

FINANCIAL ASSISTANCE FUNDING OPPORTUNITY ANNOUNCEMENT



Department of Energy (DOE) Office of Fossil Energy (FE)

FRONT-END ENGINEERING DESIGN STUDIES FOR CARBON CAPTURE SYSTEMS ON COAL AND NATURAL GAS POWER PLANTS

Funding Opportunity Announcement (FOA) Number: DE-FOA-0002058

FOA Type: Initial FOA Release¹

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FOA Issue Date:	03/13/2019
Submission Deadline for Full Applications:	05/13/2019 12:00:00 PM ET
Expected Date for Selection Notifications:	08/07/2019
Expected Date for Award:	September 2019

¹ The FOA will appear on FedConnect.net as "Modification 1" as a result of the Notice of Intent (Base) issued under DE-FOA-0002058. As a result, the numbering of subsequent modifications to the FOA (if issued) in FedConnect will also be affected; however, the "Announcement Type" of any issued modification will be noted accordingly on the respective FOA cover page.

Registration Requirements

There are several one-time actions you must complete to submit an application in response to this Announcement (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, and register in FedConnect.net to submit questions). 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.

- **DUNS** - Applicants must obtain a DUNS number (including the plus 4 extension, if applicable) from Dun and Bradstreet (D&B). DUNS website: <http://fedgov.dnb.com/webform>.

NOTE: Subawardees/Subrecipients at all tiers must also obtain DUNS numbers and provide the DUNS to the Prime Recipient before the subaward can be issued.

- **SAM** - Applicants must register with SAM at <https://www.sam.gov/> prior to submitting an application in response to this FOA. NOTE: Designating an Electronic Business Point of Contact (EBiz POC) and obtaining a special password called an MPIN are important steps in SAM registration. Failure to register with SAM will prevent your organization from applying through Grants.gov. **Your SAM registration must be updated annually.** More information about SAM registration for Applicants is found at: [https://www.sam.gov/sam/transcript/Quick Guide for Grants Registrations v1.7.pdf](https://www.sam.gov/sam/transcript/Quick%20Guide%20for%20Grants%20Registrations%20v1.7.pdf).
- **Grants.gov** - Applicants must register with Grants.gov and set up your WorkSpace. You cannot submit an application through Grants.gov unless you are registered. Please read the registration requirements carefully and start the process immediately.
 - 1) The Authorized Organizational Representative (AOR) must register at: <https://apply07.grants.gov/apply/OrcRegister>; and
 - 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 MPIN from their SAM registration.

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

In addition:

- Add a Profile to a Grants.gov Account: A profile in Grants.gov corresponds to a single Applicant organization the user represents (i.e., an Applicant) or an individual Applicant. If you work for or consult with multiple organizations and have a profile for each, you may log in to one Grants.gov account to access all of your grant applications.

To add an organizational profile to your Grants.gov account, enter the DUNS Number for the organization in the DUNS field while adding a profile. For more detailed instructions about creating a profile on Grants.gov, refer to: <https://www.grants.gov/web/grants/applicants/registration/add-profile.html>; and

- *EBiz POC Authorized Profile Roles:* After you register with Grants.gov and create an Organization Applicant Profile, the organization Applicant's request for Grants.gov roles and access is sent to the EBiz POC. The EBiz POC will then log in to Grants.gov and authorize the appropriate roles, which may include the AOR role, thereby giving you permission to complete and submit applications on behalf of the organization. You will be able to submit your application online any time after you have been assigned the AOR role.

NOTE: When applications are submitted through Grants.gov, the name of the organization Applicant with the AOR role that submitted the application is inserted into the signature line of the application, serving as the electronic signature. The EBiz POC **must** authorize people who are able to make legally binding commitments on behalf of the organization as a user with the AOR role; **this step is often missed, and it is crucial for valid and timely submissions.**

For more detailed instructions about creating a profile on Grants.gov, refer to: <https://www.grants.gov/web/grants/applicants/registration/authorize-roles.html>.

To track your role request, refer to: <https://www.grants.gov/web/grants/applicants/registration/track-role-status.html>.

Questions relating to the **registration process, system requirements, or how an application form works** must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov.

- **FedConnect.net** - Applicants must register with FedConnect to submit questions. FedConnect website: www.fedconnect.net.

See Section IV for Application and Submission Information (including how to create a Workspace).

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I. Funding Opportunity Description

A. Authorizing Statutes

This Funding Opportunity Announcement (FOA) is issued in accordance with statutory authority provided by:

- [Public Law \(PL\) 95-91, DOE Organization Act](#); and
- [PL 109-58, Energy Policy Act 2005](#).

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

B. Background/Description

The Department of Energy's (DOE) Office of Fossil Energy (FE) has a program in Carbon Capture. The program has developed technologies since 2001 with the goal of decreasing the cost of carbon capture systems. The Carbon Capture program funds technologies that can be installed on existing or new coal or gas power plants. Technologies in the portfolio range from lab scale using synthetic gases to large pilot (10 – 25 MW) projects installed at operating power plants.

Much of the previous work funded in the program was focused on improved materials to separate carbon dioxide (CO₂) from either nitrogen or hydrogen. These advanced materials primarily were from four platforms: solvents, sorbents, membranes and hybrids. In addition to materials, the program also conducted research and development (R&D) on advanced processes to be used in tandem with the novel materials to provide the most optimized carbon capture system.

In 2018, The FUTURE ACT (45Q) was amended by Congress. Among other changes, the amendment increases the amount of money via a tax credit that a company can get to store captured CO₂ in saline or oil formations. The congressional action has created a plethora of activity in the carbon capture and carbon storage industries. The 2019 DOE appropriations language requested that not less than \$30M be provided for at least two commercial-scale Front-End Engineering Design (FEED) studies.

C. Objectives/Areas of Interest (AOI)

As per the Fiscal Year (FY) 2019 appropriations, the objective of the FOA is to solicit applications to conduct FEED studies for commercial-scale carbon capture systems.

This FOA will consist of the following three AOIs. Applicants may submit more than one application; however, the Applicant must target only one AOI per application.

AOI 1: FEED Studies for Retrofitting Existing, Domestic Coal Power Plants with Carbon Capture

Coal still supplies a large portion, approximately 242 GW by the end of 2019, of our Nation's primary energy supply. Additionally, in certain locations where options for gas and/or renewables are limited, it is anticipated that coal will continue to be utilized. In the future, these coal plants may begin to control carbon dioxide emissions. The Carbon Capture Portfolio of projects is addressing many of the challenges associated with the materials and processes to capture CO₂. The objective is to develop cost effective and environmentally sound technologies to mitigate CO₂ emissions.

A key impediment to the wide-scale installation of carbon capture systems is the high capital and operating costs of state-of-the-art technologies. FEED studies for carbon capture systems at actual sites will provide DOE with a more detailed understanding of carbon capture costs in a commercial application, thereby enabling DOE to better design its R&D program to reduce those costs for similar carbon capture technologies being developed in its R&D portfolio. Under this AOI, DOE is seeking a FEED for retrofitting a domestic existing coal-fired power plant with carbon capture.

Each project awarded under this AOI will complete a FEED study (see Appendix C, SOPO-1) for retrofitting carbon capture on an existing, domestic coal power plant of at least 150 MW_e. Such studies shall be based upon carbon capture system technologies that have demonstrated a Technology Readiness Level (TRL) of at least 6. The FEED study shall incorporate work from feasibility studies and testing to provide specific project definition, detailed design, scopes of work, material purchasing and construction schedules, cost for project execution, and permitting requirements. The FEED study can include: pre-conditioning flue gas system(s), capture island(s), compression train(s) and any necessary integration into the coal-fired power plant. The FEED study shall NOT include geological/Enhanced Oil Recovery (EOR) storage systems. By 2021, projects will develop a FEED study for retrofitting an existing, domestic coal power plant with carbon capture.

AOI 2: FEED Studies for Commercial-Scale Carbon Capture Units on New or Existing (Retrofit) Domestic Gas-Fired Power Plants or New Domestic Coal Plants

In the future, new coal power plants, and new or existing natural gas power plants, may begin to control carbon dioxide emissions.

The Carbon Capture Portfolio of projects is addressing many of the challenges associated with the materials and processes to capture CO₂. The objective is to develop cost effective and environmentally sound technologies to mitigate CO₂ emissions.

A key impediment to the wide-scale installation of carbon capture systems is the high capital and operating costs of state-of-the-art technologies. FEED studies for carbon capture systems at actual sites will provide DOE with a more detailed understanding of carbon capture costs in a commercial application, thereby enabling DOE to better design its R&D program to reduce those costs for similar carbon capture technologies being developed in its R&D portfolio. Under this AOI, DOE is seeking a FEED for installing carbon capture on a new domestic coal plant or a new or existing (retrofit) domestic natural gas power plant.

Each project awarded under this AOI will complete a FEED study (see Appendix C, SOPO-1) for installing carbon capture on a new domestic coal plant of at least 150 MW_e or a new or existing (retrofit) domestic natural gas power plant of at least 375 MW_e. Such studies shall be based upon carbon capture system technologies that have demonstrated a TRL of at least 6. The FEED study shall incorporate work from feasibility studies and testing to provide specific project definition, detailed design, scopes of work, material purchasing and construction schedules, cost for project execution, and permitting requirements. The FEED study can include: pre-conditioning flue gas system(s), carbon capture island(s), compression train(s) and any necessary integration into the coal- or natural gas-fired power plant. The FEED study shall NOT include geological/EOR storage systems. By 2021, projects will develop a FEED study for installing carbon capture on a new domestic coal power plant or a new or existing (retrofit) domestic natural gas power plant.

AOI 3: FEED Studies for Carbon Dioxide Purification and Compression Systems for Domestic Coal or Natural Gas Power Plants that Generate Carbon Dioxide Suitable for Utilization or Storage

In contrast to post-combustion technologies to separate carbon dioxide, advanced power systems that inherently produce concentrated streams of CO₂ may be more efficient and cost-effective alternatives.

In contrast to post-combustion carbon capture technologies, oxy-combustion-based advanced power cycles are being developed that inherently produce a concentrated stream of carbon dioxide that is suitable for utilization or storage after going through a relatively simple back-end process for carbon dioxide purification and compression. Reducing the cost of CO₂ purification and compression for oxy-combustion power cycles is consistent with the objectives of DOE's Carbon Capture Program.

FEED studies for back-end CO₂ purification and compression systems for oxy-combustion power plants at actual sites will provide DOE with a more detailed understanding of carbon capture costs in a commercial application, thereby enabling DOE to better design its R&D program to reduce those costs. Under this AOI, DOE is seeking a FEED study for a back-end CO₂ purification and compression system for a domestic oxy-combustion power plant fueled by coal or natural gas that generates carbon dioxide suitable for utilization or storage.

Each project awarded under this AOI will complete a FEED study (see Appendix C, SOPO-1) for a back-end CO₂ purification and compression system for a domestic oxy-combustion power plant fueled by coal or natural gas that generates carbon dioxide suitable for utilization or storage. Such studies shall be based upon carbon capture system technologies that have demonstrated a TRL of at least 6. The FEED study shall incorporate work from feasibility studies and testing to provide specific project definition, detailed design, scopes of work, material purchasing and construction schedules, cost for project execution, and permitting requirements. The FEED study can include: CO₂ purification system(s), compression train(s) and any necessary integration into the coal- or natural gas-fired power plant. By 2021, projects will develop a FEED study for a back-end CO₂ purification and compression system for a domestic oxy-combustion power plant fueled by coal or natural gas that generates carbon dioxide suitable for utilization or storage.

D. Applications Specifically Not of Interest:

The following types of applications will be deemed nonresponsive and will not be reviewed or considered (See Section III Responsiveness Criteria):

- Submissions that fall outside the technical parameters specified in Section I.C of the FOA;
- R&D on post-combustion CO₂ capture technologies at the laboratory/bench-scale, engineering, or pilot scale;
- R&D on pre-combustion CO₂ capture technologies at the laboratory/bench-scale, engineering, or pilot scale;
- R&D on CO₂ use and conversion technologies;
- R&D on the design of the oxy-combustion boiler or turbine or chemical looping reactor;
- R&D on CO₂ compressor development;
- R&D on systems that co-fire biomass;
- R&D on biological capture of CO₂ technologies; and
- R&D on CO₂ capture from air technologies.

II. Award Information

A. Type of Application

DOE will accept only new applications under this FOA.

B. Type of Award Instrument

DOE anticipates awarding Cooperative Agreements under this FOA (See Section VI Statement of Substantial Involvement).

C. Award Overview

i. Estimated Funding, Number of Awards, Anticipated Award Size, and Maximum DOE Share

DOE expects to make Federal funding available for new awards under this FOA as follows:

AOI	Estimated Total DOE Funding for FOA	Anticipated Number of Awards from FOA	Anticipated Individual Award Size			Maximum DOE Share per Award
			DOE Share \$/%	Cost Share* \$/%	Total \$	
1 or 2	\$30,000,000	At least 2	\$15,000,000 / 80%	\$3,750,000 / 20%	\$18,750,000	\$15,000,000
3			\$5,000,000 / 80%	\$1,250,000 / 20%	\$6,250,000	\$5,000,000

*Applicants may propose cost share in excess of 20% which could result in higher total award values than those stated above.

DOE may issue awards in one, multiple or none of the AOIs.

APPLICATIONS WHICH EXCEED THE “MAXIMUM DOE SHARE PER AWARD” WILL BE CONSIDERED NONCOMPLIANT (SEE SECTION III COMPLIANCE CRITERIA). DOE WILL NOT REVIEW OR CONSIDER NONCOMPLIANT APPLICATIONS.

DOE anticipates making awards that contain only one budget period; however, DOE may establish more than one budget period for each award and fund only the initial budget period(s). Funding for all budget periods, including the initial budget period, is not guaranteed.

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.

ii. Estimated Period of Performance per Area of Interest

DOE anticipates making awards with an estimated project period of 18 to 24 months for each of the three AOIs.

III. Eligibility Information

A. General

To be considered for substantive evaluation, an Applicant's submission must meet the criteria set forth below. If the application does not meet these initial requirements, it will be considered non-responsive, removed from further evaluation, and ineligible for any award.

B. Eligible Applicants

i. Individuals

U.S. citizens and lawful permanent residents are eligible to apply for funding as a Prime Recipient or Subrecipient.

ii. Domestic Entities

For-profit entities, educational institutions, and nonprofits that are incorporated (or otherwise formed) under the laws of a particular State or territory of the United States are eligible to apply for funding as a Prime Recipient or Subrecipient.

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

iii. Domestic Public Entities (excluding Federal entities)

State, local, and tribal government entities are eligible to apply for funding as a Prime Recipient or Subrecipient.

Federal entity eligibility is discussed below.

iv. Federally Funded Research and Development Centers and National Labs

DOE/National Nuclear Security Administration (NNSA) Federally Funded Research and Development Centers (FFRDCs) and National Laboratories (NL) are eligible to apply for funding as a Subrecipient (only) but are not eligible to apply as a Prime Recipient. Non-DOE/NNSA FFRDCs and NLs are eligible to apply for funding as a Subrecipient but are not eligible to apply as a Prime Recipient.

The National Energy Technology Laboratory (NETL) is not eligible for award under this announcement and may not be proposed as a Subrecipient on another entity's application. An application that includes NETL as a Prime Recipient or Subrecipient will be considered non-responsive.

Authorization. The cognizant contracting officer for the DOE/NNSA FFRDC/NL or the non-DOE/NNSA Federal agency sponsoring the FFRDC/NL must authorize in writing the use of the FFRDC/NL on the proposed project and this authorization must be submitted with the application. The use of a FFRDC/NL must be consistent with its authority under its award and will not place the laboratory in direct competition with the domestic private sector.

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/or FEDERAL AGENCY] assigned programs at the laboratory, and will not place the laboratory in direct competition with the domestic private sector."

Value/Funding. The value of, and funding for, the FFRDC/NL portion of the work will not normally be included in the award to a successful Applicant. Usually, DOE/NNSA will fund a DOE/NNSA FFRDC/NL through the DOE field work proposal system and other FFRDC/NLs through an interagency agreement with the sponsoring agency.

Cost Share. The Applicant's cost share requirement will be based on the total cost of the project, including the Applicant's and the FFRDC/NL's portions of the effort.

FFRDC/NL Effort as a Subrecipient

The scope of work to be performed by the FFRDC/NL may not be more significant than the scope of work to be performed by the Applicant. The FFRDC/NL's effort, in aggregate, shall not exceed **20%** of the total estimated cost of the project, including the DOE share, Applicant share and the FFRDC/NL's portions of the effort.

Responsibility. The Applicant, if successful, will be the responsible authority regarding the settlement and satisfaction of all contractual and administrative issues, including but not limited to, disputes and claims arising out of any agreement between the Applicant and the FFRDC/NL.

v. Federal Entities

Federal agencies and instrumentalities (other than DOE) are eligible to apply for funding as a Subrecipient but are not eligible to apply as a Prime Recipient.

vi. Foreign Entities

Foreign entities, whether for-profit or otherwise, are eligible to apply for funding as a Prime Recipient or Subrecipient under this FOA. Other than as provided in the "Individuals" or "Domestic Entities" sections above, all Prime Recipients receiving funding under this FOA must be incorporated (or otherwise formed) under the laws of a State or territory of the United States. If a foreign entity applies for funding as a Prime Recipient, it must designate in the Full Application a subsidiary or affiliate incorporated (or otherwise formed) under the laws of a State or territory of the United States to be the Prime Recipient. The Full Application must state the nature of the corporate relationship between the foreign entity and domestic subsidiary or affiliate.

Foreign entities may request a waiver of the requirement to designate a subsidiary in the United States as the Prime Recipient in the Full Application (i.e., a foreign entity may request that it remains the Prime Recipient on an award). To do so, the Applicant must submit an explicit written waiver request in the Full Application. Appendix B lists the necessary information that must be included in a request to waive this requirement. The Applicant does not have the right to appeal DOE's decision concerning a waiver request.

In the waiver request, the Applicant must demonstrate to the satisfaction of DOE that it would further the purposes of this FOA and is otherwise in the economic interests of the United States to have a foreign entity serve as the Prime Recipient. DOE may require additional information before considering the waiver request.

vii. Incorporated Consortia

Incorporated consortia, which may include domestic and/or foreign entities, are eligible to apply for funding as a Prime Recipient or Subrecipient. For consortia incorporated (or otherwise formed) under the laws of a State or territory of the United States, please refer to “Domestic Entities” above. For consortia incorporated in foreign countries, please refer to the requirements in “Foreign Entities” above.

Each incorporated consortium must have an internal governance structure and a written set of internal rules. Upon request, the consortium must provide a written description of its internal governance structure and its internal rules to the DOE Contracting Officer.

viii. Unincorporated Consortia

Unincorporated Consortia, which may include domestic and foreign entities, must designate one member of the consortium to serve as the Prime Recipient/consortium representative. The Prime Recipient/consortium representative must be incorporated (or otherwise formed) under the laws of a State or territory of the United States. The eligibility of the consortium will be determined by the eligibility of the Prime Recipient/consortium representative under Section III of the FOA.

Upon request, unincorporated consortia must provide the DOE Contracting Officer with a collaboration agreement, commonly referred to as the articles of collaboration, which sets out the rights and responsibilities of each consortium member. This agreement binds the individual consortium members together and should discuss, among other things, the consortium’s:

- Management structure;
- Method of making payments to consortium members;
- Means of ensuring and overseeing members’ efforts on the project;
- Provisions for members’ cost sharing contributions; and
- Provisions for ownership and rights in intellectual property developed previously or under the agreement.

C. Cost Sharing

i. Cost Share Requirements

The cost share must be at least 20% of the total allowable costs for R&D projects (i.e., the sum of the Government share, including FFRDC/NL costs if applicable, and the Recipient share of allowable costs equals the total allowable cost of the project) and must come from non-Federal sources unless otherwise allowed by law. See 2 CFR part 200 as amended by 2 CFR part 910 for the applicable cost sharing requirements.

DOE understands that projects selected under this FOA may require the use of existing data. For purposes of this FOA, DOE will consider data that is commercially available at an established price to be an allowable cost under the project (either as DOE share or non-federal cost share) but DOE will not consider in-kind data (e.g., data, owned by an entity, that is not routinely sold commercially but is instead donated to the project and assigned a value) to be an allowable cost under the project, including as Recipient cost share. Estimation methods used by the Recipient to assign a value to in-kind data cannot be objectively verified by DOE and therefore will not be accepted by DOE as an allowable cost under any project selected from this FOA. Consequently, DOE will not recognize in-kind data costs in any resulting approved DOE budget.

To assist applicants in calculating proper cost share amounts, DOE has included a cost share information sheet and sample cost share calculation in Appendix A to this FOA.

ii. Legal Responsibility

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

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

The Prime Recipient is solely responsible for managing cost share contributions by the Project Team and enforcing cost share obligation assumed by Project Team members in subawards or related agreements.

iii. 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.

iv. Cost Share Types and Allowability

Every cost share contribution must be allowable under the applicable Federal cost principles, as described in Section IV Funding Restrictions. In addition, cost share must be verifiable upon submission of the Full Application.

Project Teams may provide cost share in the form of cash or in-kind contributions. Cost share may be provided by the Prime Recipient, Subrecipients, or third parties (entities that do not have a role in performing the scope of work). Any partial donation of goods or services is considered a discount and is not allowable.

Cash contributions include, but are not limited to: personnel costs, fringe costs, supply and equipment costs, indirect costs and other direct costs.

In-kind contributions are those where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. Allowable in-kind contributions include but are not limited to: the donation of volunteer time or the donation of space or use of equipment.

Project teams may use funding or property received from state or local governments to meet the cost share requirement, so long as the funding was not provided to the state or local government by the Federal Government.

The Prime Recipient may not use the following sources to meet its cost share obligations including, but not limited to:

- Revenues or royalties from the prospective operation of an activity beyond the project period;

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

Project Teams may not use the same cash or in-kind contributions to meet cost share requirements for more than one project or program.

Cost share contributions must be specified in the project budget, verifiable from the Prime Recipient's records, and necessary and reasonable for proper and efficient accomplishment of the project. As all sources of cost share are considered part of total project cost, the cost share dollars will be scrutinized under the same Federal regulations as Federal dollars to the project. Every cost share contribution must be reviewed and approved in advance by the Contracting Officer and incorporated into the project budget before the expenditures are incurred.

Applicants are encouraged to refer to 2 CFR 200.306 as amended by 2 CFR 910.130 for additional guidance on cost sharing.

Please refer to Appendix A.

v. Cost Share Verification

Applicants are required to provide written assurance of their proposed cost share contributions in their Full Applications.

Upon selection for award negotiations, applicants are required to provide additional information and documentation regarding their cost share contributions.

vi. Cost Share Contributions by FFRDCs

Because FFRDCs and NLs are funded by the Federal Government, costs incurred by FFRDCs and NLs generally may not be used to meet the cost share requirement.

FFRDCs and NLs may contribute cost share only if the contributions are paid directly from the contractor's Management Fee or another non-Federal source. In such instance, the FFRDC and NLs must certify in writing that the cost share comes from non-Federal sources.

APPLICATIONS WHICH FAIL TO MEET THE “MINIMUM COST SHARE CONTRIBUTION OF AWARD” WILL BE CONSIDERED NONCOMPLIANT. DOE WILL NOT REVIEW OR CONSIDER NONCOMPLIANT APPLICATIONS.

D. Compliance Criteria

All submitted information and documents must meet all Compliance Criteria listed below or they will be considered noncompliant. DOE will not review or consider noncompliant submissions that were: submitted through means other than the instructions specified herein; submitted after the applicable deadline; and/or submitted incomplete. DOE will not extend the submission deadline for applicants that fail to submit required information due to server/connection congestion.

Full Applications are deemed compliant if:

- The Full Application complies with the content and form requirements in Section IV.B of the FOA;
- The application does not exceed the “Maximum DOE Share per Award” in Section II.C.i. or the maximum page limits in Section IV.B.; and
- The Applicant successfully uploaded all required documents and clicked the “Submit” button in Grants.gov by the deadline stated in the FOA.

E. Responsiveness Criteria

A preliminary review of all submitted documents and information is performed to determine if the submissions are responsive to the FOA requirements. All submitted information and documents must meet all of the Responsiveness Criteria listed below to be eligible for review.

Full Applications are deemed responsive if:

- The application meets the technical requirements of this FOA as described in the “Objectives/Areas of Interest” contained in Section I.C and “Applications Specifically Not of Interest” contained in Section I.D; and
- The Applicant/application meets the Eligibility Criteria in Section III of the FOA.

Only compliant/responsive applications will be eligible for a comprehensive merit review.

F. Number of Submittals Eligible for Review

Applicants may submit multiple applications under each AOI of this FOA; **HOWEVER**, applicants may not submit duplicate applications under multiple AOIs. Put simply, each submitted application should be distinct and tailored to the specific AOI.

G. Felony Convictions and Tax Liabilities

Corporate Felony Conviction and Federal Tax Liability Representations (MARCH 2014)

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

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

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

For purposes of these representations the following definition applies: A Corporation includes any entity that has filed articles of incorporation in any of the 50 states, the District of Columbia, or the various territories of the United States [but not foreign corporations]. It includes both for-profit and non-profit organizations.

H. Questions Regarding Eligibility

DOE will not make eligibility determinations for potential applicants prior to the date on which applications to this FOA must be submitted. The decision whether to submit an application in response to this FOA lies solely with the Applicant.

IV. Application and Submission Information

A. Form and Content Requirements

All submissions must conform to the following form and content requirements, including maximum page limits (described below) and must be submitted as specifically stated. **Applications which do not meet the form and content requirements listed below will be considered noncompliant (See Section III Compliance Criteria). DOE will not review or consider noncompliant applications.** DOE will not review or consider submissions submitted through means other than specifically stated in the FOA, submissions submitted after the applicable deadline, and incomplete submissions. **DOE will not extend deadlines for applicants who fail to submit required information and documents due to server/connection congestion.**

The Full Application must conform to the following requirements:

- Each must be submitted in Adobe PDF format unless stated otherwise.
- Each must be written in English.
- All pages must be formatted to fit on 8.5 x 11-inch paper with margins not less than one inch on every side. Use Times New Roman typeface, a black font color, and a font size of 11 point or larger (except in figures or tables, which may be 10-point font). A symbol font may be used to insert Greek letters or special characters, but the font size requirement still applies. References must be included as footnotes or endnotes in a font size of 10 or larger. Footnotes and endnotes are counted toward the maximum page requirement.
- Each submission must not exceed the specified maximum page limit, including cover page, references, charts, graphs, data, maps, and photographs when printed using the formatting requirements set forth above and **double** spaced. **Applications that exceed the maximum page limits indicated below will be considered noncompliant and DOE will not review or consider the application.**

Applicants are responsible for meeting the submission deadline. Applicants are strongly encouraged to submit their Full Applications at least 48 hours in advance of the submission deadline. Under normal conditions (i.e., at least 48 hours in advance of the submission deadline), applicants should allow at least 1 hour to submit a Full Application. Once the Full Application is submitted, applicants may revise or update that submission until the expiration of the applicable deadline. If changes are made, the Applicant must resubmit the Full Application, before the applicable deadline.

DOE urges applicants to carefully review their Full Applications and to allow sufficient time for the submission of required information and documents. All Full Applications that pass the initial eligibility review will undergo comprehensive technical merit review according to the criteria identified in Section V.A of the FOA.

B. Full Applications

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

i. Application Package

Application forms and instructions are available at www.grants.gov.

ii. Content and Form of Full Application

DOE will not review or consider ineligible Full Applications (see Section III of the FOA).

Each Full Application must be limited to a **single** AOI. Concepts or technologies unrelated to the specific AOI should not be consolidated into a single Full Application.

Full Applications must conform to the following requirements:

Submission	Components	Format	File Name
Full Application (PDF, unless stated otherwise)	SF-424	Form	N/A
	Project/Performance Site Location(s)	Form	N/A
	Project Narrative (See chart below)	PDF	Project.pdf
	Summary for Public Release (1-page limit)	PDF	Summary.pdf
	Project Management Plan	PDF	PMP.pdf
	Resume	PDF	Resume.pdf
	SF424a Budget Information – Non-Construction Programs File	Microsoft Excel	SF424A.xls or .xlsx
	Budget Justification – SEE DETAILED INSTRUCTIONS BELOW	Microsoft Excel	RecipientBudget Justification.xls or .xlsx

	Subaward Budget Justification, if applicable – SEE DETAILED INSTRUCTIONS BELOW	Microsoft Excel	Subawardee_name BudgetJustification.xls or.xlsx
	Budget for DOE/NNSA FFRDC/NL, if applicable	PDF	Use up to 10 letters of the FFRDC/NL name plus FWP as the file name (e.g., lanlFWP.pdf or anlFWP.pdf)
	Authorization from cognizant Contracting Officer for non-DOE FFRDC/NL, if applicable	PDF	Use up to 10 letters of the FFRDC/NL name plus FFRDC as the file name (e.g. lincolnFFRDC.pdf)
	Environmental Questionnaire	PDF	Env.pdf
	Commitment Letters from Third Parties Contributing to Cost Share and host site to be used in the FEED Study, if applicable	PDF	CLTP.pdf
	SF-LLL Disclosure of Lobbying Activities, if applicable	Form	N/A
	Foreign Entity waiver request, if applicable	PDF	FN_Waiver.pdf
	Performance of Work in the United States waiver request, if applicable	PDF	PerformanceofWork_Waiver.pdf

Note: The maximum file size that can be uploaded to the Grants.gov website is 10MB. Files in excess of 10MB cannot be uploaded, and hence cannot be submitted for review. If a file exceeds 10MB but is still within the maximum page limit specified in the FOA it must be broken into parts and denoted to that effect. For example:

Project Part 1
Project Part 2, etc.

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 component is listed below.

1. SF-424: Application for Federal Assistance

Complete the SF 424 form first to populate data in other forms. Complete all required fields in accordance with the instructions on the form. The list of certifications and assurances in Field 21 can be found at <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms>, under Certifications and Assurances.

2. Project/Performance Site Location(s)

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

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

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

3. Other Attachments Form

Submit the following files with your application and attach them to the Other Attachments Form. Click on "Add Mandatory Other Attachment" to attach the Project Narrative. Click on "Add Optional Other Attachment," to attach the other files.

a. Project Narrative File – Mandatory Other Attachment

The Project Narrative File must be submitted in Adobe PDF format. The project narrative must not exceed **35** pages, including cover page, table of contents, footnotes/endnotes, charts, graphs, maps, photographs, and other pictorial presentations, when printed using standard 8.5" by 11" paper with 1-inch margins (top, bottom, left, and right) **double** spaced. The font must not be smaller than 11 point. The **Current and Pending Support, Identification of Potential Conflicts of Interest or Bias in Selection of Reviewers, and Bibliography** sections are **NOT** included in the project narrative page limitation. Do not include any Internet addresses (URLs) that provide information necessary to review the application. See Section VIII for instructions on how to mark proprietary application information.

SUBMISSIONS THAT EXCEED THE MAXIMUM PAGE LIMITS INDICATED ABOVE WILL BE CONSIDERED NONCOMPLIANT AND DOE WILL NOT REVIEW OR CONSIDER THE SUBMISSION.

Save the information in a single file named "Project.pdf," and click on "Add Mandatory Other Attachment" to attach.

The project narrative must include:

SECTION/PAGE LIMIT (if applicable)	DESCRIPTION
Cover Page (1-page maximum)	The cover page should include the project title, the specific FOA Area of Interest being addressed, the Applicant's name, and the names of all team member organizations. In addition, provide the Applicant's technical and business points of contact along with e-mail addresses and telephone numbers. The cover page should also include the federal and non-federal share of costs associated with each team member's proposed effort. Applicants should ensure the cost information is consistent with the submitted budget justification(s).
Table of Contents	Applicant to capture, at a minimum, all of the required sections identified in this table.
Project Objectives	This section should provide a clear, concise statement of the specific objectives/aims of the proposed project.
Merit Review Criterion Discussion	The section should be formatted to address each of the merit review criterion and sub-criterion listed in Section V.A. Provide sufficient information so that reviewers will be able to evaluate the application in accordance with these merit review criteria. DOE/NNSA WILL EVALUATE AND CONSIDER ONLY THOSE APPLICATIONS THAT ADDRESS SEPARATELY EACH OF THE MERIT REVIEW CRITERION AND SUB-CRITERION.
Statement of Project Objectives	<p>The project narrative must contain a single, detailed Statement of Project Objectives that addresses how the project objectives will be met. The Statement of Project Objectives must contain a clear, concise description of all activities to be completed during project performance. It is therefore required that it shall not contain proprietary or confidential business information.</p> <p>The Statement of Project Objectives is generally less than 10 pages in total for the proposed work. Applicants shall prepare the Statement of Project Objectives in the format provided in Appendix C of the FOA.</p>
Relevance and Outcomes/Impacts	This section should explain the relevance of the effort to the objectives in the program announcement and the expected outcomes and/or impacts. The justification for the proposed project should include a clear statement of the importance of the project in terms of the utility of the outcomes and the target community of beneficiaries.
Roles of Participants	For multi-organizational or multi-investigator projects, describe the roles and the work to be performed by each participant/investigator, business agreements between the Applicant and participants, and how the various efforts will be integrated and managed.

Multiple Principal Investigators	<p>The Applicant, whether a single organization or team/partnership/consortium, must indicate if the project will include multiple PIs. This decision is solely the responsibility of the Applicant. If multiple PIs will be designated, the application must identify the Contact PI/Project Coordinator and provide a "Coordination and Management Plan" that describes the organization structure of the project as it pertains to the designation of multiple PIs. This plan should, at a minimum, include:</p> <ul style="list-style-type: none"> - process for making decisions on scientific/technical direction; - publications; - intellectual property issues; - communication plans; - procedures for resolving conflicts; and - PIs' roles and administrative, technical, and scientific responsibilities for the project.
Facilities and Other Resources Appendix (not included in the page limitation)	<p>Identify the facilities (e.g., office, laboratory, computer, etc.) to be used at each performance site listed and, if appropriate, indicate their capacities, pertinent capabilities, relative proximity, and extent of availability to the project. Describe only those resources that are directly applicable to the proposed work. Provide any information describing the other resources available to the project such as machine and electronics shops.</p>
Equipment Appendix (not included in the page limitation)	<p>List important items of equipment already available for this project and, if appropriate, note the location and pertinent capabilities of each. If you are proposing to acquire equipment, describe comparable equipment, if any, already at your organization and explain why it cannot be used.</p>
Current and Pending Support Appendix (not included in the page limitation)	<p>Provide a list of all current and pending support (both Federal and non-Federal) for the Project Director/Principal Investigator(s) (PD/PI) and senior/key persons, including Subrecipients, for ongoing projects and pending applications. 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.</p>
Identification of Potential Conflicts of Interest or Bias in Selection of Reviewers Appendix (not included in the page limitation)	<p>Provide the following information in this section:</p> <ul style="list-style-type: none"> ▪ Collaborators and Co-editors: List in alphabetical order all persons, including their current organizational affiliation, who are, or who have been, collaborators or co-authors with you on a research project, book or book article, report, abstract, or paper during the 48 months preceding the submission of this application. Also, list any individuals who are currently, or have been, co-editors with you on a special issue of a journal, compendium, or conference proceedings during the 24 months preceding the submission of this application. If there are no collaborators or co-editors to report, state "None."

	<ul style="list-style-type: none"> Graduate and Postdoctoral Advisors and Advisees: List the names and current organizational affiliations of your graduate advisor(s) and principal postdoctoral sponsor(s) during the last 5 years. Also, list the names and current organizational affiliations of your graduate students and postdoctoral associates.
Bibliography Appendix (not included in the page limitation)	If applicable: Provide a bibliography for any references cited in the Project Narrative section. This section must include only bibliographic citations.
Vendor Qualification Sheet Appendix (not included in the page limitation)	<p>For each vendor, provide:</p> <ol style="list-style-type: none"> 1. Name and address; 2. Years in business; 3. Number of Employees; 4. Key personnel proposed for this project (resumes included above); 5. Company certifications and standards as related to this project; 6. Scope of work assigned referencing task/subtask numbers; 7. Summary of the pertinent qualifications with respect to the scope of work assigned in the proposed project; and 8. Identify and provide an overview of recent projects (no more than 5) in which similar effort was conducted.

b. Project Summary for Public Release File

The project summary/abstract must contain a summary of the proposed activity suitable for dissemination to the public. It should be a self-contained document that identifies the name of the Applicant, the project director/principal investigator(s), the project title, the objectives of the project, a description of the project, including methods to be employed, the potential impact of the project (i.e., benefits, outcomes), and major participants (for collaborative projects). This document must not include any proprietary or sensitive business information as the DOE may make it available to the public if an award is made. The project summary must not exceed one (1) page when printed using standard 8.5" by 11" paper with 1" margins (top, bottom, left and right) **double** spaced with font no smaller than 11 point. Save this information in a file named "Summary.pdf," and click on "Add Optional Other Attachment" to attach.

c. Project Management Plan

The Project Management Plan (PMP) must not exceed 10 pages when printed using standard 8.5" by 11" paper with 1" margins (top, bottom, left and right) **double** spaced with font no smaller than 11 point. Applicants shall prepare the PMP in the format provided in Appendix D of the FOA.

Save this information in a file named "PMP.pdf," and click on "Add Optional Other Attachment" to attach.

d. Resume File

Provide a resume for each key person proposed, including subawardees and consultants if they meet the definition of key person. A key person is any individual who contributes in a substantive, measurable way to the execution of the project. Save all resumes in a single file named "Resume.pdf" and click on "Add Optional Other Attachment" to attach. The biographical information for each resume must not exceed 2 pages when printed on 8.5" by 11" paper with 1-inch margins (top, bottom, left, and right) **double** spaced with font no smaller than 11 point and should include the following information, if applicable:

- Education and Training. Undergraduate, graduate and postdoctoral training, provide institution, major/area, degree and year.
- Research and Professional Experience. Beginning with the current position list, in chronological order, professional/academic positions with a brief description.
- Publications. (Researchers/Technology Developers) Provide a list of up to 5 publications most closely related to the proposed project. For each publication, identify the names of all authors (in the same sequence in which they appear in the publication), the article title, book or journal title, volume number, page numbers, year of publication, and website address if available electronically.
- Project Experience. (Vendors) Provide a list of up to 5 most recent projects with summary of effort that demonstrates that the capabilities exist for the effort outlined in the Application.
- Patents, copyrights, and software systems developed may be provided in addition to or substituted for publications.

- Synergistic Activities. List no more than 5 professional and scholarly activities related to the effort proposed.

e. SF 424A Budget Information – Non-Construction Programs (SF424) File

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

You may request funds under any of the Object Class Categories as long as the item and amount are necessary to perform the proposed work, meet all the criteria for allowability under the applicable Federal cost principles, and are not prohibited by the funding restrictions in this announcement (See Section IV Funding Restrictions). Save the information in a single file named "SF424A.xls or.xlsx," and click on "Add Optional Other Attachment" to attach.

f. Budget Justification File

Applicants are required to provide a detailed budget justification for the project as a whole, including all work to be performed by the Applicant and its Subrecipients and Contractors, and provide all requested documentation (e.g., a Federally-approved rate agreement, vendor quotes). Applicants should include costs associated with required annual audits and incurred cost proposals in their proposed budget documents.

A Budget Justification Workbook has been embedded below for use and to describe the level of detail required in the budget justification. Although the data requested is mandatory, the use of the budget justification workbook is not.

The "Instructions and Summary" included with the Budget Justification Workbook will auto-populate as the Applicant enters information into the Workbook. Applicants must carefully read the "Instructions and Summary" tab provided within the Budget Justification Workbook.

In addition, Applicants must carefully read and note each “Instructions” Summary contained within each individual tab of the Budget Justification Workbook. **As stipulated within the Budget Justification Workbook, all direct costs must be identified by specific task. All cost should include the basis of cost and justification of need, as applicable. Of specific note is the necessity to identify personnel costs for each individual proposed for all tasks to which they are assigned. Note EXAMPLES provided within each tab for further clarification.**

DOE understands that projects selected under this FOA may require the use of existing data. For purposes of this FOA, DOE will consider data that is commercially available at an established price to be an allowable cost under the project (either as DOE share or non-federal cost share) but DOE will not consider in-kind data (e.g., data, owned by an entity, that is not routinely sold commercially but is instead donated to the project and assigned a value) to be an allowable cost under the project, including as Recipient cost share. Estimation methods used by the Recipient to assign a value to in-kind data cannot be objectively verified by DOE and therefore will not be accepted by DOE as an allowable cost under any project selected from this FOA. Consequently, DOE will not recognize in-kind data costs in any resulting approved DOE budget.

It is understandable, and expected, that the majority of the team members required to complete the scope will be vendors/contractors per the instructions on ‘Tab f. Contractual’ of the following spreadsheet. For the purposes of the application, a vendor quote for entities under \$250,000 shall include a Summary Table of Budget Categories as shown on ‘Tab Instructions and Summary’, at a minimum. For entities estimating effort of \$250,000 or more, similar information as requested in the spreadsheet shall be provided. In both cases, if the team member is part of a successful application, supporting documentation needs to be readily available during the negotiation of award phase.

Save the Budget Justification Workbook in a single file named “RecipientBudgetJustification.xls or.xlsx” and click on “Add Optional Other Attachment” to attach.



g. Subaward Budget Justification (if applicable)

Applicants must provide a separate Detailed Budget Justification for each subawardee that is expected to perform work estimated to be more than \$100,000 or 50 percent of the total work effort (whichever is less). A template to provide the Detailed Budget Justification has been embedded below. Although the data requested is mandatory, the use of the budget justification workbook is not. The level of detail to be included in the subaward budget justification (if applicable) must be commensurate with that provided by the Prime Recipient. Save the information in a single file named “Subawardee_name BudgetJustification.xls or.xlsx” and click on “Add Optional Other Attachment” to attach.

It is understandable, and expected, that the majority of the team members required to complete the scope will be vendors/contractors per the instructions on ‘Tab F. Contractual’ of the following spreadsheet. For the purposes of the application, a vendor quote for entities under \$250,000 shall include a Summary Table of Budget Categories as shown on ‘Tab Instructions and Summary’, at a minimum. For entities estimating effort of \$250,000 or more, similar information as requested in the spreadsheet shall be provided. In both cases, if the team member is part of a successful application, supporting documentation needs to be readily available during the negotiation of award phase.



h. Budget for DOE/NNSA FFRDC/NLs, (if applicable)

If a DOE/NNSA FFRDC/NL is to perform a portion of the work, you must provide a DOE Field Work Proposal (FWP) in accordance with the requirements in DOE Order 412.1 Work Authorization System. This order and the DOE FWP form are available at <https://www.directives.doe.gov/directives-documents/0412.1-BOrder-A-admchg1>. Use up to 10 letters of the FFRDC name plus FWP as the file name (e.g., lanlFWP.pdf or anlFWP.pdf), and click on "Add Optional Other Attachment" to attach.

i. Authorization for non-DOE/NNSA FFRDCs/NLs (if applicable)

The Federal agency sponsoring the FFRDC must authorize in writing the use of the FFRDC on the proposed project and this authorization must be submitted with the application. The use of a FFRDC must be consistent with the contractor's authority under its award. In addition, a summary of the work to be performed and an estimate of cost should also be provided. Use up to 10 letters of the FFRDC name plus FFRDC as the file name (e.g., lincolnFFRDC.pdf), and click on "Add Optional Other Attachment" to attach.

j. Environmental Questionnaire

The Applicant must submit an environmental questionnaire providing for the work of the entire project. The Applicant is also responsible for submitting a separate environmental questionnaire for each proposed Subrecipient performing at a different location. The environmental questionnaire is available at http://www.netl.doe.gov/File%20Library/Business/forms/451_1-1-3.pdf. Save the questionnaire in a single file named "Env.pdf" (or "Env-FILL IN TEAM MEMBER.pdf" if more than questionnaire is submitted) and click on "Add Optional Other Attachment" to attach.

NOTE: If selected for award and if a Subrecipient's location is not known at the time of application, a subsequent environmental questionnaire will be needed prior to them beginning work at an alternate location.

k. Commitment Letters from Third Parties Contributing to Cost Share (if applicable)

If a third party, (i.e., a party other than the organization submitting the application) proposes to provide all or part of the required cost sharing, the Applicant must include a letter from the third party stating that it is committed to providing a specific minimum dollar amount of cost sharing. The letter should also identify the proposed cost sharing (e.g., cash, services, and/or property) to be contributed. Letters must be signed by the person authorized to commit the expenditure of funds by the entity and be provided in a PDF format. Save this information in a single file named "CLTP.pdf" and click on "Add Optional Other Attachment" to attach.

l. SF-LLL: Disclosure of Lobbying Activities (if applicable)

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

If applicable, complete SF- LLL. Applicability: If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the grant/cooperative agreement, you must complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying."

m. Waiver Requests: Foreign Entities and Performance of Work in the United States (if applicable)

1) Foreign Entity Participation:

As set forth in Section III, all Prime Recipients receiving funding under this FOA must be incorporated (or otherwise formed) under the laws of a State or territory of the United States. To request a waiver of this requirement, the Applicant must submit an explicit waiver request in the Full Application. See Appendix B for a list of the necessary information that must be included in a request to waive this requirement.

Save the waiver request(s) in a single PDF file titled "FN_Waiver" and click on "Add Optional Other Attachment" to attach.

2) Performance of Work in the United States

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

The Applicant must demonstrate to the satisfaction of DOE that a waiver would further the purposes of the FOA and is in the economic interests of the United States. DOE may require additional information before considering a waiver request. Save the waiver request(s) in a single PDF file titled "PerformanceofWork_Waiver" and click on "Add Optional Other Attachment" to attach. The Applicant does not have the right to appeal DOE's decision concerning a waiver request.

C. Post-Selection Information Requests

If selected for negotiations leading to an award, submission of a Data Management Plan (See Appendix E for guidance) will be required. In addition, DOE reserves the right to request additional or clarifying information for any reason deemed necessary, including but not limited to:

- Indirect cost information;
- Other budget information;
- Name and phone number of the Designated Responsible Employee for complying with national policies prohibiting discrimination (See 10 CFR 1040.5);
- Listing of Protected Data and Unlimited Rights Data, if applicable;
- Representation of Limited Rights Data and Restricted Software, if applicable;
- Updated Commitment Letters from Third Parties Contributing to Cost Share, if applicable;

- Updated Environmental Questionnaire, if applicable; and
- Foreign National Involvement.

D. Submission Dates and Times

Full Applications must be received no later than the time/dates provided on the cover page of this FOA. **APPLICATIONS RECEIVED AFTER THE DEADLINE WILL NOT BE REVIEWED OR CONSIDERED FOR AWARD.**

E. Intergovernmental Review

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

F. Other Submission and Registration Requirements

i. Registration Process

There are several one-time actions before submitting an application in response to this FOA, and it is vital that applicants address these items as soon as possible. Some may take several weeks, and failure to complete them could interfere with an applicant's ability to apply to this FOA, or to meet the negotiation deadlines and receive an award if the application is selected. These requirements are provided immediately following the FOA cover page or modification summary, if applicable.

ii. Where to Submit

You cannot submit an application through Grants.gov unless you are registered. Please read the registration requirements carefully and start the process immediately. **Applications submitted via e-mail will not be accepted.**

Grants.gov applicants can apply online using Workspace. Workspace is a shared, online environment where members of a grant team may simultaneously access and edit different webforms within an application. For each funding opportunity announcement (FOA), you can create individual instances of a workspace.

Below is an overview of submitting an application using Workspace on Grants.gov. For access to complete instructions on how to apply for opportunities using Workspace, refer to:

<https://www.grants.gov/web/grants/applicants/workspace-overview.html>

1) *Create a Workspace*: Creating a workspace allows you to complete it online and route it through your organization for review before submitting.

2) *Complete a Workspace*: Add participants to the workspace to work on the application together, complete all the required forms online or by downloading PDF versions, and check for errors before submission. The Workspace progress bar will display the state of your application process as you apply. As you apply using Workspace, you may click the blue question mark icon near the upper-right corner of each page to access context-sensitive help.

a. *Adobe Reader*: If you decide not to apply by filling out webforms you can download individual PDF forms in Workspace. The individual PDF forms can be downloaded and saved to your local device storage, network drive(s), or external drives, then accessed through Adobe Reader.

NOTE: Visit the Adobe Software Compatibility page on Grants.gov to download the appropriate version of the software at:

<https://www.grants.gov/web/grants/applicants/adobe-software-compatibility.html>

b. *Mandatory Fields in Forms*: In the forms, you will note fields marked with an asterisk and a different background color. These fields are mandatory fields that must be completed to successfully submit your application.

c. *Complete SF-424 Fields First*: The forms are designed to fill in common required fields across other forms, such as the Applicant name, address, and DUNS Number. Once it is completed, the information will transfer to the other forms.

3) *Submit a Workspace*: An application may be submitted through workspace by clicking the Sign and Submit button on the Manage Workspace page, under the Forms tab. Grants.gov recommends submitting your application package at least 24-48 hours prior to the close date to provide you with time to correct any potential technical issues that may disrupt the application submission.

4) *Track a Workspace Submission*: After successfully submitting a workspace application, a Grants.gov Tracking Number (GRANTXXXXXXX) is automatically assigned to the application. The number will be listed on the Confirmation page that is generated after submission. Using the tracking number, access the Track My Application page under the Applicants tab or the Details tab in the submitted workspace.

For additional training resources, including video tutorials, refer to:
<https://www.grants.gov/web/grants/applicants/applicant-training.html>

Applicant Support: Grants.gov provides applicants 24/7 support via the toll-free number 1-800-518-4726 and email at support@grants.gov. For questions related to the specific grant opportunity, contact the number listed in the application package of the grant you are applying for.

If you are experiencing difficulties with your submission, it is best to call the Grants.gov Support Center and get a ticket number. The Support Center ticket number will assist the DOE with tracking your issue and understanding background information on the issue.

iii. Full Application Proof of Timely Submissions

Proof of timely submission is automatically recorded by Grants.gov. An electronic date/time stamp is generated within the system when the application is successfully received by Grants.gov. The Applicant with the AOR role who submitted the application will receive an acknowledgement of receipt and a tracking number (GRANTXXXXXXX) from Grants.gov with the successful transmission of their application. The Applicant with the AOR role will also receive the official date/time stamp and Grants.gov Tracking number in an email serving as proof of their timely submission. The Grants.gov Support Center reports that some applicants end the transmission because they think that nothing is occurring during the transmission process. Please be patient and give the system time to process the application.

When DOE successfully retrieves the application from Grants.gov, and acknowledges the download of submissions, Grants.gov will provide an electronic acknowledgment of receipt of the application to the email address of the Applicant with the AOR role who submitted the application. Again, proof of timely submission shall be the official date and time that Grants.gov receives your application. Applications received by Grants.gov after the established due date for the FOA will be considered non-compliant.

G. Funding Restrictions

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.

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

H. Pre-Award Costs

Recipients may charge to an award resulting from this announcement pre-award costs that were incurred within the ninety (90) calendar day period immediately preceding the effective date of the award, if the costs are allowable in accordance with the applicable Federal cost principles referenced in 2 CFR part 200 as amended by 2 CFR part 910 [DOE Financial Assistance Regulation]. Recipients must obtain the prior approval of the contracting officer for any pre-award costs that are for periods greater than this 90-day calendar period.

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

I. Pre-Award Costs Related to National Environmental Policy Act (NEPA) Requirements

DOE's decision whether and how to distribute Federal funds under this FOA is subject to NEPA. Applicants should carefully consider and should seek legal counsel or other expert advice before taking any action related to the proposed project that would have an adverse effect on the environment or limit the choice of reasonable alternatives prior to DOE completing the NEPA review process.

DOE does not guarantee or assume any obligation to reimburse costs where the Prime Recipient incurred the costs prior to receiving written authorization from the Contracting Officer. If the Applicant elects to undertake activities that may have an adverse effect on the environment or limit the choice of reasonable alternatives prior to receiving such written authorization from the Contracting Officer, the Applicant is doing so at risk of not receiving Federal funding and such costs may not be recognized as allowable cost share. Likewise, if a project is selected for negotiation of award, and the Prime Recipient elects to undertake activities that are not authorized for Federal funding by the Contracting Officer in advance of DOE completing a NEPA review, the Prime Recipient is doing so at risk of not receiving Federal Funding and such costs may not be recognized as allowable cost share.

Nothing contained in the pre-award cost reimbursement regulations or any pre-award costs approval letter from the Contracting Officer override these NEPA requirements to obtain the written authorization from the Contracting Officer prior to taking any action that may have an adverse effect on the environment or limit the choice of reasonable alternatives.

J. Performance of Work in the United States

The Recipient agrees that at least **80%** (percent) of the direct labor cost for the project (including Subrecipient labor) shall be incurred in the United States, unless the Recipient can demonstrate to the satisfaction of the DOE that the United States economic interest will be better served through a greater percentage of the work being performed outside of the United States.

Applicants and Prime Recipients may request a waiver of this requirement. Applicants must include a written waiver request in the Full Application. Prime Recipients must submit any waiver requests in writing to the DOE Contracting Officer for this FOA. The DOE Contracting Officer has discretion to waive this requirement if he/she determines that it will further the purposes of this FOA and is otherwise in the best interest of the Government. If you would like to request a waiver see Full Application Package in Section IV and Appendix B.

K. Foreign Travel

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

L. Equipment and Supplies

To the greatest extent practicable, all equipment and supplies purchased with funds made available under this FOA should be American-made. This requirement does not apply to used or leased equipment.

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

V. Application Review Information

A. Review Criteria

i. Compliance/Responsiveness Review

Prior to a comprehensive merit evaluation, DOE will (1) perform a compliance review to determine that submissions are timely, and the information required by the FOA has been submitted (form and content requirements); and (2) perform a responsiveness review to determine that the Applicant is eligible for an award and the proposed project is responsive to the objectives of the FOA. Applications that fail the compliance and responsiveness review will not be forwarded for merit review and will be eliminated from further consideration.

ii. Merit Review Criteria

The following evaluation criteria will be utilized by the Technical Evaluation Committee and Federal Merit Review Panel members in conducting their evaluations of applications subjected to comprehensive merit review.

Merit Review Criterion 1: Scientific and Technological Merit (35%)

- Thoroughness of the description of the applicant's proposed technology. Adequacy of the discussion of the advantages of the proposed technology compared to other competing technologies. The likelihood that development of this concept will result in a successful deployment at proposed scale.
- Soundness and adequacy, of the data provided substantiating readiness of the technology for proposed scale. Thoroughness of the discussion justifying the carbon capture technology has achieved at least a TRL 6 in the AOI selected.
- Adequacy and completeness of the discussion of the Environmental Health and Safety (EH&S) implications of the proposed technology. Sufficiency of the discussion regarding air and water emissions, solid waste streams, and potential environmental impacts of the technology including toxicological effects and hazards of emissions and waste streams.

- Description and thoroughness of the applicant description and analysis of the cost of capture. Description of the applicant's efforts to reduce the cost of capture by the application of state of the art gas separation materials and designs to reduce capital costs of the facility.
- The extent to which the proposed FEED study will allow the DOE to better understand both capital and operating costs thereby enabling DOE to better design its R&D program to reduce those costs.

Merit Review Criterion 2: Technical Approach and Understanding (25%)

- Adequacy and feasibility of the applicant's discussion in its approach to achieving the objectives of the FOA:
 - Overall soundness of the approach to completing the FEED for the commercial-scale, post-combustion CO₂ capture system including balance of plant. Completeness of the engineering design to include all necessary engineering disciplines, and completeness of the overall scope of the design including all systems required to determine an accurate cost for a full retrofit. Soundness of the design approach for preparing an accurate cost estimate.
 - Soundness and feasibility of the proposed approach to improve efficiency or optimize the plant to reduce the overall parasitic power requirements of the capture system.
 - Adequacy and feasibility of the approach to mitigating any EH&S concerns, and to managing air and water emissions as well as solid and hazardous waste. Soundness and completeness of the proposed hazard and operability study (HAZOP) and constructability reviews. Soundness and adequacy of the approach to identifying permits required, and completing environmental reviews, and identifying internal or corporate approvals necessary to initiate construction.
- Feasibility, appropriateness, rationale, and completeness of the proposed Statement of Project Objectives (SOPO), such that all necessary tasks and deliverables of the FEED are identified and there is a logical progression of work in completing these tasks.
- Thoroughness of the discussion regarding the required deliverables (specific project definition, detailed design, scopes of work, material purchasing and construction schedules, cost for project execution, and subsurface, structural, and environmental permitting requirements.)
- The adequacy and completeness of the Project Management Plan (PMP) in establishing baselines (technical scope, budget, schedule) and in managing project performance relative to those baselines; defining the actions that will be taken when these baselines must be revised; and identification of project risks and strategies for mitigation.

Merit Review Criterion 3: Technical and Management Capabilities (40%)

- Demonstrated experience of the applicant and partnering organizations (e.g., partners, host site, subcontractors, and consultants) in the technology areas addressed in the application and in successfully completing FEED projects of similar size, scope, and complexity.
- Credentials, capabilities, and experience of key personnel of the applicant and partnering organizations, particularly with regards commercializing technologies and conducting FEED studies on coal and natural gas power plants.
- Clarity and likely effectiveness of the project organization, including subrecipients or partners, to successfully complete the project.
- Adequacy and availability of proposed personnel, facilities, and equipment to perform project tasks.
- Adequacy of the host generation unit that will be the focus of the FEED study for:
 - Level of commitment demonstrated by the host site.
 - Use as the basis for the capture system design.
 - Availability of the generating unit for participation in the proposed project.
 - Availability of data and operating information as well as physical access to the plant by the applicant (applicable to Retrofit only).

B. Other Selection Factors**i. Program Policy Factors**

In addition to the above criteria, the Selection Official may consider the following program policy factors in determining which Full Applications to select for award negotiations:

- It may be desirable to select for award a project, or group of projects, that represent a diversity of technical approaches and methods under this FOA or the overall program.
- It may be desirable to support complementary and/or similar projects which, when taken together, will best achieve the program's research goals and objectives.
- It may be desirable that different kinds and sizes of organizations be selected for award in order to provide a balanced programmatic effort and a variety of technical perspectives under this FOA or the overall program.

- In order to best achieve the program’s research goals and objectives, it may be desirable to select for award a project or group of projects with a broad or specific geographic distribution under this FOA or the overall program.
- It may be desirable to select a project, or group of projects, if such a selection will optimize use of available funds.
- It may be desirable to select a project, or group of projects, if such a selection presents lesser schedule risk, lesser budget risk, lesser technical risk, and/or lesser environmental risks required to achieve commercialization of the technology.

C. Other Review Requirements

i. Risk Assessment

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.

In addition to this review, DOE must 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.

ii. Reporting Matters Related to Recipient Integrity and Performance

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

D. Review and Selection Process

i. Merit Review

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

ii. Selection

The Selection Official may consider the merit review, program policy factors, and the amount of funds available in arriving at selections for this FOA.

iii. Discussions and Award

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

VI. Award Administration Information

A. Notices

i. Ineligible Submissions

Ineligible Full Applications will not be further reviewed or considered for award. The Contracting Officer will send a notification letter by email to the technical and administrative points of contact designated by the Applicant in Grants.gov. The notification letter will state the basis upon which the Full Application is ineligible and not considered for further review.

ii. Full Application Notifications

DOE will notify applicants of its determination via a notification letter by email to the technical and administrative points of contact designated by the Applicant in Grants.gov. The notification letter will inform the Applicant whether or not its Full Application was selected for award negotiations. Alternatively, DOE may notify one or more applicants that a final selection determination on particular Full Applications will be made at a later date, subject to the availability of funds or other factors.

1. Successful Applicants

Receipt of a notification letter selecting a Full Application for award negotiations does not authorize the Applicant to commence performance of the project. If an application is selected for award negotiations, it is not a commitment by DOE to issue an award.

Applicants do not receive an award until award negotiations are complete and the Contracting Officer executes the funding agreement, accessible by the Prime Recipient in FedConnect.

The award negotiation process may take up to 60 days. Applicants must designate a primary and a backup point-of-contact in Grants.gov with whom DOE will communicate to conduct award negotiations. The Applicant must be responsive during award negotiations (i.e., provide requested documentation) and meet the negotiation deadlines. If the Applicant fails to do so or if award negotiations are otherwise unsuccessful, DOE will cancel the award negotiations and rescind the Selection. DOE reserves the right to terminate award negotiations at any time for any reason.

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

2. Unsuccessful Applicants

DOE shall promptly notify in writing each Applicant whose application has not been selected for negotiation or award. This notice will explain why the application was not selected.

3. Alternate Selection Determinations

In some instances, an Applicant may receive a notification that its application was not selected for award and DOE designated the application to be an alternate. As an alternate, DOE may consider the Full Application for Federal funding in the future. A notification letter stating the Full Application is designated as an alternate does not authorize the Applicant to commence performance of the project. DOE may ultimately determine to select or not select the Full Application for award negotiations.

4. 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; (5) National Policy Assurances To Be Incorporated As Award Terms; (6) Budget Summary; (7) Federal Assistance Reporting Checklist and Instructions, which identifies the reporting requirements; (8) Intellectual Property;

(9) Federal-wide Research Terms and Conditions; (10) Agency Specific Requirements; and (11) any award specific terms and conditions.

B. Administrative and National Policy Requirements

i. Award 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 Special Terms and Conditions for Use in Most Grants and Cooperative Agreements. The DOE Special Terms and Conditions for Use in Most Grants and Cooperative Agreements are located at

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

National Policy Requirements. The National Policy Assurances that are incorporated as a term and condition of award are located at:

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

Intellectual Property Provisions. The standard DOE financial assistance intellectual property provisions applicable to the various types of recipients are located at:

<http://energy.gov/gc/standard-intellectual-property-ip-provisions-financial-assistance-awards>.

ii. DUNS and SAM Requirements

Additional administrative requirements for DOE grants and cooperative agreements are contained in 2 CFR, Part 25 (See: <http://www.eCFR.gov>). Prime awardees must keep their data at the System for Award Management (SAM) current at <https://www.sam.gov>. Subawardees at all tiers must obtain DUNS numbers and provide the DUNS to the prime awardee before the subaward can be issued.

iii. Uniform Commercial Code (UCC) Financing Statements

Per 2 CFR 910.360 (Real Property and Equipment) when a piece of equipment is purchased by a for-profit Recipient or Subrecipient with Federal Funds (federal and/or non-federal), and when the Federal share of the financial assistance agreement is more than \$1,000,000, the Recipient or Subrecipient must:

Properly record, and consent to the Department's ability to properly record if the Recipient fails to do so, Uniform Commercial Code (UCC) financing statement(s) for all equipment in excess of \$5,000 purchased with project funds. These financing statement(s) must be approved in writing by the contracting officer prior to the recording, and they shall provide notice that the Recipient's title to all equipment (not real property) purchased with Federal funds under the financial assistance agreement is conditional pursuant to the terms of this section, and that the Government retains an undivided reversionary interest in the equipment. The UCC financing statement(s) must be filed before the Contracting Officer may reimburse the Recipient for the Federal share of the equipment unless otherwise provided for in the relevant financial assistance agreement. The Recipient shall further make any amendments to the financing statements or additional recordings, including appropriate continuation statements, as necessary or as the contracting officer may direct.

Note: All costs associated with filing UCC financing statements, UCC financing statement amendments, and UCC financing statement terminations, are allowable and allocable costs to be charged to the Federal award.

iv. Foreign National Access Under DOE ORDER 142.3A, "Unclassified Foreign Visits and Assignments Program"

All applicants selected for an award under this FOA may be required to provide information to the DOE in order to satisfy requirements for foreign nationals' access to DOE sites, information, technologies, equipment, programs, and personnel. A foreign national is any person who was born outside the jurisdiction of the United States, is a citizen of a foreign government, and has not been naturalized under U.S. law. If a selected Applicant (including any of its Subrecipients or subcontractors) anticipates involving foreign nationals in the performance of its award, the selected Applicant may be required to provide DOE with specific information about each foreign national to ensure compliance with the requirements for access approval.

Access approval for foreign nationals from countries identified on the U.S. Department of State's list of [State Sponsors of Terrorism](#) must receive final approval authority from the Secretary of Energy before they can commence any work under the award.

v. Statement of Substantial Involvement

Cooperative Agreements will be awarded under this announcement. There will be substantial involvement between the DOE and the Recipient during the performance of this Cooperative Agreement. The DOE and the Recipient shall collaborate and share responsibility for the management of the project as further described in this section.

Recipient's Responsibilities. The Recipient is responsible for:

- Performing the activities supported by this award in accordance with the Project Management Plan, including providing the required personnel, facilities, equipment, supplies and services;
- Managing and controlling project activities in accordance with established processes and procedures to ensure tasks and subtasks are completed within schedule and budget constraints defined by the current Project Management Plan;
- Implementing an approach to identify, analyze, and respond to project risks that is commensurate with the complexity of the project;
- Defining and revising approaches and plans, submitting the plans to DOE for review, and incorporating DOE comments;
- Coordinating related project activities with Subrecipients and external suppliers, including contractors, to ensure effective integration of all work elements;
- Attending annual project review meetings and reporting project status;
- Participating in peer review evaluations of the project, or peer review evaluations of the program that their project supports;
- Submitting technical reports and publicly releasable documents that incorporate DOE comments; and
- Presenting the project results at appropriate technical conferences or meetings as directed by the DOE Project Officer.

DOE Responsibilities. DOE has the right to intervene in the conduct or performance of project activities for programmatic reasons. Intervention includes the interruption or modification of the conduct or performance of project activities.

Suspension or termination of the Cooperative Agreement under 2 CFR part 200, as amended by 2 CFR part 910 (DOE Financial Assistance Regulations) does not constitute intervention in the conduct or performance of project activities. DOE is responsible for:

- Reviewing in a timely manner project plans, including project management, testing and technology transfer plans, and recommending alternate approaches, if the plans do not address critical programmatic issues;
- Participating in project management planning activities, including risk analysis, to ensure DOE's program requirements or limitations are considered in performance of the work elements;
- Conducting annual project review meetings to ensure adequate progress and that the work accomplishes the program and project objectives. Recommending alternate approaches or shifting work emphasis, if needed;
- Providing substantial involvement to ensure that project results address critical system and programmatic goals established by the DOE Office of Fossil Energy;
- Promoting and facilitating technology transfer activities, including disseminating program results through presentations and publications;
- Serving as scientific/technical liaison between awardees and other program or industry staff; and
- Reviewing and concurring with ongoing technical performance to ensure that adequate progress has been obtained within the current Budget Period authorized by DOE before work can commence on subsequent Budget Periods.

vi. Statement of Federal Stewardship

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

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

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

While NEPA compliance is a Federal agency responsibility and the ultimate decisions remain with the Federal agency, all Recipients selected for an award will be required to assist in the timely and effective completion of the NEPA process in the manner most pertinent to their proposed project. If DOE determines certain records must be prepared to complete the NEPA review process (e.g., biological evaluations or environmental assessments), the costs to prepare the necessary records may be included as part of the project costs.

viii. Conference Spending

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

C. REPORTING

i. Reporting Requirements

Reporting requirements are identified on the Federal Assistance Reporting Checklist and Instructions, DOE F 4600.2, attached to the award agreement.

A sample checklist is available at:

<https://www.netl.doe.gov/sites/default/files/netl-file/4600.2-FE.pdf>.

ii. Subaward and Executive Reporting

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

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

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

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

D. Applicant Representations and Certifications

i. Lobbying Restrictions

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

ii. Nondisclosure and Confidentiality Agreements Representations

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

It **does not and will not** require its employees or contractors to sign internal nondisclosure or confidentiality agreements or statements prohibiting or otherwise restricting its employees or contractors from lawfully reporting waste, fraud, or abuse to a designated investigative or law enforcement representative of a Federal department or agency authorized to receive such information.

It **does not and will not** use any Federal funds to implement or enforce any nondisclosure and/or confidentiality policy, form, or agreement it uses unless it contains the following provisions:

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

The limitation above shall not contravene requirements applicable to Standard Form 312, Form 4414, or any other form issued by a Federal department or agency governing the nondisclosure of classified information.

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

VII. Questions/Agency Contacts

A. QUESTIONS

Questions regarding the **content of the funding opportunity announcement** must be submitted through the FedConnect portal. You must register with FedConnect to respond as an interested party to submit questions, and to view responses to questions. It is recommended that you register as soon after release of the FOA as possible to have the benefit of all responses. DOE/NNSA 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 shall be submitted not later than **3** business 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/NNSA cannot answer these questions.

B. AGENCY CONTACT

Name: Nicholas Anderson
E-mail: nicholas.anderson@netl.doe.gov

VIII. Other Information

A. Modifications

Notices of any modifications to this FOA will be posted on Grants.gov and the FedConnect portal. You can receive an email when a modification or an announcement message is posted by registering with FedConnect as an interested party for this FOA. It is recommended that you register as soon after release of the FOA as possible to ensure you receive timely notice of any modifications or other announcements.

B. Government Right to Reject or Negotiate

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

C. Commitment of Public Funds

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

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

D. 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 cover sheet of the application must be marked as follows and identify the specific pages containing trade secrets or commercial or financial information that is privileged or confidential:

Notice of Restriction on Disclosure and Use of Data:

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

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

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

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

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

Applicants shall not identify the entire Project Narrative as exempt from public disclosure.

E. Evaluation and Administration by Non-Federal Personnel

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

F. Intellectual Property Developed Under This Program

Patent Rights: The government will have certain statutory rights in an invention that is conceived or first actually reduced to practice under a DOE award. 42 U.S.C. 5908 provides that title to such inventions vests in the United States, except where 35 U.S.C. 202 provides otherwise for nonprofit organizations or small business firms. However, the Secretary of Energy may waive all or any part of the rights of the United States subject to certain conditions.

Class Patent Waiver: Pursuant to 10 CFR Part 784, the DOE's Office of Fossil Energy has issued a class patent waiver that applies to this FOA. Under this class waiver, any entity other than a domestic small business firm or domestic nonprofit organization may elect title to their subject inventions similar to the right provided to domestic small business firms and domestic nonprofit organization by law (see below). In order to avail itself of the class waiver, such an entity must agree, among other things, that any products embodying or produced through the use of a subject invention (first created or reduced to practice under this program) will be substantially manufactured in the United States, unless DOE agrees otherwise.

Right to Request Patent Waiver: If a selected entity does not want to participate in the Class Patent Waiver, it may request a waiver of all or any part of the rights of the United States in inventions conceived or first actually reduced to practice in performance of an agreement as a result of this announcement, in advance of or within 30 days after the effective date of the award. Even if such advance waiver is not requested or the request is denied, the Recipient will have a continuing right under the award to request a waiver of the rights of the United States in identified inventions, i.e., individual inventions conceived or first actually reduced to practice in performance of the award. Any patent waiver that may be granted is subject to certain terms and conditions in 10 CFR 784 see <http://www.energy.gov/gc/services/technology-transfer-and-procurement/office-assistant-general-counsel-technology-transf-1> for further information.

Domestic small businesses and domestic nonprofit organizations: 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 patent waiver.

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

G. Program Covered Under Special Protected Data Statute (December 2014)

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** from the development of the information, of data that would be trade secret, or commercial or financial information that is privileged or confidential, if the information had been obtained from a non-Federal party. Generally, the provision entitled, Rights in Data--Programs Covered Under Special Protected Data Statutes (Item 4 under 2 CFR 910 Appendix A to Subpart D), would apply to an award made under this announcement. This provision will identify data or categories of data first produced in the performance of the award that will be made available to the public, notwithstanding the statutory authority to withhold data from public dissemination and will also identify data that will be recognized by the parties as protected data. Any entity receiving an award or subaward under this announcement has the right to opt out of such data protection.

H. Notice Regarding Eligible/Ineligible Activities

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

I. Notice of Right to Conduct a Review of Financial Capability

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

J. Notice of Potential Disclosure Under Freedom of Information Act (FOIA)

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

K. 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.

L. 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.

M. Protected Personally Identifiable Information

In responding to this FOA, applicants must ensure that Protected Personally Identifiable Information (PII) is not included in the application documents. These documents will be used by the Merit Review Committee in the review process to evaluate each application. PII is defined by the Office of Management and Budget (OMB) as:

Any information about an individual maintained by an agency, including but not limited to, education, financial transactions, medical history, and criminal or employment history and information that can be used to distinguish or trace an individual's identity, such as their name, social security number, date and place of birth, mother's maiden name, biometric records, etc., including any other personal information that is linked or linkable to an individual.

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

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

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

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

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

N. Annual Compliance Audits

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

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

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

O. Accounting System

If your application is selected for negotiation toward award, you should have an accounting system that meets government standards for recording and collecting costs. Reference 2 CFR 200 Subpart D for the applicable standards. If you have not had prior government awards or a recent accounting system review, DOE may request that the Defense Contract Audit Agency (DCAA) or an independent auditor verify that the accounting system is acceptable. A resulting award may contain a Term and Condition that prohibits DOE reimbursement until the system is deemed acceptable.

P. Indirect Rates

Potential Recipients and major Subrecipients will need to demonstrate how indirect rates are developed using an acceptable government methodology or current rate agreement. The Prime Recipient and major Subrecipients may be subject to a DCAA or independent auditor indirect rate review if there has not been a certified rate audit within the previous twelve months. Additionally, annual indirect cost reconciliations are required, as applicable.

IX. Appendices

Appendix A – Cost Share Information

Cost Sharing or Cost Matching

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

How Cost Sharing Is Calculated

As stated above, cost sharing is calculated as a percentage of the Total Project Cost. FFRDC/NL costs must be included in Total Project Costs.

Example – 20% cost share

The following is an example of how to calculate cost sharing amounts for a project with \$1,000,000 in federal funds with a minimum 20% non-federal cost sharing requirement:

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

What Qualifies for Cost Sharing

While it is not possible to explain what specifically qualifies for cost sharing in one or even a couple of sentences, in general, if a cost is allowable under the cost principles applicable to the organization incurring the cost and is eligible for reimbursement under an DOE grant or cooperative agreement, then it is allowable as cost share.

Conversely, if the cost is not allowable under the cost principles and not eligible for reimbursement, then it is not allowable as cost share. In addition, costs may not be counted as cost share if they are paid by the Federal Government under another award unless authorized by Federal statute to be used for cost sharing.

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

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

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

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

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

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

- (A) Acceptable contributions. All contributions, including cash contributions and third party in-kind contributions, must be accepted as part of the Prime Recipient's cost sharing if such contributions meet all of the following criteria:
- (1) They are verifiable from the Recipient's records.
 - (2) They are not included as contributions for any other federally-assisted project or program.
 - (3) They are necessary and reasonable for the proper and efficient accomplishment of project or program objectives.

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

(B) Valuing and documenting contributions:

- (1) Valuing Recipient's property or services of Recipient's employees. Values are established in accordance with the applicable cost principles, which mean that amounts chargeable to the project are determined on the basis of costs incurred. For real property or equipment used on the project, the cost principles authorize depreciation or use charges. The full value of the item may be applied when the item will be consumed in the performance of the award or fully depreciated by the end of the award. In cases where the full value of a donated capital asset is to be applied as cost sharing or matching, that full value must be the lesser or the following:
- a. The certified value of the remaining life of the property recorded in the Recipient's accounting records at the time of donation; or
 - b. The current fair market value. If there is sufficient justification, the Contracting Officer may approve the use of the current fair market value of the donated property, even if it exceeds the certified value at the time of donation to the project. The Contracting Officer may accept the use of any reasonable basis for determining the fair market value of the property.
- (2) Valuing services of others' employees. If an employer other than the Recipient furnishes the services of an employee, those services are valued at the employee's regular rate of pay, provided these services are for the same skill level for which the employee is normally paid.

(3) Valuing volunteer services. Volunteer services furnished by professional and technical personnel, consultants, and other skilled and unskilled labor may be counted as cost sharing or matching if the service is an integral and necessary part of an approved project or program. Rates for volunteer services must be consistent with those paid for similar work in the Recipient's organization. In those markets in which the required skills are not found in the Recipient organization, rates must be consistent with those paid for similar work in the labor market in which the Recipient competes for the kind of services involved. In either case, paid fringe benefits that are reasonable, allowable, and allocable may be included in the valuation.

(4) Valuing property donated by third parties.

- a. Donated supplies may include such items as office supplies or laboratory supplies. Value assessed to donated supplies included in the cost sharing or matching share must be reasonable and must not exceed the fair market value of the property at the time of the donation.
- b. Normally only depreciation or use charges for equipment and buildings may be applied. However, the fair rental charges for land and the full value of equipment or other capital assets may be allowed, when they will be consumed in the performance of the award or fully depreciated by the end of the award, provided that the Contracting Officer has approved the charges. When use charges are applied, values must be determined in accordance with the usual accounting policies of the Recipient, with the following qualifications:
 - i. The value of donated space must not exceed the fair rental value of comparable space as established by an independent appraisal of comparable space and facilities in a privately-owned building in the same locality.
 - ii. The value of loaned equipment must not exceed its fair rental value.

(5) Documentation. The following requirements pertain to the Recipient's supporting records for in-kind contributions from third parties:

- a. Volunteer services must be documented and, to the extent feasible, supported by the same methods used by the Recipient for its own employees.
- b. The basis for determining the valuation for personal services and property must be documented.

Appendix B – Waiver Requests: Foreign Entity Participation as the Prime Recipient and Performance of Work in the United States

1. Waiver for Foreign Entity Participation as the Prime Recipient

As set forth in Section III, all Prime Recipients receiving funding under this FOA must be incorporated (or otherwise formed) under the laws of a State or territory of the United States. To request a waiver of this requirement, an Applicant must submit an explicit waiver request in the Full Application.

Overall, the Applicant must demonstrate to the satisfaction of DOE that it would further the purposes of this FOA and is otherwise in the economic interests of the United States to have a foreign entity serve as the Prime Recipient. A request to waive the *Foreign Entity Participation as the Prime Recipient* requirement must include the following:

- Entity name;
- The rationale for proposing a foreign entity to serve as the Prime Recipient;
- Country of incorporation;
- A description of the project's anticipated contributions to the US economy;
 - How the project will benefit U.S. research, development and manufacturing, including contributions to employment in the U.S. and growth in new markets and jobs in the U.S.;
 - How the project will promote domestic American manufacturing of products and/or services;
- A description of how the foreign entity's participation as the Prime Recipient is essential to the project;
- A description of the likelihood of Intellectual Property (IP) being created from the work and the treatment of any such IP; and
- Countries where the work will be performed (Note: if any work is proposed to be conducted outside the U.S., the Applicant must also complete a separate request for waiver of the Performance of Work in the United States requirement).

DOE may require additional information before considering the waiver request.

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

2. Waiver for Performance of Work in the United States

As set forth in the FOA, at least 80% (percent) of the direct labor cost for the project (including Subrecipient labor) shall be incurred in the United States, unless the Recipient can demonstrate to the satisfaction of the DOE that the United States economic interest will be better served through a greater percentage of the work being performed outside of the United States. This requirement does not apply to the purchase of supplies and equipment, so a waiver is not required for foreign purchases of these items. However, the Prime Recipient should make every effort to purchase supplies and equipment within the United States. There may be limited circumstances where it is in the interest of the project to perform a portion of the work outside the United States.

To seek a waiver of the Performance of Work in the United States requirement, the Applicant must submit an explicit waiver request in the Full Application. A separate waiver request must be submitted for each entity proposing performance of work outside of the United States.

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

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

DOE may require additional information before considering the waiver request.

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

Appendix C – Statement of Project Objectives Template

STATEMENT OF PROJECT OBJECTIVES

Title of Project

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

This should be a standalone document that states the work to be conducted and should not include any proprietary/confidential information.

A. OBJECTIVES

Include one paragraph on the overall objective(s) of the work. Note: if the project will be performed in phases, include specific objective(s) for each phase of the work.

B. SCOPE OF WORK

This section should not exceed one-half page and should summarize the effort and approach to achieve the objective(s) of the work. Note: if the project will be performed in phases, includes specific scope statement(s) for each phase.

C. TASKS TO BE PERFORMED

This section provides a brief summary of the planned approach to this project. Tasks/subtasks, concisely written, should be provided in a logical sequence and should be divided into the phases of the project, as appropriate. In writing the Statement of Project Objectives (SOPO), avoid 1) the use of proper nouns to minimize SOPO modifications in the event of changes to the project team, facilities, etc.; 2) figures and equations; 3) references to other documents and publications; and 4) details about past work and discussion of technical background (which should be covered elsewhere in the application narrative).

Task 1.0 - Project Management and Planning (REQUIRED; THE APPLICANT SHALL INSERT THE LANGUAGE PROVIDED BELOW IN QUOTES)

“The Recipient shall manage and direct the project in accordance with this Statement of Project Objectives (SOPO) and the Project Management Plan (PMP) to meet the project’s technical, schedule, and budget objectives and requirements. The Recipient shall manage, coordinate, and report on the technical scope, budget, risk, requirements of the National Environmental Policy Act (NEPA), and schedule consistent with a task-oriented work breakdown structure (WBS) to effectively accomplish the project. The Recipient shall ensure that project plans, results, and decisions are appropriately documented, and project reporting and briefing requirements are satisfied.

The Recipient will work with the DOE Contract Specialist (CS) and Project Officer (PO) to make revisions to the award and its associated documentation when necessary.

This task also includes all work elements required to maintain and revise the PMP, and to manage and report on activities in accordance with the PMP. The Recipient will revise the PMP by including details from the negotiation process and through consultation with the PO.

The Recipient shall manage and direct the project in accordance with the PMP to meet all technical, schedule and budget objectives and requirements. The Recipient shall coordinate activities in order to effectively accomplish the work and ensure that project plans, results, and decisions are appropriately documented, and project reporting and briefing requirements are satisfied.

The PMP is to be developed per the National Energy Technology Laboratory (NETL) guidelines, amended to reflect any negotiated changes to the original plan, and provided to the PO within the first 30 days of the award for review and approval. The PMP shall be updated throughout the project to track technical, schedule, and budget status in coordination with the PO such that it accurately reflects the status of the project. Examples of when it may be appropriate to update the Project Management Plan include: (a) project management policy and procedural changes; (b) changes to the technical, cost, and/or schedule baseline for the project; (c) significant changes in scope, methods, or approaches; or (d) as otherwise required to ensure that the plan is the appropriate governing document for the work required to accomplish the project objectives. Management of project risks shall occur in accordance with the risk management methodology delineated in the PMP in order to identify, assess, monitor, and mitigate technical uncertainties as well as schedule, budgetary and environmental risks associated with all aspects of the project. The results and status of the risk management process shall be presented during project reviews and in Progress Reports with emphasis placed on the medium- and high-risk items.

Results of internal review and advisory committee meetings to discuss the status of all aspects within the PMP will be provided to the PO in the next Progress Report. Any known deviations to the SOPO, schedule, or budget will be communicated directly to the PO in an email immediately upon determination. The "Project Timeline" in the PMP lists the tasks to be performed and their respective time frames. Using this schedule, the degree of progress under each task will be updated in the Progress Reports."

The Applicant shall continue with tasks/sub-tasks as necessary. If the project is structured in Phases, clearly delineate which tasks/subtasks are in each Phase.

Task 2.0 - (Title)

Task descriptions should include a concise description of the work to be conducted for each task. If the task includes subtasks, provide a general description of how each subtask is related to the overall scope of the task.

Subtask 2.1 - (Title)

Subtask descriptions should include a concise description of the work to be conducted for each subtask.

Subtask 2.2 - (Title)

D. DELIVERABLES

The periodic and final reports shall be submitted in accordance with the Federal Assistance Reporting Checklist and the instructions accompanying the checklist. The initial and subsequent amended Project Management Plans will be finalized by the project team and submitted to the Project Officer for review and acceptance.

In addition to these routine reports, other deliverables such as technical presentations and briefings will be prepared and provided to the PO before presenting, including those to support the DOE briefings and technical conferences indicated below.

The final report will summarize all project results and significance from the FEED Study, perform a systems and benefits analysis, summarize the results from the technical and economic feasibility analysis of scale-up, and make recommendations for future research and development.

In addition to the reports specified in the “Federal Assistance Reporting Checklist”, the Recipient must provide the following to the NETL Project Officer (identified in Block 15 of the Assistance Agreement as the Program Manager).

Task / Subtask Number	Deliverable Title	Due Date
1.0	Project Management Plan (requirements as defined in Appendix D)	Due 30 days after award with updates resulting from negotiations. Revisions to the PMP shall be submitted as requested by the NETL Project Officer.
x.x	FEED Study (requirements as defined in Appendix C, SOPO-1)	Due to the Project Officer by end date of project.

x.x	Final Report - A non-proprietary publicly disclosable overview of the sections of the FEED Study.	Due 90 days after the completion of the project per the Federal Assistance Reporting Checklist and instructions.
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The Applicant shall continue to identify deliverables (other than those identified on the “Federal Assistance Reporting Checklist”) that will be delivered using the format provided in the table above. Ensure the delivery date to NETL is also identified. For examples: Delivery to NETL X months after completion of task/subtask X.

NOTE: If the application is selected for award, DOE may require the Recipient to include additional deliverables, provided that such deliverables are consistent with the budget, schedule, and scope of the project.

E. BRIEFINGS/TECHNICAL PRESENTATIONS (Required: The Applicant shall insert the language provided below in quotes and continue to complete.)

“The Recipient shall prepare detailed briefings for presentation to the Project Officer at the Project Officer’s facility located in Pittsburgh, PA, or Morgantown, WV. The Recipient shall make a presentation to the NETL Program Manager at a project kick-off meeting held within ninety (90) days of the project start date. At a minimum, annual briefings shall also be given by the Recipient to explain the plans, progress, and results of the technical effort and a final project briefing at the close of the project shall also be given. The Recipient will provide and present a technical paper at the DOE/NETL Annual Contractor’s CO₂ Capture Review Meeting to be held at a location (typically August in Pittsburgh, PA) designated by the Project Officer. Additionally, the Recipient may present project results at least at one other National Conference each year, provided project funds are available and as approved by the Project Officer.” (The Applicant shall account for this travel in budget justification spreadsheet.)

At the Applicant’s discretion, other briefings/presentations may be added to Section E of the SOPO.

NOTE: If the application is selected for award, DOE may require the Recipient to include additional briefings/presentations, provided that such briefings/presentations are consistent with the budget, schedule, and scope of the project.

Appendix C, SOPO-1

FEED Study – Requirements

It is understood that the content to be included in a Front-End Engineering and Design (FEED) study package is tailored by the type of project and the needs of the owner. Often Engineering and Construction (E&C) firms practicing in a given industry (e.g. power generation) will have an in-house standard in the absence or lack of owner definition. The goal of any FEED study is for the owner and E&C firm to collaboratively define as much of the project's scope as possible to reduce risk and uncertainty prior to executing the project. Often, Items 1 – 3 of the list below are provided by the owner to the E&C firm. **The following is a list of content to be included in the FEED study package developed by the successful applicants selected from this FOA. Applicants are encouraged to include additional materials outside this list that resulted from the uniqueness of their respective project or the needs of the owner.**

1.) Project Background

- a. Discusses Project need or Research/Business Objective

2.) Project Scope

- a. Provides a summary of the proposed project and how it will meet the objective
- b. Provides the system boundaries, or battery limits, of the proposed project

3.) Project Design Basis

- a. Site Characteristics
 - i. Location, topography, available land, transportation access, available utilities, ...
- b. Site Ambient Conditions
 - i. Elevation, atmospheric pressure, temperature averages/extremes, prevailing wind, seismic data, air composition,
- c. Fuel Feedstock and Flue Gas Characteristics
 - i. Design compositional analyses of the fuel (coal, natural gas, biomass, etc.)
 - ii. Design compositional analyses of the flue gas (flow rate, composition, etc.)

- d. Environmental Requirements - as dictated by the authority(s) having jurisdiction (e.g. State DEP, EPA, etc.)
 - i. Air emission permitting limitations and required control technologies
 - ii. Water discharge permitting limitations and required control technologies
 - iii. Waste disposal (e.g. coal ash, spent absorbents, etc.) permitting limitations and required control technologies
 - e. Site Specific Design Considerations
 - i. Flood plain, soil conditions, rainfall/snowfall criteria, building/enclosure permitting, noise regulations, local community requirements (plumes visibility)
 - f. Modularization Design Requirements
- 4.) Basic contracting and purchasing strategy
- 5.) Engineering Design Packages
- a. Process Engineering
 - i. Process area descriptions
 - ii. Block Flow Diagram (BFD), Process Flow Diagram (PFD), and Process & Instrumentation Diagram (P&ID)
 - iii. Process simulation output and heat and material balances (H&MB)
 - iv. HAZOP/PHA documentation
 - v. Major Process Equipment specifications/data sheets
 - vi. Equipment and instrumentation lists
 - vii. Cause and Effect diagrams
 - viii. Overpressure Relief/Flare Study
 - b. Civil Engineering
 - i. Soil Load Analysis
 - ii. Storm water runoff plan
 - iii. Geologic assessment
 - iv. Spill containment assessment
 - c. Structural Engineering

- i. Foundation design drawings (e.g. concrete sonotubes & slabs, helical pillars)
 - ii. Structural and Architectural drawings (e.g. process equipment/piping structural supports, access gangways/ladders, building enclosures, etc.)
 - iii. Material take-offs
- d. Mechanical Engineering
 - i. General site plan view(s)
 - ii. 3-D model and/or equipment elevation sections & plan drawings
 - iii. Piping/tracing/insulation line list and material specification
 - iv. Piping isometrics
 - v. Piping layout/routing drawings
- e. Electrical Engineering
 - i. Electrical load lists
 - ii. One-line diagram(s)
 - iii. Electrical equipment (e.g. substation, motor control centers, switchgear) specifications
 - iv. Cable/cable tray routing drawings
 - v. Lighting drawings
- f. Instrumentation & Controls Engineering (System Integration)
 - i. Control system architecture specification
 - ii. Instrument/equipment lists and specifications
 - iii. Loop drawings
 - iv. Communications infrastructure (e.g. remote SCADA ability, telephone, internet) specifications
- g. Fire Protection Engineering
 - i. Fire protection system (e.g. sprinkler, foam, water cannons, etc.) design specifications and drawings
- h. Facilities Engineering
 - i. Building/Security Infrastructure Plans

1. Front Office/Administration
 2. Control Room(s)
 3. Maintenance/Shop Area
- ii. HVAC
- i. Site Security
 - j. Logistics
 - k. Constructability
 - i. Construction access
 - ii. Lay-down areas
 - iii. Sequencing of construction work
 - l. Project Cost Estimate (~ +/- 15%)
 - m. Estimated Project Schedule

Appendix D – Project Management Plan Template

The Applicant's Project Management Plan (PMP) is an approved document that defines how the Applicant will execute, monitor, and control the project to accomplish the objectives. The specific contents, level of detail, and inclusion of subsidiary planning documents are tailored according to the needs of the project. Consequently, every PMP will be different based on the risk, visibility, and/or complexity of the project and the Recipient's established processes, procedures, and systems.

Title Page:

PROJECT MANAGEMENT PLAN

{Insert Project Title}

{Date Prepared}

SUBMITTED BY

{Organization Name}

{Organization Address}

{City, State, Zip Code}

PRINCIPAL INVESTIGATOR

{Name}

{Phone Number}

{E-mail}

SUBMITTED TO

U.S. Department of Energy

National Energy Technology Laboratory

This plan should be formatted to include the following sections with each section to include the information as described below:

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

B. Project Organization and Structure: Provide the following information in this section:

- Organizational Chart(s): Include a complete project organizational chart and sub-organization charts (if applicable), accompanied by a discussion of how the organizational structure will facilitate the performance of the Tasks and achievement of the objectives described in the SOPO within the time frame specified in the application.
- Roles and Responsibilities of Participants: Provide a discussion of key project team members, and the capacity in which each team member will assist in achieving the overall objective(s) of the proposed project. For multi-organizational or multi-investigator projects, describe the roles to be performed by each participant/investigator within the context of the Task/subtask structure contained in the SOPO. Include descriptions of any business agreements or intellectual property issues between the Applicant and other members of the project team, and how these agreements will be integrated and managed.
- Decision-making and Communication Strategy: Provide a discussion of how communication and decision-making will occur within the context of the organizational structure, with particular emphasis on scientific/technical direction and mechanisms for controlling project scope, cost, and schedule. Include a discussion of how the project team will communicate with DOE and external stakeholders during the performance of the project.
- Management Capabilities: Provide information relevant to the capabilities and experience of the PI and key project team members in managing technical projects of similar nature and complexity. If applicable, include examples that demonstrate the ability to successfully meet research objectives within scope, budget and schedule.

C. Risk Management Plan: Provide a summary description of the proposed approach to identify, analyze, and respond to perceived risks associated with the proposed project. Project risk events are uncertain future events that, if realized, impact the success of the project. Risk is inherent to all projects regardless of complexity, cost, or visibility. An effective Risk Management Plan will identify perceived risks and explain mitigation strategies for each risk. At a minimum, the Risk Management Plan shall include the initial identification of significant financial, cost/schedule, technical/scope, management, planning and oversight, ES&H, external factors, and management issues that have the potential to impede project progress and strategies to minimize impacts from those issues.

The following table format is provided but is not required:

Perceived Risks and Mitigation Strategies

Perceived Risk	Risk Rating			Mitigation/Response Strategy
	Probability	Impact	Overall	
	(Low, Med, High)			
Financial Risks:				
Cost/Schedule Risks:				
Technical/Scope Risks:				
Management, Planning, and Oversight Risks:				
ES&H Risks:				
External Factor Risks:				

D. Milestone Log: Provide milestones for each budget period of the project. Each milestone should be linked to a specific Task or Subtask and include a title, planned completion date, and a description of the method/process/measure used to verify completion. Milestones should be quantitative and show progress toward budget period and/or project goals. Conversely, periodic, mandatory progress reports are not considered to be Milestones.

Milestones are presumed to lie on the critical path of the project, i.e., unless all milestones are achieved, the Objectives as defined in the SOPO cannot be met completely. Applicants must provide at least two milestones per year throughout the course of the project.

Milestone Format

Task/ Subtask	Milestone Title & Description	Planned Completion Date	Verification method

[Note: During project performance, the Recipient will report the Milestone Status as part of the required quarterly progress report as prescribed under the Federal Assistance Reporting Checklist. The Milestone Status will present actual performance in comparison with Planned Milestones, and include:

- (1) the actual status and progress of the project,
- (2) specific progress made toward achieving the project's milestones, and,
- (3) any proposed changes in the project's schedule required to complete milestones.]

E. Costing Profile:

Project Spend Plan per FY

The Applicant (Recipient) shall provide a Spend Plan table that shows, by federal fiscal year, the amount of government funding going to the Applicant (Recipient) and each first tier Subrecipient along with the associated cost share. (A first tier subaward/Subrecipient is defined as an active team member that is partnering/reporting **directly** to the Applicant (Recipient) and shares in the development/advancement of the technology and may provide cost share or any Field Work Proposal (FWP). A vendor/subcontractor that provides a service or merchandise for a competed/catalog price is not considered a Subaward/Subrecipient.) At a minimum, all first-tier sub-awards with a total value (DOE + Cost Share) of $\geq \$100,000$ and all FWPs shall be identified. The table shall also calculate totals and cost sharing percentages.

Spend Plan by Fiscal Year Format

Example below is for a hypothetical project with total project costs of \$3 million (\$2.4 million DOE – 80%/\$600,000 cost share – 20%)

	FY 20XX		FY 20XX		FY 20XX		Total Project	
	Government Share	Cost Share	Government Share	Cost Share	Government Share	Cost Share	Government Share	Cost Share
Applicant	\$500,000	\$200,000	\$500,000	\$270,000	\$200,000	\$100,000	\$1,200,000	\$570,000
Subrecipient #1	\$300,000		\$300,000		\$50,000		\$650,000	0
Subrecipient #2			\$400,000	\$30,000	\$150,000		\$550,000	\$30,000
Total	\$800,000	\$200,000	\$1,200,000	\$300,000	\$400,000	\$100,000	\$2,400,000	\$600,000
Cost Share	80%	20%	80%	20%	80%	20%	80%	20%

Project Spend Plan per Quarter

The Applicant (Recipient) shall provide a table that projects, by quarter, the expenditure of government funds and cost share funds for the per budget period. [Note: Minimum cost share of 20% must be maintained within each Budget Period.] The Applicant (Recipient) shall report against the quarterly project costing profile in the Progress Reports submitted quarterly, throughout the duration of the award, in accordance with the requirements of the Federal Assistance Reporting Checklist.

Spend Plan by Fiscal Year Format

Example below is for a hypothetical project with total project costs of \$1 million (\$800,000 DOE – 80%/\$200,000 cost share – 20%) with one budget period of 9 months (3 quarters).

	Budget Period 1					
	10/1/14 – 12/31/14		1/1/15 – 3/31/15		4/1/15 – 6/30/15	
	Q1	Total Project	Q2	Total Project	Q3	Total Project
Federal Share	\$100,000	\$100,000	\$300,000	\$400,000	\$400,000	\$800,000
Non-Federal Share	\$50,000	\$50,000	\$50,000	\$100,000	\$100,000	\$200,000
Total Planned	\$150,000	\$150,000	\$350,000	\$500,000	\$500,000	\$1,000,000

F. Project Timeline: The Applicant (Recipient) shall provide a timeline of the project broken down by each task and subtask, as described in the Statement of Project Objectives. The resulting figure (see below) shall include:

- A timeline of the project identifying each task and subtask per the outline provided by the Applicant's Statement of Project Objectives.
- The start date and end date for each task and subtask in a column next to the task list of the timeline. All tasks and subtasks shall be completed within the budget period in which initiated, except Task 1, Project Management and Planning. If the time required to complete the activities within a task exceeds 9 months, additional definition of this task is required through the use of subtasks that shall not individually exceed a duration of 9 months.
- The total cost (DOE and cost share funds) of each task in a column next to the task start date and end date column.
- The team members participating on the task/subtask.
- The interdependencies between tasks.
- The milestones that are identified in the Milestone Log (*see below*).

It is highly recommended that the Applicant (Recipient) consider using a commercial software package to generate the timeline as a Gantt chart or other applicable format. Figure 1 provides the format and required information of the project timeline.

Example below is for a hypothetical project with total project costs of \$3 million (\$2.4 million DOE – 80%/\$600,000 cost share – 20%) and three Budget Periods of 3, 5, and 4 quarters respectively.

Project Timeline

				Budget Period 1			Budget Period 2					Budget Period 3			
				10/1/14 - 6/30/15			7/1/15 - 9/30/16					10/1/16 - 9/30/17			
	Start Date	End Date	Cost	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Task 1.0 - Project Management and Planning	10/1/2014	9/30/2017	\$200,000												
Subtask 1.1 - Project Management and Planning	10/1/2014	9/30/2017													
Subtask 1.2 - Briefings and Reports	10/1/2014	9/30/2017													
Milestones															
- List milestone here															
- List milestone here															
Task 2.0 - Descriptive Title	10/1/2014	6/30/2015	\$800,000												
Subtask 2.1 - Descriptive Title	10/1/2014	12/31/2014													
Subtask 2.2 - Descriptive Title	1/1/2015	3/31/2015													
Subtask 2.X - Descriptive Title	4/1/2015	6/30/2015													
Milestones															
- List milestone here															
- List milestone here															
Task 3.0 - Descriptive Title	7/1/2015	9/30/2016	\$850,000												
Subtask 3.1 - Descriptive Title	7/1/2015	12/31/2015													
Subtask 3.2 - Descriptive Title	10/1/2015	6/30/2016													
Subtask 3.X - Descriptive Title	4/1/2016	9/30/2016													
Milestones															
- List milestone here															
- List milestone here															
- List milestone here															
Task 4.0 - Descriptive Title	1/1/2016	9/30/2016	\$650,000												
Subtask 4.1 - Descriptive Title	1/1/2016	3/31/2016													
Subtask 4.2 - Descriptive Title	4/1/2016	6/30/2016													
Subtask 4.X - Descriptive Title	7/1/2016	9/30/2016													
Milestones															
- List milestone here															
Task 5.0 - Descriptive Title	10/1/2016	9/30/2017	\$325,000												
Subtask 5.1 - Descriptive Title	10/1/2016	12/31/2016													
Subtask 5.2 - Descriptive Title	1/1/2017	6/30/2017													
Subtask 5.X - Descriptive Title	4/1/2017	9/30/2017													
Milestones															
- List milestone here															
- List milestone here															
Task 6.0 - Descriptive Title	1/1/2017	9/30/2017	\$175,000												
Subtask 5.1 - Descriptive Title	1/1/2017	6/30/2017													
Subtask 5.2 - Descriptive Title	4/1/2017	9/30/2017													
Subtask 5.X - Descriptive Title	7/1/2017	9/30/2017													
Milestones															
- List milestone here															
- List milestone here															

G. Success Criteria: Success criteria are used by the DOE to determine if specific goals and objectives were met at the end of budget period(s), go/no-go decision points, and/or project completion. The success criteria should be objective and stated in terms of specific, measurable, and repeatable data. Usually, the success criteria pertain to desirable outcomes, results, and observations from the project.

Success Criteria

Decision Point	Date	Success Criteria

[Note: As the first task in the Statement of Project Objectives, successful applicants will revise the version of the Project Management Plan that is submitted with their applications by including details from the negotiation process. This Project Management Plan will be updated by the Recipient as the project progresses, and the Recipient must use this plan to report scope, schedule, and budget variances.]

Appendix E - Data Management Plan

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

DMP Requirements

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

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

The DMP must provide a plan for making all research data displayed in publications resulting from the proposed work digitally accessible at the time of publication. This includes data that are displayed in charts, figures, images, etc. In addition, the underlying digital research data used to generate the displayed data should be made as accessible as possible in accordance with the principles stated above. This requirement could be met by including the data as supplementary information to the published article, or through other means. The published article should indicate how these data can be accessed.

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

The DMP must protect confidentiality, personal privacy, Personally Identifiable Information, and U.S. national, homeland, and economic security; recognize proprietary interests, business confidential information, and intellectual property rights; avoid significant negative impact on innovation, and U.S. competitiveness; and otherwise be consistent with all laws (i.e., export control laws), and DOE regulations, orders, and policies.

Data Determination for a DMP

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

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

Suggested Elements for a DMP

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

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

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

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

and whether/where the data will be preserved after direct project funding ends and any plans for the transfer of responsibilities for sharing and preservation. A description of how the Recipient intends to make the results of any resulting DOE-funded work available to the public, including the relevant technical community.

Protection: A statement of plans, where appropriate and necessary, to protect confidentiality, personal privacy, Personally Identifiable Information, and U.S. national, homeland, and economic security; recognize proprietary interests, business confidential information, and intellectual property rights; and avoid significant negative impact on innovation, and U.S. competitiveness.

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

Additional Guidance

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

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

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

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

Definitions

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

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

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

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

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

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

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

Appendix F – Technology Readiness Levels

Following is a description of DOE Technology Readiness Levels.

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

Technology Development	TRL 5	Laboratory scale, similar system validation in relevant environment	The basic technological components are integrated so that the system configuration is similar to (matches) the final application in almost all respects. Examples include testing a high-fidelity, laboratory scale system in a simulated environment with a range of simulants (1) and actual waste (2). Supporting information includes results from the laboratory scale testing, analysis of the differences between the laboratory and eventual operating system/environment, and analysis of what the experimental results mean for the eventual operating system/environment. The major difference between TRL 4 and 5 is the increase in the fidelity of the system and environment to the actual application. The system tested is almost prototypical.
Technology Development	TRL 4	Component and/or system validation in laboratory environment	The basic technological components are integrated to establish that the pieces will work together. This is relatively "low fidelity" compared with the eventual system. Examples include integration of ad hoc hardware in a laboratory and testing with a range of simulants and small-scale tests on actual waste (2). Supporting information includes the results of the integrated experiments and estimates of how the experimental components and experimental test results differ from the expected system performance goals. TRL 4-6 represent the bridge from scientific research to engineering. TRL 4 is the first step in determining whether the individual components will work together as a system. The laboratory system will probably be a mix of on hand equipment and a few special purpose components that may require special handling, calibration, or alignment to get them to function.
Research to Prove Feasibility	TRL 3	Analytical and experimental critical function and/or characteristic proof of concept	Active research and development (R&D) is initiated. This includes analytical studies and laboratory-scale studies to physically validate the analytical predictions of separate elements of the technology. Examples include components that are not yet integrated or representative tested with simulants. (1) Supporting information includes results of laboratory tests performed to measure parameters of interest and comparison to analytical predictions for critical subsystems. At TRL 3 the work has moved beyond the paper phase to experimental work that verifies that the concept works as expected on simulants. Components of the technology are validated, but there is no attempt to integrate the components into a complete system. Modeling and simulation may be used to complement physical experiments.
Basic Technology Research	TRL 2	Technology concept and/or application formulated	Once basic principles are observed, practical applications can be invented. Applications are speculative, and there may be no proof or detailed analysis to support the assumptions. Examples are still limited to analytic studies. Supporting information includes publications or other references that outline the application being considered and that provide analysis to support the concept. The step up from TRL 1 to TRL 2 moves the ideas from pure to applied research. Most of the work is analytical or paper studies with the emphasis on understanding the science better. Experimental work is designed to corroborate the basic scientific observations made during TRL 1 work.

	TRL 1	Basic principles observed and reported	This is the lowest level of technology readiness. Scientific research begins to be translated into applied R&D. Examples might include paper studies of a technology's basic properties or experimental work that consists mainly of observations of the physical world. Supporting Information includes published research or other references that identify the principles that underlie the technology.
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¹ Simulants should match relevant chemical and physical properties.

² Testing with as wide a range of actual waste as practicable and consistent with waste availability, safety, ALARA, cost and project risk is highly desirable.

Source: U.S. Department of Energy, "Technology Readiness Assessment Guide". Office of Management. 2011.