reactor Fuel and Fuel Cycle.** Specify whether you will use an existing fuel form that has been used in existing reactors. Alternatively, if the Applicant plans to use an unproven fuel design, the application must include a technically complete plan for fuel development and demonstration in a timeframe that supports operation of the demonstration reactor (within five to seven years for Demos; five to seven years thereafter for Risk Reduction). For any fuel form proposed that cannot be fabricated using existing industry uranium fuel processes, provide plans for developing the fuel processing and fabrication capability. The application is to include the following information:

- i. Fuel description, including nuclear fuel type (oxide, metallic, nitride, carbide, etc.) and cladding type
- ii. Fuel availability and transportation, including fuel acquisition strategy (awardees for Demos will be required to obtain their own reactor fuel; awardees for Risk Reductions will be required to establish a plan by which they would obtain the reactor fuel for their projects)
- iii. Core configuration
- iv. Core load requirement of fissionable material by weight (kg)
- v. Reactor refueling interval, including cycle length, expected burnup, number of core batches
- vi. Refueling process / duration / on or off site
- vii. Fuel fabrication process
- viii. Ability to tolerate impurities in fuel material
- ix. Spent Fuel Management and Profile:
 - A. Describe the plan for managing spent fuel (on or off site), including cooling time prior to moving used fuel; provide a discussion of what would be routinely shipped outside the reactor site (reactor core or fuel, etc.) and the associated frequency
 - B. Describe the envisioned fuel cycle when commercially deployed (once-through, limited recycle, or continuous recycle and which elements would be recycled)
 - C. Describe any unique aspects of managing spent fuel that might require development, e.g., design and licensing of interim storage casks

NOTE: Appendix A is an informational attachment to this FOA and describes current considerations for HALEU supply in the United States and provides links to information about DOE's efforts to address HALEU supply challenges.

h. **Project Siting, Permitting, and Licensing.** The expectation is that Demos will be licensed by the NRC; if applicants wish to propose a different approach, a strategy and compelling justification must be provided.) Describe the regulatory approach to licensing, permitting, and siting the reactor, including:

- i. The specific NRC licensing safety process selected, such as a construction permit and operating license under 10 CFR § Part 50 or a combined license under 10 CFR § Part 52, or other (must specifically describe). Must also describe how you will address the environmental requirements in 10 CFR § 51
- ii. Current status of licensing/regulatory efforts to date, including pre-application efforts
- iii. Schedule and critical milestones by which anticipated licensing process will proceed as well as the

- anticipated time frame to complete final design configurations, and to complete the appropriate permitting, certification and licensing reviews/activities with the regulator
- iv. Discussion of known critical issues requiring NRC approval and plans to address these issues (e.g., topical or technical reports)
 - v. Plans for licensing application development and submittal
 - vi. A siting plan specifying the proposed primary site (as well as any alternate sites) for the advanced Reactor; include a discussion on why these sites are selected, including advantages, disadvantages, risks, planned mitigation strategies to address the risks
 - vii. Describe any permits required for the site and the construction
 - viii. Discuss any manufacturing or construction issues that would require regulatory approval

Please see the [FOA website](#) for additional information regarding NRC licensing.

- i. **Manufacture and Construction.** Describe the approach to achieve supply chain readiness and to manufacture parts and components of the advanced reactor design and the eventual on-site construction approach, including:
 - i. General plans for reactor construction (e.g. plans to secure an EPC contractor, plans for transporting major components to the construction site, materials, power needs, and other needs for the plant to become fully functional, as well as procurement of major long-lead components and commodities and how any other special equipment purchases will be handled, etc.)
 - ii. Any novel approaches to plant construction which may reduce the construction timeline, increase quality, and improve construction efficiency
 - iii. Any novel approaches to component manufacture which may reduce costs, increase reliability, or simplify the supply chain
 - iv. Procurement plans for various phases of the project
- j. **Start Up and Testing.** Describe plans for reactor start up and testing to assure the advanced reactor is operational and functioning (e.g., producing electricity, process heat, etc.) and how these activities will be accomplished, including:
 - i. A schedule for startup activities, including to complete operator training, as well as a top-level commissioning strategy to ensure the reactor functions as per its requirements
 - ii. Plan to transition from startup/testing to regular operations
- k. **Reactor End of Life.** Provide any details available for reactor end-of-life activities such as spent fuel dispositioning, decontamination and decommissioning. Describe plans to successfully accomplish these activities.
- l. **Project Cost Information.** Summarize the following:
 - i. The estimated total cost of the overall demonstration project, including rationale for the estimate; the estimate should include cost estimates for design, development, construction, etc.

Total project cost for **Demos** should address activities through successful completion of the NRC licensed advanced reactor demonstration as characterized by authorized start of operations. **Risk Reduction** projects that are intended to be conducted under DOE authorization at a DOE site must include costs associated with dismantlement and disposition of demonstration equipment and restoring the DOE site/facility to its original state, or as otherwise negotiated.

Applications for **Demos** but that also desire consideration for **Risk Reduction**: the application must

include two estimated total costs of the overall project – one for the Demo, and another for Risk Reduction.

- ii. Identify efforts made to reduce costs in design, development, licensing and construction, such as value engineering studies
- iii. Specify the targeted market(s) and the expected average price of electricity, product or energy in those markets. Explain the relative market position of your reactor and how it will compete with its cost competitors. For commercial power reactors, provide a cost of electricity generation to be cost competitive with competing forms for energy; include in your discussion an estimated overnight capital cost - \$/kw of capacity by date, with the estimate detailed to a level consistent with level 2 of the code of accounts , along with assumptions and rationale. A similar discussion should occur for other products or multiple products from the same reactor
- iv. Discuss the ability for flexible operation (if pertinent to the business case)

m. Commercialization Efforts.

Provide a Business Plan (see Appendix L for specific instructions). The Business Plan explains your marketing strategy, including customers, to ensure successful commercialization of the Advanced Demonstration Reactor.

Note: this document is included in the overall page count for the Project Narrative.

n. Team Identification and Expertise. Identify the team assembled to accomplish the project, as well as key personnel and describe their roles and responsibilities in accomplishing project tasks, including:

- i. The team assembled to accomplish the project including the lead PM as well as any co-PMs, subrecipients/collaborators (including key personnel) who will contribute in a substantial, measurable way to the project (including consultants). 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; submit your analysis as part of the application; reference 2 CFR § 200.330 Subrecipient and contractor determinations, for guidance on making the determination.
- ii. Current and Pending Support: Provide a list of all current and pending support (both Federal and non-Federal) for senior/key persons, including subrecipients, for ongoing projects and pending applications – see FOA website forms library for template. For each organization providing support, show the total award amount for the entire award period (including indirect costs) and the number of person-months per year to be devoted to the project by the senior/key person. Concurrent submission of an application to other organizations for simultaneous consideration will not prejudice its review. This will be included as a separate attachment to the Project Narrative File; it is not included in the Project Narrative File page count.

Name File: Current and Pending Support [insert application ID#]

- iii. Specify the team’s overall management experience and capability necessary for project success. Discuss the team’s management ability to manage the project consistent with the level of risk involved in the project.

- iv. Provide technical experience information on the qualifications, skills and capabilities of your organization that support achieving the described demonstration objectives including but not limited to the following areas:
- A. Major development requirements including materials, testing, systems, etc.;
 - B. Capabilities to resolve development requirements;
 - C. Capabilities to secure NRC licensing;
 - D. Capabilities to build and test the advanced reactor; and
 - E. Capabilities to operate the advanced reactors, including to achieve commercial operations and to address major risks to accomplishing commercial operation.
- v. **Key Personnel Qualifications/Resume.** In addition to describing the team’s qualifications, describe the qualifications of individual key personnel (including for subrecipients and consultants), who will contribute in a substantial, measurable way on the project. Specify individual key personnel relevant knowledge, skills and abilities; information on key personnel qualifications submitted as part of the application may use either the resume template at Appendix M, or applicants may use their own resume formats; but, all information required by Appendix M must be submitted). For key personnel identified describe their overall role in the project. Each resume has a 2-page limit. However, resume pages are not included in the overall Project Narrative File page count. Name File: Resume “Last Name” [insert application ID#]
- o. **Facilities and Resources.** Identify the major essential facilities (as determined by the applicant) and other major resources to be used for the project and extent of their availability to the project. Describe only those resources that are directly applicable to the proposed work. For important items of equipment not yet available specify how they will be acquired in time to support the project.

Applications for **Demos** but that also desire consideration for **Risk Reduction**. Provide a statement to indicate which major facilities and resources that were to be used in the Demo will NOT be used in the Risk Reduction activity. Or, if more appropriate, provide a clear delineation of major facilities and resources to be used for each scope.

The applicant must clearly specify any equipment, materials, information or other services it requires from the Government to accomplish the project.

- p. **Coordination and Management Plan for Projects with Co-Project Manager (Co-PM):** The Applicant, whether a single organization or team/partnership/consortium, must indicate the lead PM. While the DOE’s preference is to have only one PM specified, the Applicant may elect to have a lead PM with one or more co-PM(s); this decision is solely the responsibility of the Applicant. Having co-PMs specified will not affect the selection for award of applications submitted in response to this FOA.

If co-PMs will be designated, the application must provide a “Coordination and Management Plan” that describes the organization structure of the project as it pertains to the designation of co-PMs. This plan, at a minimum, will include:

- i. process for making decisions on scientific/technical direction
- ii. publications
- iii. intellectual property issues
- iv. communication plans
- v. procedures for resolving conflicts
- vi. PMs’ roles and administrative, technical, and scientific responsibilities for the project

The Coordination and Management Plan is included as part of the Project Narrative File, and is included in its page limits.

- q. **Project Management Plan (PMP).** See Appendix J for instructions to complete the Project Management Plan.

Note: this document is included in the overall page count for the Project Narrative.

- r. **Risk Register And Risk Management Plan.** See Appendix I for instructions to complete the Risk Register And Risk Management Plan.

Note: this document is included in the overall page count for the Project Narrative.

- s. **Data Management Plan (DMP).** Provide a DMP that explains how data generated in the course of the work performed under the award will be shared and preserved or, when justified, explains why data sharing or preservation is not possible or scientifically appropriate. See Appendix X for specific application requirements regarding the DMP. Note: this document is included in the overall page count for the Project Narrative.

t. RESERVED

u. Merit Review Criterion Discussion

- i. This section of the project narrative must be formatted to address each of the merit review criterion and sub-criterion listed in Section 6, as well as each Other Selection Factors. In addressing the merit review criterion and sub-criterion, applicants are encouraged to reference any correlation between the responses provided under this item and the responses provided for other information requests.
- ii. Applicants must submit the discussion of merit review criteria in the form of a table with a summary level discussion of each merit review criterion, including cross references back to any responses provided under the project narrative. Applicants shall provide sufficient information so that reviewers will be able to evaluate the application in accordance with the merit review criteria and Other Selection Factors. Provide sufficient information so that reviewers will be able to evaluate the application in accordance with these merit review criteria. DOE WILL EVALUATE AND CONSIDER ONLY THOSE APPLICATIONS THAT ADDRESS SEPARATELY EACH OF THE MERIT REVIEW CRITERION AND SUB-CRITERION.

Note: the Merit Review Criterion discussion is included in the overall page count for the Project Narrative.

5.16 ARC-20 Application Preparation Instructions

PROJECT NARRATIVE FILE.

The project narrative must not exceed the below indicated number of pages, including cover page, table of contents, charts, graphs, maps, photographs, and other pictorial presentations. EVALUATORS WILL REVIEW ONLY THE NUMBER OF

PAGES SPECIFIED BELOW. Do not include any Internet addresses (URLs) that provide information necessary to review the application. See FOA paragraph 5.4 for instructions on how to mark proprietary application information.

PATHWAY	PAGE LIMIT
ARC-20:	50

- a. **Relevance and Outcomes/Impacts:** Explain the relevance of the near-term project plan to the objectives of the longer-term commercialization plan and expected outcomes and/or impacts. The justification for the proposed project must include a clear statement of the importance of the project in terms of the utility of the outcomes.
- b. **Roles of Participants and Key Personnel:** Describe the roles and the work to be performed by each organization (including estimates of percentages of total project effort to be accomplished by each participant), business agreements between the Applicant and participants, and how the various efforts will be integrated and managed. This includes identification of work to be accomplished by national laboratories and indication of which national laboratories would be used, as applicable. Information on key personnel qualifications must be submitted as part of the application – see Appendix M (the resume template at Appendix M is optional for use – applicants may use their own resume formats; but, all information required by it must be submitted). Each resume has a 2-page limit. However, resume pages are not included in the overall Project Narrative File page count. Name File: Resume “Last Name” [insert application ID#]
- c. **Co-Project Manager (Co-PM):** The Applicant, whether a single organization or team/partnership/consortium, must indicate the lead PM. While the DOE’s preference is to have only one PM specified, the Applicant may elect to have a lead PM with one or more co-PM(s); this decision is solely the responsibility of the Applicant. Having co-PMs specified will not affect the selection for award of applications submitted in response to this FOA.

If co-PMs will be designated, the application must provide a “Coordination and Management Plan” that describes the organization structure of the project as it pertains to the designation of co-PMs. This plan, at a minimum, will include:

- i. process for making decisions on scientific/technical direction
 - ii. publications
 - iii. intellectual property issues
 - iv. communication plans
 - v. procedures for resolving conflicts
 - vi. PMs’ roles and administrative, technical, and scientific responsibilities for the project
- d. **Capabilities, Facilities and Other Resources:** Identify the main facilities and other major resources to be used at each performance site listed and phase of the project and, if appropriate, indicate their capacities, pertinent capabilities, 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 the project. List important items of equipment by phase for the project, including those items already available for this project and, if appropriate, note the location and pertinent capabilities of each. For important items of equipment not yet available specify how they will become timey available.
 - e. **Benefit of Collaborations:** Based on the roles and work to be done by key participating organizations identified in the paragraph above titled, “Roles of Participants and Key Personnel”, indicate if the application has benefit or

influence on other ongoing or proposed NE R&D projects, and provide a brief explanation of those benefits.

- f. **Current and Pending Support:** Provide a list of all current and pending support (both Federal and non-Federal) for senior/key persons, including sub-recipients, for ongoing projects and pending applications – see FOA website forms library for template. For each organization providing support, show the total award amount for the entire award period (including indirect costs) and the number of person-months per year to be devoted to the project by the senior/key person. Concurrent submission of an application to other organizations for simultaneous consideration will not prejudice its review. This will be included as a separate attachment to the Project Narrative File; it is not included in the Project Narrative File page count.

Name File: Current and Pending Support [insert application ID#]

- g. **Equipment:** List critical items of equipment (e.g., items involved in key test programs or important long-lead procurements) required for successful completion of this project, the pertinent capabilities of each, the location of available equipment, and identify whether the item of equipment is already available or proposed for acquisition; if proposed for acquisition, specify the estimated acquisition cost and delivery times of equipment proposed for acquisition.
- h. **Statement of Project Objectives:** The project narrative must contain a single, detailed Statement of Project Objectives (SOPO) that addresses how both the near-term, short-term and project objectives will be met. The SOPO must contain a clear, concise description of all activities to be completed during project performance and follow the structure discussed below. The SOPO may be released to the public by DOE in whole or in part at any time. It is therefore required that it shall not contain proprietary or confidential business information.

Applicants shall prepare the SOPO in the following format:

TITLE OF WORK TO BE PERFORMED

Insert the title of work to be performed. Be concise and descriptive.

OBJECTIVES

Include one paragraph on the overall objective(s) of the work.

SCOPE OF WORK SUMMARY

This section must not exceed one-half page and should summarize the effort and approach to achieve the objective(s) of the work. To clarify, this refers only to a summary of the SOW. The rest of the Statement of Project Objectives sections will provide the details of the work scope.

TASKS TO BE PERFORMED

Tasks, concisely written, must be provided in a logical sequence and should be divided into the project phases, as appropriate. This section must provide a summary of the planned approach to this project.

The applicant may propose tasks using milestones, including the use of a milestone payment approach, or may propose payments be made as project costs are incurred, e.g., monthly invoices. If the applicant elects to propose a milestone payment approach, the instructions in FOA Appendix G, pages 6 – 7, titled Milestone Payments, are to be followed.

The applicant must clearly specify any equipment, materials, information or other services it requires from the

Government to accomplish the project.

PROJECT/PERFORMANCE SITE LOCATION

See application submission requirements under paragraph 5.8.

RISK REGISTER AND RISK MANAGEMENT PLAN.

See Appendix I for instructions to complete the Risk Register And Risk Management Plan.

DATA MANAGEMENT PLAN (DMP).

Provide a DMP that explains how data generated in the course of the work performed under the award will be shared and preserved or, when justified, explains why data sharing or preservation is not possible or scientifically appropriate. See Appendix X for specific application requirements regarding the DMP.

DELIVERABLES

The periodic, topical, and final reports shall be submitted in accordance with the attached Appendix U, "Federal Assistance Reporting Checklist," and the instructions accompanying the checklist.

[Note: The Recipient shall provide a list of deliverables other than those identified on the "Federal Assistance Reporting Checklist" that will be delivered, including the expected delivery dates. These reports shall also be identified within the text of the Statement of Project Objectives.] See the following examples:

- i. Task 1.1 - (Report Description)
- ii. Task 2.2 - (Report Description)

RESEARCH AND RELATED OTHER PROJECT INFORMATION

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

MERIT REVIEW CRITERION DISCUSSION

i. This section of the project narrative must be formatted to address each of the merit review criterion and sub-criterion listed in Section 6, as well as each Other Selection Factors. In addressing the merit review criterion and sub-criterion, applicants are encouraged to reference any correlation between the responses provided under this item and the responses provided for other information requests.

ii. Applicants must submit the discussion of merit review criteria in the form of a table with a summary level discussion of each merit review criterion, including cross references back to any responses provided under the project narrative. Applicants shall provide sufficient information so that reviewers will be able to evaluate the application in accordance with the merit review criteria and Other Selection Factors. Provide sufficient information so that reviewers will be able to evaluate the application in accordance with these merit review criteria. **DOE WILL EVALUATE AND CONSIDER ONLY THOSE APPLICATIONS THAT ADDRESS SEPARATELY EACH OF THE MERIT REVIEW CRITERION AND SUB-CRITERION.**

Note: the Merit Review Criterion discussion is included in the overall page count for the Project

Narrative.

Section 6 – APPLICATION REVIEW INFORMATION

6.1 Criteria

6.1.1 Initial Application Pass/Fail Review Criteria

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 announcement has been submitted; (3) all mandatory requirements are satisfied; (4) the proposed project is relevant and responsive to the objectives of the FOA, and (5) that the application from a specific applicant for the same/essentially the same technology/project has not been submitted more than once in response to the FOA (except see NOTE under paragraph 6.1.2 regarding Demos and Risk Reduction applications); applications from the same applicant for the same/essentially the same technology/project submitted under multiple pathways will be rejected.

Included in the eligibility determination of 6.1.1 (1) above, per FOA paragraph 4.4, a Letter of Intent was required for each project; the Letter of Intent specified the prime applicant and known team members. However, all information submitted in the letter of intent – other than the project itself - may be updated with the submission of the full application. See FOA paragraph 4.4 for details.

The above are pass/fail evaluation factors; applicants that fail to pass all of these may be rejected without further evaluation. For rejected applications, the Applicant will be notified in writing by the Contracting Officer along with a brief explanation as to why.

6.1.2 Merit Review Criteria

Full 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>. Applications must be fully responsive to each of the merit review criteria. Merit review criteria are as follows:

Merit Review Criteria (**Demos** and **Risk Reduction**)

NOTE: The Merit Review Criteria for both the Demos and Risk Reduction Pathways are the same; however, they are weighted differently. Applications submitted for Demos that also desire to be considered for Risk Reduction will first be evaluated for award consideration for a Demo using only information in the application that applies specifically for Demos. If not selected for a Demo, these applications will be evaluated for a Risk Reduction award using the information submitted in the application, as that application information specifically applies to a Risk Reduction award.

1) Technical feasibility that the demonstration reactor can be operational within five to seven years from the execution date of the award, and for Risk Reduction, to achieve a demonstration reactor in approximately 10-14 years from the execution date of the award, will be evaluated. The application will be evaluated on the feasibility and likelihood of success in the described approach to addressing the following elements:

- a comprehensive technology development program, including all research, development, analysis, engineering, start up and testing leading to a final reactor design product.
- appropriate identification of the TRL of the reactor and TRLs of key systems and components, including fuel, with adequate rationale for the TRL claimed.
- a compelling basis for the viability and feasibility of a nuclear fuel supply, addressing: procurement strategy, fabrication, transportation, availability, handling, and used fuel management. Any assumed reliance on DOE for access to enriched uranium for the initial core load is identified and reasonable/achievable based on plans, subject to appropriations.
- if applicable, the extent to which the reactor design incorporates features that address significant improvements compared to the current generation of operational reactors in the U.S. fleet, including but not limited to:
 - inherent safety features,
 - lower waste yields,
 - greater fuel utilization,
 - superior reliability,
 - resistance to proliferation,
 - increased thermal efficiency,
 - the ability to integrate with electric and nonelectric applications,
 - energy resiliency,
 - load following, and/or
 - suitability for connection to the grid.

RELATIVE WEIGHT OF CRITERION 1:

Demos	30%
Risk Reduction	40%

2) The likelihood that the design can be licensed for safe operations by the NRC will be evaluated. The application will be evaluated on the identification of a clear and logical strategy addressing the following efforts assuring the reactor design and selected site can be licensed by the NRC, including:

- depth, breadth, and quality of engagement with or plans for pre-application interaction with the regulator, including any early licensing topical reports, operating license applications, design certification applications, or any other activities addressing technical topics supporting licensing.
- quality and completeness of the plans to address the requirements of the Applicant's selected licensing strategy (e.g., 10 CFR § Part 50, Part 52, or other).
- quality and completeness of plans to address site permitting, environmental requirements and reporting, safeguards and securities, and other requirements for licensing reactor operations, including reactor end-of-life, at the selected site(s).

RELATIVE WEIGHT OF CRITERION 2:

Demos	20%
Risk Reduction	10%

3) The feasibility that the project management processes applied to the project will lead to success in achieving initial operation within the demonstration timeline will be evaluated. The application will be evaluated on the existence of a clear and logical strategy to reactor construction and deployment, including:

- the extent to which the proposed Project Management plan will successfully accomplish the project via a sound, complete, appropriate and feasible approach.
- the quality and completeness of the Applicant's risk management plan, Risk Register, and mitigation plans.
- the quality and completeness of the Applicant's resource-loaded schedule, taking into consideration the available resources, access to technologies, project phases, milestones, activities, and timelines.
- a reasonable and achievable budget to deploy the technology, with the identification of required sources including, but not limited to: a capable EPC firm, necessary construction and manufacturing capabilities, a supply chain that is or can be developed, etc.
- the quality and completeness of the Applicant's plans to address site specific engineering requirements at the selected deployment location.
- the quality and completeness of the Applicant's programs to address operations, maintenance, simulator development, and operator training.

RELATIVE WEIGHT OF CRITERION 3:

Demos	15%
Risk Reduction	10%

4) Affordability of the design for full-scale construction and cost competitiveness in the commercial market will be evaluated. The application will be evaluated on the strategy to identify and implement activities or methodologies that can assure the advanced reactor design can be competitive with other generating sources, including:

- the quality and completeness of efforts or results of value engineering to optimize reactor cost.
- the quality and completeness of efforts or results of manufacturing and construction evaluations to minimize plant deployment costs.
- the quality and completeness of efforts to address appropriate levels of plant staffing to optimize operations and maintenance costs.
- the quality, completeness and feasibility of the business plan, strategy, and market analysis (short and long term) to achieve commercial success. This includes the identification of current and future customers, economic or cost competitiveness, and feasibility of the reactor's commercial product.

RELATIVE WEIGHT OF CRITERION 4:

Demos	20%
Risk Reduction	20%

5) Technical abilities, qualifications and commitment of key personnel, organizations and teams to successfully accomplish the project, as well as to meet the cost share requirements, will be evaluated. The application will be evaluated on the team's capabilities, experience, financial solvency, and other factors, including:

- demonstrated management capability and commitment necessary for project success, consistent with the complexity and level of risk involved in the project; key personnel commitment will be evaluated to determine

the extent to which this commitment is likely to help ensure the project's success. 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)).
- a logical and achievable funding strategy that addresses the five to seven year cost requirements of the project.
- identification of yearly funding level commitments from the Applicant, as well as third party sources.

RELATIVE WEIGHT OF CRITERION 5:

Demos	15%
Risk Reduction	20%

Merit Review Criteria (ARC-20)

The applications will be evaluated in accordance with the following three criteria:

1. Significance/Technical Merit: The extent to which the project proposed for the advanced reactor and plant technologies, if successfully carried out, will make important advancements to advanced reactor technologies, including in such areas as but not limited to safety, operations, used fuel disposition and economics, and to advance the concept towards a successful future commercial demonstration.
2. Approach: The extent to which the proposed approach is properly developed, well-integrated, and appropriate to the aims of the project. This includes the extent to which the proposed project/activities:
 - i. Solve technical issues, address licensing challenges or demonstrate technical viability of concept features;
 - ii. Demonstrate the Applicant understands the technical, regulatory, and market requirements influencing the progression of the reactor concept to a future successful commercial demonstration;
 - iii. Have the ability to significantly progress the commercial demonstration of the reactor concept.
3. Feasibility: The likelihood that the proposed work can be accomplished within the time and budget proposed by the Applicant, given its experience and expertise, past performance and progress, available resources, institutional/organizational commitment, and access to technologies. The extent to which proposed activities can be accomplished while addressing project risks to schedule (including any milestones and milestone-based payments if proposed,), cost, and performance.

6.2 Review and Selection Process

6.2.1 Merit Review (Demos and Risk Reduction)

Congressional language directs DOE to utilize outside subject matter experts (SMEs) to assist with the evaluation of applications submitted in response to the FOA, including: (1) a representative from an electric utility that operates a

nuclear power plant; (2) a representative from an entity that uses high-temperature process heat, district heating, hydrogen production, or heat for manufacturing, industrial processing, or other purposes; (3) experts from industry with experience in design, manufacturing, and operation of nuclear reactors; and (4) a representative from the finance industry with background in the nuclear field. SMEs for construction, venture capital, and NRC licensing will also be used.

Applicants are advised that DOE will use these non-Federal SMEs in assisting with the review of applications. All non-Federal personnel used will be required to sign and strictly adhere to a Conflict of Interest/Non-Disclosure Agreement and to properly handle, use and safeguard application submission information for official DOE use only. DOE will also take proactive measures to ensure an absence of bias in the use of non-Federal SMEs by having multiple SMEs for each of the above areas of expertise, to the extent possible.

In addition to these reviewers, DOE plans to use a Federal Merit Review Panel. NRC representation will not be included in the merit review and NRC will not rate or score applications in order to preserve the NRC's status as an independent regulatory agency. However, DOE may consult with NRC during the review process and use NRC-provided information in making its evaluations and selections. Other Federal and non-Federal advisors may also be used.

To help ensure consistency, DOE plans to use the same team to evaluate both Demos and Risk Reduction applications, to the extent feasible.

6.3 Selection and Other Program Policy Factors

The Selection Official will consider information from submitted Letters of Intent, the applications, and the results of the merit review, including the merit review board's recommendation(s), in making the selection decision for awards. The Selection Official may also consider any or all the following Program Policy Factors, and the amount of funds available to initiate awards, in arriving at selections for this FOA. The purpose of considering these Program Policy Factors is to maximize the effectiveness of available Federal funding and to best achieve DOE program objectives. The Policy Factors are not listed in any order of importance.

These factors, while not indicators of the Application's merit, may be essential to the process of selecting the application that will best achieve the program objectives. The factors may be 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 objectives.

The Selection Official will rank order applications for each pathway, including for purposes of possibly making additional awards under the FOA.

Demos and Risk Reduction Other Program Policy Factors

- a. Proposed cost share that exceeds minimum required amounts on the part of the Applicant may be given preferential consideration.
- b. Diversity and versatility in reactor design may be considered, including to best optimize the selection of an appropriate mix of technologies to meet program goals.
- c. Preference may be given for U.S. content, technology, expertise, etc.
- d. Applications that have the potential to enhance U.S. nuclear infrastructure may be given preferential consideration. The Selection Official may also consider potential contributions of foreign expertise and supply chains.
- e. DOE may consider foreign influence in the selection of application(s), including type and amount of foreign involvement in the project, as well as any foreign ownership, control, or influence (FOCI) issues.

- f. 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 U.S.
- g. Cost of the overall demonstration project will be considered. This may include a Budget Evaluation. If considered, the budget evaluation (not point scored) may be conducted after the merit review is completed on the most highly rated application(s).
- h. Indirect Rates. Whether the Applicant and subapplicants have established indirect rates, including federally established indirect rate agreement(s) in place at time of application submission, such that these may be used in establishing any resultant financial assistance award on a timely basis to not delay the project.
- i. Selections to balance and to optimize an appropriate mix of technologies to meet program goals.
- j. Extent, reasonableness, availability, impacts and feasibility of any equipment, materials, information or other services specified by the applicant that it requires from the Government to accomplish the project.

ARC-20 Other Program Policy Factors

- a. Pre-application engagement with the regulator, while not required, would be a positive consideration for an ARC-20 project.
- b. Selections to balance and to optimize an appropriate mix of technologies to meet program goals.
- c. Extent of industry cost-share (i.e., proposed contributions greater than 20%) may be given preferential consideration.
- d. 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 U.S.
- e. Indirect Rates. Whether the Applicant and subapplicants have established indirect rates, including federally established indirect rate agreement(s) in place at time of application submission, such that these may be used in establishing any resultant financial assistance award on a timely basis to not delay the project.
- f. Preference may be given for U.S. content, technology, expertise, etc.
- g. Applications that have the potential to enhance U.S. nuclear infrastructure may be given preferential consideration. The Selection Official may also consider potential contributions of foreign expertise and supply chains.
- h. DOE may consider foreign influence in the selection of application(s), including type and amount of foreign involvement in the project, as well as any foreign ownership, control, or influence (FOCI) issues.
- i. Extent, reasonableness, availability, impacts and feasibility of any equipment, materials, information or other services specified by the applicant that it requires from the Government to accomplish the project.

Section 7 - AWARD ADMINISTRATION INFORMATION

(applicable to **Demos**, **Risk Reduction** and **ARC-20**)

7.1 Anticipated Notice of Selection And Award Dates

DOE anticipates making selection announcements for the various pathways, as shown below. DOE reserves the right to make additional award selections using applications submitted in response to this FOA.

Anticipated selection dates (calendar year)

Demos 4th quarter of 2020

Risk Reduction 4th quarter of 2020

ARC-20 4th quarter of 2020

Anticipated award dates (calendar year)

Demos 4th quarter of 2020

Risk Reduction 1st quarter of 2021

ARC-20 1st quarter of 2021

7.2 Award Notices

7.2.1 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 Awardee in FedConnect.

Applicants must designate a primary and a backup point-of-contact in Grants.gov with whom DOE will communicate to conduct award negotiations. As part of the notice of selection, DOE may request additional information from the selected Applicant. 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.

7.2.2 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) Agency Specific Requirements; and (9) Statement of Substantial Involvement.

7.3 Administrative and National Policy Requirements

7.3.1 Administrative Requirements

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 cooperative agreements made under ARC-20, awards will include the government-wide Research Terms and Conditions, located at <http://www.nsf.gov/bfa/dias/policy/rtc/index.jsp>. These will be included given the R&D nature of the ARC-20 awards.

7.3.2 DUNS and SAM Requirements

Additional administrative requirements for DOE grants and cooperative agreements are contained in 2 CFR § 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>. 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 DUNS numbers and provide the DUNS to the prime Awardee before the subaward can be issued.

7.3.3 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 § 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).

7.4 Special Terms and Conditions And National Policy Requirements (December 2014)

Award Terms and Conditions. A draft copy of the planned Special Terms and Conditions (T&Cs) for use in each of the pathways' awards is as follows:

Pathway	Appendix for draft T&Cs
Demos	O
Risk Reduction	P
ARC-20	Q

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

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.

Intellectual Property Provisions

Special Intellectual Property Provisions will apply to Agreements awarded under this FOA. These include special data protection provisions and the issuance of a class patent waiver to enhance commercialization of technology developed under this program. Additionally, specific intellectual property provisions can be found in Appendix R, and will be amended as directed under any class patent waiver.

Special Protected Data Statutes. This program is covered by a special protected data statute. The provisions of the statute provide for the protection from public disclosure, for a period of up to five (5) years, 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. Generally, the provision entitled, Rights in Data – Programs Covered Under Special Protected Data Statutes, (2 CFR § 910 Appendix A to Subpart D —Patent and Data Provisions), would apply, but may be modified to accommodate NE program requirements. Otherwise, the government has unlimited rights in technical data created under the DOE agreement. Delivery or third-party licensing of proprietary software or data developed solely at private expense will not normally be required except as specifically negotiated in an agreement or patent waiver to satisfy DOE's needs or to ensure the commercialization of technology developed under the DOE agreement.

Class Patent Waiver: DOE is expecting to issue a class patent waiver for agreements awarded under this FOA, which will cover most large business recipients and lower-tier subrecipients under this FOA. The patent waiver will provide those recipients, not subject to the Bayh-Dole Act, the option to retain title to their own inventions, subject to the same government retained rights identified in the Act above. To qualify for the class waiver, a recipient must maintain the required cost-share under the program and agree to substantially manufacture technology created under this FOA in the U.S., or provide other economic benefits to the U.S. Specifically, the recipient must agree to the following U.S. Competitiveness clause:

The Contractor 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 Contractor can show to the satisfaction of the DOE that it is not commercially feasible to do so. In the event the DOE agrees to foreign manufacture, there will be a requirement that the Government's support of the technology be recognized in an appropriate, legally binding manner. The Contractor agrees that it will not license, assign or otherwise transfer any waived invention to any entity unless that entity agrees to these same requirements. Should the Contractor or other such entity receiving rights in the invention(s): (1) undergo a change in ownership amounting to a controlling interest, or (2) sell, assign, or otherwise transfer title or exclusive rights in the invention (s), then the waiver, assignment, license, or other transfer of rights in the waived invention(s) is/are suspended until approved in writing by the DOE. Approval of any modification of this provision, shall require the concurrence of the Assistant Secretary for Nuclear Energy, the Acting Assistant Secretary, or the cognizant Principal Deputy Assistant Secretary.

If the recipient is unable to maintain the required cost-share or is unable to manufacture substantially in the U.S., the waiver may be terminated by DOE.

If DOE does not issue a class waiver or if applicants do not meet the criteria of the class 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 FOA, 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.

Small Businesses and Nonprofits: Domestic small businesses and domestic nonprofit organizations will receive the patent rights clause at 37 CFR § 401.14, i.e., the implementation of the Bayh-Dole Act. This clause permits domestic small business and domestic nonprofit organizations to retain title to subject inventions. Therefore, small businesses and nonprofit organizations do not need to request a waiver.

7.5 Reporting

Anticipated Federal Assistance Reporting Checklists DOE F 4600.2, reporting requirements for use in each of the pathways' awards are as follows:

Pathway	Appendix for Draft Reporting Requirements
Demos	S
Risk Reduction	T
ARC-20	U

7.6 Securing the United States Bulk-Power System

Presidential Executive Order (EO) 13920, "Securing the United States Bulk-Power System" prohibits Federal agencies and U.S. persons from acquiring, transferring, or installing Bulk-Power System (BPS) equipment in which any foreign country or foreign national has any interest and the transaction poses an unacceptable risk to national security or the security and safety of American citizens. Applications must comply with this EO; execution of the ARD cooperative agreement awards will comply with the BPS EO, as applicable.

Section 8 - QUESTIONS/AGENCY CONTACTS
(applicable to **Demos**, **Risk Reduction** and **ARC-20**)

8.1 Questions

Interested parties/applicants are encouraged to ask questions regarding any part of this announcement by submitting them through the Q&A section on the [FOA website](#). If you do not find what you're looking for, you may submit a question of your own with an email to advancedreactordemonstration@id.doe.gov; it will show up in the Q&A section on the [FOA website](#) for you as well as others to view. DOE will try to respond to a question within 3 business days, unless a similar question and answer have already been posted on the website.

Questions and comments concerning this FOA are requested to be submitted on or before 29 May 2020, but shall be submitted not later than 14 calendar days prior to the application due date. Questions submitted after that date may not allow the Government sufficient time to respond.

Questions relating to the registration process, system requirements, how an application form works, or the submittal process must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov. DOE cannot answer these questions. See Section 4 for more detailed information.

8.2 Agency FOA Contact

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

Section 9 – POST SELECTION INFORMATION
(applicable to **Demos**, **Risk Reduction** and **ARC-20**)

9.1 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 § 200 as amended by 2 CFR § 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.

9.2 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.

9.3 Post Selection 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:

- a. Conflict of Interest information/Disclosure Statement
- b. Environmental Checklist
- c. Other budget information
- d. Name and phone number of the Designated Responsible Employee for complying with national policies prohibiting discrimination (See 10 CFR § 1040.5)
- e. Representation of Limited Rights Data and Restricted Software, if applicable

9.4 Intergovernmental Review

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

9.5 Information Required From Selected Applicants

Following selection announcement but prior to award, applicants selected for award negotiations may be required to submit additional information that DOE will consider prior to award. DOE will specify to the Applicant in writing the precise information required; however, it is anticipated that information may be required to support the following assessments/reviews that DOE may make:

Financial Management Assessment Information

A financial management assessment may be undertaken by DOE to assess the Applicant's ability to manage the financial aspects of the award and its plans to accomplish project activities with reasonable economy and efficiency. The standards for acceptable financial management are found at 2 CFR § 200.302.

This assessment reviews:

The Applicant's accounting system to determine whether it is adequate for the accumulation and segregation of costs on a project-by-project basis and whether its books of account are adequate for and suited to the

organization's business;

- a. The Applicant's purchasing procedures to determine if they exist in written form and whether they result in effective, economical, and well-documented procurement;
- b. The Applicant's personnel practices and procedures to determine if they exist in written form, whether they provide for adequate separation of responsibilities for hiring, dismissal, promotion, etc., and whether the organization can meet the cost principle standards for documenting its payroll;
- c. The existence and adequacy of other written procedures governing travel, use of consultants, and property management, including adequate insurance;
- d. The organizational structure and assignment of functional responsibilities to determine whether the organization can adequately safeguard its assets provide accurate and dependable financial and cost data, and whether employees can adequately discharge their responsibilities and adhere to established policies.

In addition, the Applicant (and, as applicable, subapplicants have lower tier subapplicants), must have an acceptable procedure in place to determine whether a sub is a subrecipient or subcontract. The definition of a subrecipient is a non-Federal entity that receives a subaward from a pass-through entity to carry out part of a Federal program; but does not include an individual that is a beneficiary of such program. A subrecipient may also be a recipient of other Federal awards directly from a Federal awarding agency. (see 2 CFR 200.93). Standards for this procedure are at 2 CFR § 200.330. DOE may require submission of these procedure(s) to be submitted for DOE review, along with evidence that the Applicant has followed this procedure in determining which sub entities are subrecipients vs subcontractors.

9.6 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 § 200.205 and DOE's Guide to Financial Assistance (<https://www.energy.gov/management/downloads/departement-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.

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.

Prior to making award, the DOE Contracting Officer must make an affirmative determination of responsibility. The responsibility determination considers if the Applicant/subapplicants have the administrative and programmatic

capabilities to perform.

The term “*administrative capability*” means the capability of an Applicant to develop and implement administrative systems required by 40 CFR § 30, including systems related to financial management, property management, procurement standards, financial reporting, record-keeping, and submission of administrative reports/certifications for grant closeout.

The term “*programmatic capability*” means the technical capability of an Applicant to successfully carry out a project.

DOE may consider past performance, reporting history on prior awards, Applicant resources, etc., in making this determination.

Accordingly, the Applicant may be required to provide additional information to permit the DOE Contracting Officer to make an affirmative determination of responsibility for the Applicant, including:

- a. audits under the Single Audit Act
- b. detail regarding activities under previous awards within the past five years, especially submission of required reports (completeness and timeliness)
- c. a favorable credit determination for the past three years
- d. if the Applicant has done prior business with DOE within the past three years, to show proof of an on-going favorable relationship between DOE and the Applicant; provide prior award numbers, dates, descriptions, and DOE point of contract information

9.7 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.

9.8 Funding Restrictions (December 2014)

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.

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

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 § 200 as amended by 2 CFR § 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.

9.9 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 an 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.

9.10 Evaluation and Administration By Non-Federal Personnel

As previously stated in this FOA, in conducting the merit review evaluation, the Government will use 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.

9.11 Notice of Right To Request Patent Waiver

DOE intends to authorize a class patent waiver for awards done under this FOA.

Applicants desiring a different patent waiver may request one for all or any part of the rights of the U.S. 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 U.S. in identified inventions, i.e., individual inventions conceived or first actually reduced to practice in performance of the award. Any patent waiver that may be granted is subject to certain terms and conditions in 10 CFR 784 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, as stated above and do not need to request a waiver.

An objective of this FOA is to support the innovation and competitiveness of the U.S. nuclear industry. 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 U.S., 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.

9.12 Reporting of Matters Related to Recipient Integrity and Performance (December 2015)

DOE, prior to making a Federal award with a total amount of Federal share greater than the simplified acquisition threshold, is required to review and consider any information about the Applicant that is in the designated integrity and performance system accessible through SAM (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.

9.13 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) if there is insufficient information to determine financial capability of the organization).

9.14 Notice of Potential Disclosure Under Freedom of Information Act

Applicants are 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.

9.15 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.

9.16 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.

9.17 Protected Personally Identifiable Information

Personally Identifiable Information (PII) provided in the application, e.g., in resumes, etc., 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.

- a. Social Security Numbers in any form
- b. Place of Birth associated with an individual
- c. Date of Birth associated with an individual
- d. Mother's maiden name associated with an individual
- e. Biometric record associated with an individual
- f. Fingerprint
- g. Iris scan
- h. DNA
- i. Medical history information associated with an individual
- j. Medical conditions, including history of disease
- k. Metric information, e.g. weight, height, blood pressure
- l. Criminal history associated with an individual
- m. Employment history and other employment information associated with an individual
- n. Ratings
- o. Disciplinary actions
- p. 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
- q. Financial information associated with an individual
- r. Credit card numbers
- s. Bank account numbers
- t. Security clearance history or related information (not including actual clearances held)

9.18 Annual Compliance Audits

If an institute of higher education, non-profit organization, or state/local government is an Awardee 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 an Awardee 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) must 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.

9.19 Felony Conviction and Tax Liabilities

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 U.S. [but not foreign corporations]. It includes both for-profit and non-profit organizations.

**Section 10 – APPENDICES
APPLICATION PREPARATION INSTRUCTIONS/INFORMATIONAL MATERIAL**

APPENDIX A* – HALEU INFORMATIONAL ATTACHMENT (applicable to **Demos**, **Risk Reduction** and **ARC-20**)

APPENDIX B* – STATEMENT OF SUBSTANTIAL INVOLEMENT (DRAFT) (applicable to **Demos**)

APPENDIX C* – STATEMENT OF SUBSTANTIAL INVOLEMENT (DRAFT) (applicable to **Risk Reduction**)

APPENDIX D* – STATEMENT OF SUBSTANTIAL INVOLEMENT (DRAFT) (applicable to **ARC-20**)

APPENDIX E* – INFORMATIONAL DOCUMENT – UNDERSTANDING COST SHARING (applicable to **Demos**, **Risk Reduction** and **ARC-20**)

APPENDIX F** – WAIVER REQUESTS: PERFORMANCE OF WORK IN THE UNITED STATES (applicable to **Demos**, **Risk Reduction** and **ARC-20**)

APPENDIX G** – APPLICATION BUDGET PREPARATION INSTRUCTIONS (applicable to **Demos**, **Risk Reduction** and **ARC-20**)

APPENDIX H** – TECHNOLOGY READINESS LEVELS (applicable to **Demos**, **Risk Reduction**, and **ARC-20**)

APPENDIX I** – RISK MANAGEMENT PLAN APPLICATION PREPARATION INSTRUCTIONS (applicable to **Demos**, **Risk Reduction** and **ARC-20**)

APPENDIX J** - PROJECT MANAGEMENT PLAN AND OBJECTIVES APPLICATION INSTRUCTIONS (applicable to **Demos** and **Risk Reduction**)

APPENDIX K** – FOREIGN OWNERSHIP, CONTROL OR INFLUENCE (FOCI) DISCLOSURE TEMPLATE APPLICATION INSTRUCTIONS (applicable to **Demos**, **Risk Reduction** and **ARC-20**)

APPENDIX L** –BUSINESS PLAN TEMPLATE FOR APPLICATION SUBMISSION INFORMATION (applicable to **Demos** and **Risk Reduction**)

APPENDIX M** – KEY PERSONNEL RESUME TEMPLATE APPLICATION INSTRUCTIONS (applicable to **Demos**, **Risk Reduction** and **ARC-20**)

APPENDIX N** – PAST PERFORMANCE TEMPLATE (applicable to **Demos**, **Risk Reduction** and **ARC-20**)

APPENDIX O* – AWARD TERMS AND CONDITIONS (DRAFT) (applicable to **Demos**)

APPENDIX P* – AWARD TERMS AND CONDITIONS (DRAFT) (applicable to **Risk Reduction**)

APPENDIX Q* – AWARD TERMS AND CONDITIONS (DRAFT) (applicable to **ARC-20**)

APPENDIX R* – INTELLECTUAL PROPERTY PROVISIONS (applicable to Demos, Risk Reduction and ARC-20)

APPENDIX S* – REPORTING REQUIREMENTS CHECKLIST (DRAFT) (applicable to Demos)

APPENDIX T* – REPORTING REQUIREMENTS CHECKLIST (DRAFT) (applicable to Risk Reduction)

APPENDIX U* – REPORTING REQUIREMENTS CHECKLIST (DRAFT) (applicable to ARC-20)

APPENDIX V* - COVID-19 OMB MEMO M-20-17 (applicable to Demos, Risk Reduction and ARC-20)

APPENDIX W* – DOE COVID-19 FINANCIAL ASSISTANCE GUIDANCE (applicable to Demos, Risk Reduction and ARC-20)

APPENDIX X -- DATA MANAGEMENT PLAN APPLICATION INSTRUCTIONS (applicable to Demos, Risk Reduction and ARC-20)**

* Informational Document Only

** Application Preparation Document