

FINANCIAL ASSISTANCE FUNDING OPPORTUNITY ANNOUNCEMENT



U. S. Department of Energy Office of Fossil Energy National Energy Technology Laboratory

Novel Crosscutting Research and Development to Support Advanced Energy Systems

Funding Opportunity Number: DE-FOA-0001095

Announcement Type: **Amendment 000001**

CFDA Number: 81.089 Fossil Energy Research and Development

Issue Date: **05/08/2014**
Letter of Intent Due Date: Not Applicable
Pre-Application Due Date: Not Applicable
Application Due Date: 05/21/2014 at 11:59:59 PM Eastern Time

****The purpose of this amendment is to provide changes to the Environmental Questionnaire and Budget for DOE/NNSA Federally Funded Research and Development Center (FFRDC) Contractor links in Section IV, Part C (page 24).**

Changes are highlighted in **yellow.**

This Funding Opportunity Announcement (FOA) will remain open until the Application Due Date indicated above, however, applications may be submitted any time before this FOA closes.

It is strongly recommended that application submission begin well in advance (at least 48 hours) of the Application Due Date.

NOTE: Applications in response to this FOA must be submitted through Grants.gov.

NOTE: REGISTRATION/SUBMISSION REQUIREMENTS

Registration Requirements

There are several one-time actions you must complete in order to submit an application in response to this FOA (e.g., obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number, register with the System for Award Management (SAM) and register with Grants.gov).

Applicants who are not registered with SAM and Grants.gov, should allow at least six weeks to complete these requirements. It may take 44 days or more to complete the entire process. It is suggested that the process be started as soon as possible.

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

Applicants must register with SAM. SAM website: <http://www.sam.gov/>

Applicants must register with Grants.gov. Grants.gov website: <http://www.grants.gov/>

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

Questions

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

Questions regarding the **content** of the 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 will try to respond to a question within three (3) business days, unless a similar question and answer have already been posted on the website.

Application Preparation and Submission

Applicants must download the application package, application forms and instructions from Grants.gov. Grants.gov website: <http://www.grants.gov/>
(Additional instructions are provided in Section IV.A. of this FOA.)

Where to Submit

Applications must be submitted through Grants.gov to be considered for award. You cannot submit an application through Grants.gov unless you are registered. Please read the registration requirements carefully and start the process immediately. Remember you have to update your SAM registration annually. If you have any questions about your registration, you should contact the Grants.gov Helpdesk at 1-800-518-4726 to verify that you are still registered in Grants.gov.

IMPORTANT NOTICE TO POTENTIAL APPLICANTS: When you have completed the registration process, you should call the Grants.gov Helpdesk at 1-800-518-4726 to verify that you have completed the final step (i.e. Grants.gov registration).

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SECTION I - FUNDING OPPORTUNITY DESCRIPTION

**Under Statutory Authority of Public Law 95-91 DOE Organization Act, as amended by
Public Law 109-58 Energy Policy Act 2005**

A. BACKGROUND

The U.S. Department of Energy (DOE)/Fossil Energy's Crosscutting Research Program serves as a bridge between basic and applied research by targeting concepts that offer the potential for transformational breakthroughs and step-change benefits in the way energy systems are designed, constructed, and operated.

B. OBJECTIVES

DOE is seeking financial assistance applications that propose concepts and technologies that will make significant and cost-effective progress toward achieving these step-change benefits for electric generating units and industrial plants that use fossil fuel. Specific objectives are included under the respective Areas of Interest (AOI) below.

C. AREAS OF INTEREST (AOI)

Applicants must identify each AOI/subtopic they are applying for (i.e. 1-A, 1-B, 2, 3-A, 3-B, 4-A, 4-B, 5-A, 5-B, 6-A, 6-B, 7-A or 7-B). The required format for the project title will be: "AOI [1-A, 1-B, 2, 3-A, 3-B, 4-A, 4-B, 5-A, 5-B, 6-A, 6-B, 7-A or 7-B -specify one] (project title)." An applicant does not need to apply for more than one topic or subtopic, but a separate application is required for each subtopic.

AOI 1: Innovative Concepts for Managing Water in Fossil Fuel Based Energy Systems

The efficient and conservative use of energy and water are paramount for future growth of the energy sector as well as related infrastructures that rely on water. The important balance and connection between energy and water are well documented and it is accepted that a multifaceted approach is needed to effectively manage the energy water nexus.

Fossil fuel based power generation systems are the foundation of reliable low cost power. These systems rely on water and steam for the generation of electricity. Active efforts are underway to increase the efficiency of advanced fossil fuel based power generation systems, which can reduce water consumption for power production. In combination with these efforts, low impact carbon capture and storage technologies are under development. In support of these efforts and to improve upon water use in the energy sector, innovative technologies and novel system level approaches are needed.

Reference:

World Energy Outlook 2012, (WEO-2012) Chapter 17 - Water for Energy

Applications are sought in either of the following subtopic areas:

Subtopic 1-A: Utilization of Low Grade Heat within Existing Power Generation Systems

The large scale generation of power requires water/steam for all Rankine cycle systems. Water/steam is also the preferred fluid for cooling and heating in numerous power and industrial systems.

Within existing large scale power generation systems, massive amounts of low grade heat and energy are available but not utilized. This topic seeks novel technologies and system concepts that can efficiently utilize low grade heat and energy and are deployable at large scale. System level concepts that integrate and utilize waste heat and improve heat transfer are of interest. Concepts, such as thermoelectrics, heat pipes, and other innovative conversion concepts must address the viability of deploying these techniques within large scale power generation systems. Additional concepts of interest for utilization of low grade heat include: 1) facilitation of carbon dioxide (CO₂) capture systems, 2) options to dehumidify flue gas, 3) facilitation of water treatment, 4) support for integration of bottoming cycles or low cost refrigeration cycles, and 5) enabling bio-based systems for emission and water treatment.

To date, the capture and use of low grade heat and energy has not been shown to be cost effective. As challenges with water availability increase, the ability to produce more power and/or use available heat and energy sources will greatly reduce the amount of water required per unit of power produced. Proposed concepts must address the tradeoffs of 1) efficiently capturing and utilizing low grade heat and energy, 2) reduced fresh water intake and water consumption relative to current practices at large scale power generation systems, and 3) cost benefit analysis of the proposed concept as it relates to large scale power generation systems.

Subtopic 1-B: Low Cost Treatment of Produced Waters

In the extraction of fossil energy based resources and the subsurface storage of carbon dioxide (CO₂), water is produced in significant quantities for a given locale and/or region. The water that is produced is in the form of a concentrated brine solution with a total dissolved solids level of up to 320,000 parts per million (ppm) with 180,000 ppm as an average. In many cases, this brine solution is disposed of and is considered costly to treat for recycle and/or beneficial use in other infrastructures. Innovative concepts are sought for low cost treatment of brine solutions/water with an average concentration of 180,000 ppm total dissolved solids, to a level where it has beneficial use opportunities for a given locale/region. Depending on the characteristics of the treated water, beneficial use opportunities could include, but are not limited to cooling and process make-up water for power production and industrial operations, agricultural application, or municipal water uses. Treatment and beneficiation concepts must be portable or easily deployed at extraction and injection sites where the brine solution/water is first produced. Opportunities to utilize any methane or flare gas/bleed gas at resource extraction sites to operate brine treatment systems and opportunities to use compressed CO₂ to drive brine treatment at CO₂ injection sites are of interest.

Technologies that are exclusively limited to natural gas and oil production are not of interest.

AOI 2: Advanced Oxygen Separation Technology

Applications are sought for research and development of innovative oxygen production technologies that can be scaled to industrially relevant rates at costs (capital, operating, and energy use) that are substantially below the current benchmarks for commercially available, stand-alone Air Separation Units. The production rate and purity of oxygen must be industrially relevant to support oxygen-intensive industries, such as energy production (e.g., Integrated Gasification Combined Cycle and oxy-combustion systems), fuels, chemicals, and other industries (e.g., steel, cement, glass, etc.).

Proposed efforts should include experimental components to demonstrate viability of industrially relevant oxygen production rates. Examples of air separation technologies that may be of interest include, but are not limited to: sorbents, magnetic gradients, redox swing, or bio-mimetic processes (such as mimicking hemoglobin). Concepts using membrane based separation of oxygen are included but flux temperatures must not exceed 700° C. The use of nano-technology and/or advanced fabrication techniques are of interest if approaches contribute to improving cost

competitiveness. Concepts that augment cryogenic air separation technology and potential integration schemes with commercial cryogenic air separation units are included.

AOI 3: Transformational Concepts in Coal Gasification

Conversion of coal to syngas is an important part of the process to efficiently generate electricity as well as a variety of fuels, fertilizers, and other high value products. Research and development projects are sought that will support cost competitive power generation, either in isolation or in a coproduction configuration that will also produce fertilizer/fuels/chemicals. Process feed must be at least 50% coal by BTU input.

Reference:

<http://www.netl.doe.gov/research/coal/energy-systems/gasification/reference-shelf>

Applications are sought in either of the following subtopic areas:

Subtopic 3-A: Advanced Catalytic Gasification for Polygeneration Applications

Polygeneration of electricity, fuels, and/or chemicals is an approach to diversify plant output and optimize overall revenue for a production facility. Advanced catalytic gasification is one process that could support polygeneration if methane concentrations can be controlled and/or minimized during gasification, thus enabling optimum synthesis gas composition suitable for a primary product of Fischer-Tropsch diesel or methanol (low CH₄, high H₂ and CO content at approximately 2:1, H₂:CO).

Catalytic gasification is highly efficient, and operates below the melting point of ash -- thereby reducing low availability issues associated with entrained gasifiers. However, the methane content is typically high, making the technology problematic for production of chemicals, liquid fuels or poly-generation applications, or in power generation applications with high levels of carbon capture.

This subtopic seeks to advance concepts in catalytic based gasification that promote optimum synthesis gas composition including the control and/or minimization of methane formation during gasification of coal. Approaches of interest include catalyst development (for the gasification process), methods to inhibit methane formation, gasification concepts enabling the use of existing catalysts, and/or other system level considerations that enable efficient and economical cost coal gasification. The following are of interest if the potential cost benefits compared to added process complexity are described: 1) Combining pyrolysis and catalytic gasification of char, or 2) Tightly integrated methane conversion, as a way to use catalytic gasification for polygeneration.

The fuel for the main focus of tests must include sub-bituminous or bituminous coal.

Molten bed catalytic gasification is outside the scope of this subtopic. Stand-alone Fischer-Tropsch and water-gas-shift catalysts are also outside the scope of this subtopic. Applications that focus on Synthetic Natural Gas are not of interest.

Subtopic 3-B: Biological Coal Conversion

Applications are sought for novel technologies for the conversion of coal using microbes. The most likely applications would be to create methane from unmineable seams of low rank coal; however, other applications are of interest if the speed of microbial conversion, capital costs, product slate, etc. indicate the concept may eventually become a commercially competitive process. The production rate and purity of the product(s) must be industrially relevant to support power generation, or the production of transportation fuels/fertilizer/chemicals.

Proposed efforts should include experimental components to demonstrate viability of industrially relevant coal conversion rates. Niche fuel conversion applications are not of interest: the fuel to be the main focus of tests must be either sub-bituminous or bituminous coal. Efforts to re-sequence or recombine microbial DeoxyriboNucleic Acid (DNA) are not of interest. For in situ applications, the ecological hazards of proposed methods should be described.

AOI 4: Innovative Concepts for High-Temperature Heat Exchange and Heat Recovery

A key component in the overall performance of an energy system, as well as many other large scale industrial applications, is the efficient transfer and recovery of heat. Advanced power generation systems are trending toward higher temperature and pressures in order to achieve high efficiency. These extreme operating conditions serve as the drivers for seeking innovation in the design of high temperature heat exchangers and the materials used to enable efficient heat transfer.

Heat exchangers (and recuperators) have a critical role in thermal management for almost all power generation technologies. The applications are extremely diverse depending on the power system. For example, integrated gasification combined cycle systems, solid oxide fuel cell systems, novel supercritical carbon dioxide (SCO₂) cycles, and advanced ultrasupercritical steam cycles require efficient heat transfer but with different design and performance criteria. Proposed developments in heat exchanger design and materials should identify a suitable application(s) for which the heat exchanger would be incorporated into the system/cycle. The mechanical properties, attributes such as corrosion resistance, manufacturability, heat transfer rate, thermal cycling ability, system compatibility, pressure drop, and economic feasibility should be considered and discussed within the context of the targeted system for which they are being developed.

Financial assistance applications should 1) identify the specific type of advanced energy system for which the technology is proposed, 2) demonstrate the applicant's knowledge of the state-of-the-art for that system, and 3) identify the range of temperature, pressure, and other operating conditions associated with the proposed technology development in the context of the advanced energy system.

Applications are sought in either of the following subtopic areas:

Subtopic 4-A: High Temperature Heat Exchange Design and Fabrication for Systems with Large Pressure Differentials

This topic seeks advancements in the design and fabrication of heat exchange/recovery and utilizes high temperature alloys to enable operation at high inlet temperatures and large pressure differentials. In cases where both the inlet temperature and pressures are high, the use of high quality structural materials is needed in combination with appropriate design to enable suitable heat exchange and recovery. In combination with advancements in design, the ability to fabricate components for long service life must be addressed. The intended application must be identified to support the rationale for material selection for both structural integrity and corrosion resistance.

Subtopic 4-B: Compact High Temperature Heat Exchange Design and Fabrication

This subtopic seeks to advance novel heat exchange designs and materials to support high inlet temperatures and low pressure differentials. Innovative, compact, and highly efficient heat exchange is enabled by new materials. The use of ceramics and nano materials to support high temperature heat exchange are of interest when combined with novel compact designs, relative ease in fabrication, and consideration for system level integration. Challenges associated with sealing ceramic based components and thermal mismatch/cycling should be addressed to extent

possible.

AOI 5: Computational Design and Performance Prediction of Materials

The development and qualification of new materials intended for long operating life (up to 300,000 hrs.) in severe fossil energy (FE) environments has historically been lengthy (10 to 20 years) and high cost. While modern computationally based materials science has improved portions of the front end or discovery part of the overall research and development (R&D) process, much of the development and qualification work is still done by expensive and long duration lab experiments. Accurate prediction of the long term behavior of structural materials and their weldments is still predominately based on either long term lab experiments or field data from facilities operating for over 10 years. Cyclic operation of FE plants has added - complexity (thermo-mechanical fatigue in addition to creep and corrosion) to the prediction of long term behavior of materials and their weldments in both existing FE plants and future advanced FE technologies. Weldments in high temperature/high pressure FE applications are often the weak link of structural components, yet the ability to predict the mechanical behavior of weldments from limited experimental data is complicated by the various microstructures that exist within the weldment area.

This topic seeks to build a portfolio of computational techniques for more efficient and accurate design of structural materials and predicted performance of these materials. The use of computational techniques could reduce the development life cycle of materials by half. Predictive capability of performance could greatly improve long term material performance and reliability of a system.

Applications are sought in either of the following subtopic areas:

Subtopic 5-A: Computational Approaches to Design Structural Materials

This subtopic seeks computational approaches to design structural materials. Techniques to enable multi-scale modeling and design are sought. Approaches that enable discovery and rapid development are needed so that computational approaches compliment and support accelerated experimental and testing efforts.

Subtopic 5-B: Computational Approaches to Predict Performance of Structural Materials

This subtopic seeks computational approaches and techniques to predict long term mechanical and oxidation/ corrosion behavior of structural materials and their weldments under severe and variable (cyclic) operating environments. The ability to reasonably predict the long term (10-30 years) evolution of a metal alloy microstructure and its effect on creep properties and rupture strength when exposed to high temperature and stress would enable major reductions of the time and cost to develop new materials for advanced fossil energy applications. The combination of models and relatively short term experimental efforts are needed to improve the predictive capability of in service materials when compared to extrapolating materials performance from short term tests.

AOI 6: Advanced Materials Manufacturing

The more severe operating environments (high temperature, pressure, corrosivity) and performance specifications of advanced fossil energy systems will require that components and subassemblies be fabricated from increasingly complex and expensive structural and functional materials. Material and component complexity may be manifested in a number of ways, e.g. unique component geometry, material chemical composition, phase chemistry, microstructure, additional specifications on the material's chemistry and micro structure, and tighter control on the

manufacturing variance of these specifications. Fabrication of individual components and subassemblies for FE power generation systems also may require welding or other high temperature joining processes. The joining of advanced materials for use in several FE environments introduces an additional level of technical design and manufacturing complexity. Conventional fusion welding of many creep resistant alloys results in significant reduction in weld creep strength, even with expensive post weld heat treatments. Early weld failure has been a major issue for a number of creep strength enhanced ferritic steels used in FE power plants. Advanced FE processes will also require joining of dissimilar creep strengthened metal alloys, which will introduce yet another level of design and manufacturing complexity and cost.

Applications are sought in either of the following subtopic areas:

Subtopic 6-A Joining of Structural or Functional Materials

Applications are sought for novel and more robust ways to manufacture and join semi-finished and finished components and subassemblies for advanced fossil energy applications that offer the potential to reduce manufacturing costs, improve product recovery, reduce product variability, and allow the production of more precisely designed structural and functional materials. Manufacturing processes that eliminate the component performance issues that occur from traditional joining techniques for similar and dissimilar materials would be responsive to this topic.

Subtopic 6-B Manufacture of Structural Components

Applications are also sought for demonstration of the use of conventional material processing technologies that have been tailored to the fabrication of components from advanced materials which have not been previously manufactured on large scale. Current processing methods to manufacture these materials may have significant variability or raw material loss, or may require a number of costly steps to achieve the desired material functionality. Examples of such manufacturing and joining complexity are the production of large castings of nickel superalloys, and the welding of precipitate strengthened metal alloys for long term high temperature and pressure service. Nickel superalloys being considered for advanced FE technologies were not originally designed to be cast into large components. Thus, successful casting of these alloys will require new manufacturing design and control techniques.

AOI 7: Advanced Topping Cycles to Improve Power Plant Performance

The development and application of topping cycles can provide improvements in process efficiency when integrated with advanced power generation technologies. Topping cycles that offer step change improvements in process efficiency and can be deployed in reasonable configurations are the focus of this topic.

Topping cycles of interest, in general, operate in temperature regimes above existing power generation technology. One such approach is called Direct Power Extraction (DPE). DPE refers to technology aimed at directly converting the thermal or kinetic energy of a working fluid into electrical energy. One example is a magnetohydrodynamic (MHD) type power generator. By avoiding an intermediate conversion of energy into mechanical energy (e.g. the movement of turbine blades), maximum cycle efficiencies can be extended well beyond current limitations imposed by the material limitations of mechanical parts.

DPE technology can be applied as a topping unit either in a closed cycle or open cycle configuration. In the past, closed cycle systems generally operated with working fluids that utilized non-equilibrium plasmas, whereas open cycle systems generally operated with plasmas in thermal equilibrium. The closed cycle approaches are usually limited by temperature limits of heat exchanger materials, but the ability to optimize the working fluid enables higher power densities

as compared to the open cycle configuration. Open cycle systems utilize combustion products as the working fluid and so do not have the same temperature limitations, but large scale systems have been needed to realize high efficiency plants. One particular advantage of the open cycle approach is that it is also synergistic with the oxy-fuel based combustion systems. Applicants should define the topping cycle approach(es) that are applicable to advanced Fossil Energy based power systems.

Applications are sought in either of the following subtopic areas:

Subtopic 7-A: Component Level Development to Enable Direct Power Extraction

This subtopic seeks component level development to enable direct power extraction. Components of interest are high temperature material and material systems (approximately > 1000 °C) which can be useful as heat exchanger materials, thermal and/or electrical insulators, structural components, and electrodes. Materials appropriate for high strength magnets are also of interest. Electrical and magnetic components optimized for DPE applications are of interest, including ionization and generator needs such as current extraction techniques and power conditioning. DPE components optimized for high temperature combustion or detonations to achieve high speed flows are also of interest for development. Proposed efforts should incorporate computational and experimental efforts to support component development.

Subtopic 7-B: System Level Development to Integrate Direct Power Extraction

This subtopic seeks novel systematic approaches for the integration of DPE applications into Advanced Energy Systems. Proposed efforts may employ computational techniques and process simulations of DPE applications to support viable system level concepts. Proposed experimental effort or the inclusion of previously generated data to support computational and/or system level concepts is encouraged. Applications should propose deliverables including a conceptual design and a techno-economic analysis for an integrated, highly efficient, and cost-effective DPE system.

SECTION II - AWARD INFORMATION

A. TYPE OF AWARD INSTRUMENT

DOE anticipates awarding cooperative agreements under this funding opportunity announcement (FOA) (see Section VI.B.2, Statement of Substantial Involvement).

B. ESTIMATED FUNDING

Approximately \$15,000,000 in Federal funds is expected to be available for new awards under this FOA. At least 20% non-Federal cost share of the total allowable costs must be provided. 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.

C. MAXIMUM AND MINIMUM AWARD SIZE

Ceiling (i.e., the maximum **DOE share** for an individual award made under this FOA): The maximum individual award value will be \$500,000 of DOE funding plus a minimum of \$125,000 recipient share (at least 20% of total allowable cost).

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

D. EXPECTED NUMBER OF AWARDS

DOE anticipates making the following number of awards for each Program/Topic Area:

| Program/Topic Area | Number of Awards |
|---|-------------------------|
| AOI 1: Innovative Concepts for Managing Water in Fossil Fuel Based Energy Systems | 4 to 10 |
| AOI 2: Advanced Oxygen Separation Technology | 1 to 4 |
| AOI 3: Transformational Concepts in Coal Gasification | 1 to 4 |
| AOI 4: Innovative Concepts for High-Temperature Heat Exchange and Heat Recovery | 1 to 4 |
| AOI 5: Computational Design and Performance Prediction of Materials | 1 to 4 |
| AOI 6: Advanced Materials Manufacturing | 1 to 4 |
| AOI 7: Advanced Topping Cycles to Improve Power Plant Performance | 1 to 4 |

E. ANTICIPATED AWARD SIZE

The anticipated DOE share for projects under each Program/Topic Area of this FOA is as shown in the following table:

| Program/Topic Area | Award Size (DOE share) |
|---------------------------|-------------------------------|
| All AOs | Up to \$500,000 |

F. PERIOD OF PERFORMANCE

DOE anticipates making awards ranging up to 24 months in duration.

G. TYPE OF APPLICATION

DOE will accept only new applications under this announcement.

SECTION III - ELIGIBILITY INFORMATION

A. ELIGIBLE APPLICANTS

1. INDIVIDUALS

U.S. citizens and lawful permanent residents are eligible to apply for funding as a prime recipient or subrecipient.

2. DOMESTIC ENTITIES

For-profit entities, educational institutions, and nonprofits¹ 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.

State, local, and tribal government entities are eligible to apply for funding as a prime recipient or subrecipient.

DOE/NNSA Federally Funded Research and Development Centers (FFRDCs) and Non-DOE/NNSA FFRDCs are eligible to apply for funding as a subrecipient, but are not eligible to apply as a prime recipient. See Section III.C.

Non-DOE Government-Owned, Government Operated (GOGOs) entities and 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.

NOTE: The National Energy Technology Laboratory (NETL) is not considered eligible for award under this announcement and may not be proposed as a team member on another entity's application.

3. FOREIGN ENTITIES

Foreign entities, whether for-profit or otherwise, are eligible to apply for funding 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 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 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 this requirement in the Application. See Section VIII.J of the FOA for waiver request information. 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 interests of the Office of Fossil Energy.

A foreign entity may receive funding as a subrecipient.

4. 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)

¹Nonprofit 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.

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.

5. 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.A 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.

B. COST SHARING

The cost share must be at least 20% of the total allowable costs for research and development projects (i.e., the sum of the Government share, including FFRDC contractor 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 10 CFR Part 600 for the applicable cost sharing requirements.)

For example: If Total Project Costs are \$500,000, the maximum DOE share would be \$400,000 and the Recipient would be required to cost share a minimum of \$100,000.

C. OTHER ELIGIBILITY REQUIREMENTS

Federally Funded Research and Development (FFRDC) Contractors. Federal agencies and FFRDC contractors are not eligible for an award under this announcement, but may be proposed as a team member subject to the following:

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

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

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

Value/Funding. The value of, and funding for, the FFRDC contractor portion of the work will not normally be included in the award to a successful applicant. Usually, DOE will fund a DOE/NNSA FFRDC contractor through the DOE field work proposal system and other FFRDC contractors 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 contractor's portions of the effort.

FFRDC Contractor Effort.

- The scope of work to be performed by the FFRDC contractor may not be more significant than the scope of work to be performed by the applicant.
- The FFRDC contractor effort, in aggregate, **shall not exceed 25%** of the total estimated cost of the project, including the applicant's and the FFRDC contractor'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 contractor if a field work proposal is not utilized.

NOTE: NETL is not considered eligible for award under this announcement and may not be proposed as a team member on another entity's application.

D. PERFORMANCE OF WORK IN THE UNITED STATES

The Recipient agrees that at least **75%** of the cost for the project (including subrecipient cost) shall be incurred in the United States, unless the Recipient can demonstrate to the satisfaction of the Department of Energy 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 Section VIII.

Section IV - APPLICATION AND SUBMISSION INFORMATION

A. ADDRESS TO REQUEST APPLICATION PACKAGE

Application forms and instructions are available at Grants.gov. To access these materials, go to <http://www.grants.gov>, select "Apply for Grants," and then select "Download Application Package." Enter the CFDA and/or the funding opportunity number (DE-FOA-0001095) located on the cover of this announcement and then follow the prompts to download the application package.

B. LETTER OF INTENT AND PRE-APPLICATION

1. Letter of Intent

Letters of Intent are not required.

2. Pre-application

Pre-applications are not required.

C. CONTENT AND APPLICATION FORMS

Applicants must complete the mandatory forms and any applicable optional forms (e.g., Disclosure of Lobbying Activities (SF-LLL)) 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.

1. SF 424 - Application for Federal Assistance

Complete this form first to populate data in other forms. Complete all required fields in with the pop-up instructions on the form. The list of certifications and assurances referenced in Field 21 can be found on the DOE Financial Assistance Forms Page at <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Certifications and Assurances.

Applicants must identify each AOI/subtopic they are applying for (i.e. 1-A, 1-B, 2, 3-A, 3-B, 4-A, 4-B, 5-A, 5-B, 6-A, 6-B, 7-A or 7-B). The required format for the project title will be: "AOI [1-A, 1-B, 2, 3-A, 3-B, 4-A, 4-B, 5-A, 5-B, 6-A, 6-B, 7-A or 7-B - specify one] (project title)." An applicant does not need to apply for more than one topic or subtopic, but a separate application is required for each subtopic.

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.

3A. Project Narrative File - Mandatory Other Attachment File name: Narrative.pdf

The project narrative must not exceed **25 pages, double-spaced**, including cover page, table of contents, charts, graphs, maps, photographs, tables, and other pictorial presentations, when printed using standard 8.5" by 11" paper with 1 inch margins (top, bottom, left, and right) with font not smaller than 11 point. **EVALUATORS WILL ONLY REVIEW THE NUMBER OF PAGES SPECIFIED IN THE PRECEDING SENTENCE.** Do not include any Internet addresses (URLs) that provide information necessary to review the application, because the information contained in these sites will not be reviewed. See Part VIII.D for instructions on how to mark proprietary application information. To attach a Project Narrative, click "Add Attachment."

The project narrative must include the following information that **WILL** count in the Project Narrative page limitation:

- **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 Part V.A. Provide sufficient information so that reviewers will be able to evaluate the application in accordance with these merit review criteria. **DOE WILL EVALUATE AND CONSIDER ONLY THOSE APPLICATIONS THAT ADDRESS SEPARATELY EACH OF THE MERIT REVIEW CRITERION AND SUB-CRITERION.**
- **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.
- **Statement Of Project Objectives (SOP):** 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 and follow the structure discussed below. The Statement of Project Objectives may be released to the public by DOE in whole or in part after award. It is therefore required that it shall not contain proprietary or confidential business information.

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 following format:

TITLE OF WORK TO BE PERFORMED

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

A. OBJECTIVES

Include one paragraph on the overall objective(s) of the work. Also, include objective(s) for each phase of the work.

B. SCOPE OF WORK

This section generally does not exceed one-half page and must summarize the effort and approach to achieve the objective(s) of the work for each Phase.

C. TASKS TO BE PERFORMED

Tasks and Subtasks (if applicable) must be concisely written, provided in a logical sequence and apportioned across the Phases (if applicable) as appropriate. This section shall provide a brief summary of the planned approach to this project. Tasks must be numbered consecutively and continuously throughout the entire duration of the project, starting with Task 1.0 as outlined below. If the project has been divided into Phases, do not re-number the Tasks at the beginning of each Phase.

An outline of the Project Management Plan (referenced in Task 1.0 below and required to be submitted with your application) is provided later in this Section.

Task 1.0 – Project Management and Planning **(THIS TASK IS MANDATORY; INSERT THE FOLLOWING)**

This task shall include all work elements required to maintain and revise the Project Management Plan, and to manage and report on activities in accordance with the plan. It shall also include the necessary activities to ensure coordination and planning of the project with DOE/NETL and other project participants. These shall include, but are not limited to, the submission and approval of required NEPA documentation.

Task 2.0 – (Title)

(Description)

Subtask 2.1 – (Title)

(Description)

Subtask 2.2 – (Title)

(Description)

Task 3.0 – (Title)

(Description)

Subtask 3.1 – (Title)

(Description)

Subtask 3.2 – (Title)

(Description)

Task 4.0 – (Title)

(Description)

(Continue with Tasks as necessary)

D. DELIVERABLES

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

Note: The Recipient shall provide a list of deliverables other than those identified above and on the "Federal Assistance Reporting Checklist" that will be delivered. These reports shall also be identified within the text of the SOPO as they relate to each Task. See the following examples:

1. Task 1.0 – Project Management Plan
2. Sub-task 2.1 – (Deliverable Description)
3. Task 3.0 – (Deliverable Description)

E. BRIEFINGS/TECHNICAL PRESENTATIONS (INSERT THE FOLLOWING)

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 Project Officer/Manager at a project kick-off meeting held within 90 days of project start date. At minimum, annual briefings shall also be given by the Recipient to explain the plans, progress, and results of the technical effort. A final project briefing at the close of the project shall also be given. The Recipient shall also complete a minimum of one presentation at a National Conference.

(END OF SOPO)

(END OF PROJECT NARRATIVE)

Also, attach the following file:

3B. Project Management Plan

This plan shall be formatted to address the following sections with each section to include the information as described below and is generally **ten page (10) pages** in length. The font must not be smaller than 11 point **SINGLE SPACED**. Information in the appendices **WILL NOT** count toward the page limits in the Project Narrative.

Title Page:

PROJECT MANAGEMENT PLAN
for {insert project title}
{Date Prepared}

SUBMITTED UNDER FUNDING OPPORTUNITY ANNOUNCEMENT

DE-FOA-0001095

SUBMITTED BY

{Organization Name}
{Organization Address}
{City, State, Zip Code}

PRINCIPAL INVESTIGATOR

{Name}
{Phone Number}
{Fax Number}
{E-mail}

SUBMITTED TO

U.S. Department of Energy
National Energy Technology Laboratory

(end title page)

- 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 (Field 8) and should be simply copied to this document for completeness, so that the Project Management Plan is a stand-alone document.
- B. **Risk Management:** Provide a summary description of the proposed approach to identify, analyze, and respond to perceived risks associated with the proposed project. Project risk events are uncertain future events that, if realized, impact the success of the project. As a minimum, include the initial identification of significant technical, resource, and management issues that have the potential to impede project progress and strategies to minimize impacts from those issues.
- C. **Milestone Log:** Provide milestones for each budget period (or phase) of the project. Each milestone should include a title and planned completion date. Milestones should be quantitative and show progress toward budget period and/or project goals.

[Note: During project performance, the Recipient will report the Milestone Status as part of the required quarterly Progress Report as prescribed under Attachment 4, Reporting Requirements Checklist. The Milestone Status will present actual performance in comparison with Milestone Log, 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.]

- D. **Funding and Costing Profile:** Provide a table (the Project Funding Profile) that shows the amount of government funding going to each project team member. Also provide a table (the Project Costing Profile) that projects, by month, the expenditure of government funds for the first budget period, at a minimum.
- E. **Project Timeline:** Provide a timeline of the project (similar to a Gantt chart) broken down by each task and subtask, as described in the Statement of Project Objectives. The timeline should include for each task, a start date, and end date. The timeline should show interdependencies between tasks and include the milestones that are identified in the Milestone Log (Section C).
- F. **Success Criteria at Decision Points:** Provide success criteria for each decision point in the project, including go/no-go decision points and the entire project. The success criteria should be objective and stated in terms of specific, measurable, and repeatable data. Usually, the success criteria pertain to desirable outcomes, results, and observations from the project.

***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 schedule and budget variances.

3C. Appendices to the Project Narrative (submitted as ONE all encompassing file entitled "Appendix.pdf" under Add Optional Other Attachment on the Other Attachments Form)

The following appendices are to be provided and clearly defined by its corresponding heading. Appendices are to be utilized to validate information within the Project Narrative as appropriate and should not be utilized as an extension for information requested to be addressed in the narrative. The font must not be smaller than 11 point **SINGLE SPACED**. Information in the appendices **WILL NOT** count toward the 25-page limitation in the Project Narrative.

- **Bibliography & References Cited Appendix:** This appendix **WILL NOT** count in the Project Narrative page limitation. Provide a bibliography of any references cited in the Project Narrative. Each reference must include the names of all authors (in the same sequence in which they appear in the publication), the article and journal title, book title, volume number, page numbers, and year of publication. Include only bibliographic citations. Applicants should be especially careful to follow scholarly practices in providing citations for source materials relied upon when preparing any section of the application. In order to reduce the number of files attached to your application, please save the Bibliography and References Cited information as a part of the single file named "Appendix.pdf".
- **Facilities & Other Resources Appendix:** This appendix **WILL NOT** count in the project narrative page limitation. This information is used to assess the capability of the organizational resources, including subawardee resources, available to perform the effort proposed. Identify the facilities to be used (Laboratory, Animal, Computer, Office, Clinical, and Other). 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. Describe other resources available to the project (e.g., machine shop, electronic shop) and the extent to which they would be available to the project. In order to reduce the number of files attached to your application, please save the Facilities & Other Resources information as a part of the single file named "Appendix.pdf".

- **Equipment Appendix:** This appendix **WILL NOT** count in the Project Narrative page limitation. List major items of equipment already available for this project and, if appropriate identify location and pertinent capabilities. In order to reduce the number of files attached to your application, please save the Equipment information as a part of the single file named "Appendix.pdf".
- **Multiple Principal Investigators Appendix:** This appendix **WILL NOT** count in the Project Narrative page limitation. The applicant, whether a single organization or team/partnership/consortium, must indicate if the project will include multiple PIs. This decision is solely the responsibility of the applicant. If multiple PIs will be designated, the application must identify the Contact PI/Project Coordinator and provide a "Coordination and Management Plan" that describes the organization structure of the project as it pertains to the designation of multiple PIs. This plan should, at a minimum, include:
 - process for making decisions on scientific/technical direction;
 - publications;
 - intellectual property issues;
 - communication plans;
 - procedures for resolving conflicts; and
 - PIs' roles and administrative, technical, and scientific responsibilities for the project.

In order to reduce the number of files attached to your application, please save the Multiple Principal Investigators information as a part of the single file named "Appendix.pdf".

- **Roles Of Participants Appendix:** This appendix **WILL NOT** count in the Project Narrative page limitation. 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. Provide signed agreements or letters from team members demonstrating that the proposed team members are fully committed to the project. In order to reduce the number of files attached to your application, please save the Role of Participants information as a part of the single file named "Appendix.pdf".
- **Third Parties Contributing to Cost Sharing Appendix:** This appendix **WILL NOT** count in the Project Narrative page limitation. At the time you submit your application, you must have a letter from each third party (i.e., a party other than the organization submitting the application) who will be contributing cost share. The letter must state that the third party is committed to providing a specific minimum dollar amount of cost sharing and must be signed by the person authorized to commit the expenditure of funds by the entity. In an appendix, you must identify the following information for each third party contributing to cost sharing: (1) the name of the organization; (2) the scope of the effort to be provided by referencing tasks within the Statement of Project Objectives; (3) the proposed dollar amount to be provided; (4) the amount as a percentage of the total project cost; and (5) the proposed cost sharing - cash, services, or property. In order to reduce the number of files attached to your application, please save the Third Parties Contributing to Cost Sharing information as a part of the single file named "Appendix.pdf".

- **Identification of Potential Conflicts of Interest or Bias in Selection of Reviewers Appendix:** This appendix **WILL NOT** count in the Project Narrative page limitation. Provide the following information in this section. In order to reduce the number of files attached to your application, please save the Identification of Potential Conflicts of Interest or Bias in Selection of Reviewers information as a part of the single file named "Appendix.pdf".

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."

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.

In order to reduce the number of files attached to your application, please save the Identification of Potential Conflicts of Interest or Bias in Selection of Reviewers information as a part of the single file named "Appendix.pdf".

- **Biographical Sketch Appendix:** This appendix **WILL NOT** count in the Project Narrative page limitation. Complete a biographical sketch for each senior/key person and include it as part of the single file named "Appendix.pdf". The biographical information for each person must not exceed 2 pages when printed on 8.5" by 11" paper with 1 inch margins (top, bottom, left, and right) with font not smaller than 11 point and must include:

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.

In order to reduce the number of files attached to your application, please save the Biographical Sketch information as a part of the single file named "Appendix.pdf".

- **Current and Pending Support Appendix:** This appendix **WILL NOT** count in the Project Narrative page limitation.

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. Save the information in a separate file and attach to the "Attach Current and Pending Support" field in each profile.

In order to reduce the number of files attached to your application, please save the Current and Pending Support information as a part of the single file named "Appendix.pdf".

All appendices to the Project Narrative shall be submitted in ONE FILE entitled "Appendix.pdf" under Add Optional Other Attachment on the Other Attachments Form.

Please also attach the following files by clicking the "Add Optional Other Attachment" to attach:

3D. Budget for DOE/NNSA Federally Funded Research and Development Center (FFRDC) Contractor, if applicable
File name: FFRDCname.pdf

If a DOE/NNSA FFRDC contractor is to perform a portion of the work, you must provide a DOE Field Work Proposal in accordance with the requirements in DOE Order 412.1 Work Authorization System. This order and the DOE Field Work Proposal form are available at <https://eere-exchange.energy.gov/FileContent.aspx?FileID=6acfb6b3-fdec-42a8-8c93-e9c577a4f60c>. Use the FFRDC name as the file name (up to 10 letters) and attach by clicking the "Add Optional Other Attachment" button.

3E. Environmental Questionnaire
File name: EQ.pdf

Applicants must complete the environmental questionnaire at <http://www.netl.doe.gov/business/business-forms#FUNDING> for each performance site. Save the questionnaire(s) in a single file named "EQ.pdf" and click on "Add Optional Other Attachment" to attach.

3F. Project Summary/Abstract File
File name: Summary.pdf

The project summary/abstract must contain a summary of the proposed activity suitable for dissemination to the public. It shall be a self-contained document that identifies the name of the applicant, the project director/principal investigator(s) (PD/PI), the project title, the objectives of the project, a description of the project, including methods to be employed, the potential impact of the project (i.e., benefits, outcomes), and major participants (for collaborative projects). This document must not include any proprietary or sensitive business information as the Department may make it available to the public if 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) (**single spaced**) with font not smaller than 11 point. Save this information in a file named "Summary.pdf," and click on "Add Optional Other Attachment" to attach.

3G. Resume File
File name: Bio.pdf

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. 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) (single spaced) with font no smaller than 11 point and shall include the following information, if applicable:

Education and Training: Undergraduate, graduate, and postdoctoral training; provide institution, major/area, degree, and year.

Professional Experience: Beginning with the current position list, in chronological order, professional/academic positions with a brief description.

Publications: Provide a list of up to 10 publications most closely related to the proposed project. For each publication, identify the names of all authors (in the same sequence in which they appear in the publication), the article title, book or journal title, volume number, page numbers, year of publication, and website address if available electronically.

Patents, copyrights, and software systems developed may be provided in addition to or substituted for publications.

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

Save all resumes in a single file named "bio.pdf" and click on "Add Optional Other Attachment" to attach.

3H. SF 424 A Excel, Budget Information - Non-Construction Programs File
File name: SF424A.xls or.xlsx

Applicants 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.

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

3I. Budget Justification File
File name: RecipientBudgetJustification.xls or.xlsx

You must justify the costs proposed in each Object Class Category/Cost Classification category (e.g., identify key persons and personnel categories and the estimated costs for each person or category; provide a list of equipment and cost of each item; identify proposed subaward/consultant work and cost of each subaward/consultant; describe purpose of proposed travel, number of travelers, and number of travel days; list general categories of supplies and amount for each category; and provide any other information you wish to support your budget). Provide the name of your cognizant/oversight agency, if you have one, and the name and phone number of the individual responsible for negotiating your indirect rates. Also, see Section VIII.I. for additional items that need to be factored into the budget.

Applicants shall use the Detailed Budget Justification form (OMB Number 1910-5162) provided as an attachment to this announcement and also embedded below. Save the information in a single file named "RecipientBudgetJustification.xls or.xlsx" and click on "Add Optional Other Attachment" to attach.



Detailed_Budget_Justification.xls

SUBAWARD BUDGET FILE(S)

3J. Subaward SF-424 A, if applicable
File name: Subawardeename424.xls or xlsx

Applicants must provide a separate budget (i.e., budget for each budget year and a cumulative budget) 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). Use the SF 424 A Excel for Non Construction Programs. The form is found 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. Save each Subaward budget in a separate file. Use up to 10 letters of the subawardee's name (plus .xls or xlsx) as the file name (e.g., ucla.xls or energyres.xls or xlsx), and click on "Add Optional Other Attachment" to attach.

3K. Subaward Budget Justification, if applicable
File name: SubawardeenameBudgetJustification.xls or xlsx

Applicants must also provide a separate 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). Use the Detailed Budget Justification form (OMB Number 1910-5162) provided as an attachment to this announcement and also embedded below. Save the information in a single file named "Subawardee_name BudgetJustification.xls or xlsx" and click on "Add Optional Other Attachment" to attach.



Detailed_Budget_Justification.xls

4. SF-LLL Disclosure of Lobbying Activities, if applicable

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."

Summary of Required Forms/Files

Your application must include the following documents:

| Name of Document | Format | File Name |
|--|--------|-----------|
| 1. SF-424 Application for Federal Assistance | Form | N/A |
| 2. Project/Performance Site Location(s) | Form | N/A |

| | | |
|--|-------|--|
| Other Attachments Form - Attach the following files to this form: | Form | |
| 3A. Project Narrative File (Mandatory Other Attachment) – including Statement of Project Objectives | PDF | Narrative.pdf |
| Other Attachments: | | |
| 3B. Project Management Plan | PDF | PMP.pdf |
| 3C. Appendix: <ul style="list-style-type: none"> • Bibliography & References Cited • Facilities & Other Resources • Equipment • Multiple Principal Investigators • Roles of Participants • Third Parties Contributing to Cost Sharing • Identification of Potential Conflicts of Interest or Bias in Selection of Reviews • Biographical Sketch • Current/Pending Support | PDF | Appendix.pdf |
| 3D. Budget for DOE Federally Funded Research and Development Center (FFRDC) Contractor, if applicable | PDF | <i>FFRDCname.pdf</i> |
| 3E. Environmental Questionnaire | PDF | EQ.pdf |
| 3F. Project Summary/Abstract File | PDF | Summary.pdf |
| 3G. Resume File | PDF | Bio.pdf |
| 3H. SF 424 A Excel, Budget Information – Non-Construction Programs File | Excel | SF424A.xls or xlsx |
| 3I. Budget Justification File (Prime Applicant) | Excel | RecipientBudgetJustification.xls or xlsx |
| 3J. Subaward SF 424 A Budget Files, if applicable | Excel | <i>Subawardeename424.xls or xlsx</i> |

| | | |
|--|-------|---|
| 3K. Subaward Budget Justification, if applicable | Excel | <i>Subawardeename</i> BudgetJustification.xls or xlsx |
| 4. SF-LLL Disclosure of Lobbying Activities, if applicable | Form | N/A |
| Waiver Request- (a) Foreign Entities and (b) Performance of Work in the United States (If Applicable) – See Section VIII.J. and K. | PDF | Waiver.pdf |
| Indirect Rate Agreement (If Applicable) – See Section VIII.L. | PDF | RateAgreement.pdf |

D. SUBMISSIONS FROM SUCCESSFUL APPLICANTS

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

- Indirect cost information
- Other budget information
- Name and phone number of the Designated Responsible Employee for complying with national policies prohibiting discrimination (See 10 CFR 1040.5)
- Representation of Limited Rights Data and Restricted Software, if applicable

E. SUBMISSION DATES AND TIMES

1. Pre-application Due Date

Pre-applications are not required.

2. Application Due Date

Applications **MUST** be received by **05/21/2014, not later than 11:59:59 PM Eastern Time**. The Grants.gov Helpdesk is available for extended periods, please check their website for the Helpdesk hours of operation. **APPLICATIONS RECEIVED AFTER THE DEADLINE WILL NOT BE REVIEWED OR CONSIDERED FOR AWARD.**

You are encouraged to transmit your application well before the deadline (at least 48 hours in advance).

F. INTERGOVERNMENTAL REVIEW

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

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.

Cost Principles. Costs must be allowable, allocable, and reasonable in accordance with the applicable Federal cost principles referenced in 10 CFR Part 600. The cost principles for commercial organizations are in FAR Part 31.

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 10 CFR Part 600.

Notwithstanding the 90 day period, costs incurred prior to the date DOE selects the project are not allowable costs.

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.

H. OTHER SUBMISSION AND REGISTRATION REQUIREMENTS

1. Where to Submit

APPLICATIONS MUST BE SUBMITTED THROUGH GRANTS.GOV TO BE CONSIDERED FOR AWARD.

Submit electronic applications through the "Apply for Grants" function at www.Grants.gov. If you have problems completing the registration process or submitting your application, call Grants.gov at 1-800-518-4726 or send an email to support@grants.gov.

2. Registration Process

One Time Registration Process

You must COMPLETE the one-time registration process (all steps) before you can submit your first application through Grants.gov (See http://www.grants.gov/applicants/get_registered.jsp). We recommend that you start this process at least **six weeks** before the application due date. It may take 44 days or more to complete the entire process. Use the Grants.gov Organizational Registration Checklists at <http://www.grants.gov/assets/organizationreqcheck.pdf> to guide you through the process.

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

When you have completed the process, you should call the Grants.gov Helpdesk at 1-800-518-4726 to verify that you have completed the final step (i.e., Grants.gov registration).

3. Application Receipt Notices

After an application is submitted, the Authorized Organization Representative (AOR) will receive a series of four e-mails. It is extremely important that the AOR watch for and save each of the emails. It may take up to two (2) business days from application submission to receipt of email Number 2. The titles of the four e-mails are:

Number 1 - Grants.gov Submission Receipt Number

Number 2 - Grants.gov Submission Validation Receipt for Application Number

Number 3 - Grants.gov Grantor Agency Retrieval Receipt for Application Number
Number 4 - Grants.gov Agency Tracking Number Assignment for Application Number

Section V - APPLICATION REVIEW INFORMATION

A. CRITERIA

1. Initial Review Criteria

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

2. Merit Review Criteria

All applications that pass the initial review process will receive a detailed and consistent technical evaluation utilizing the evaluation criteria described below. The Evaluation Criteria below will be applied to the topic area.

Merit Criterion 1 - Scientific and Technical Merit (45%)

The application will be evaluated to determine the overall technical merit and quality of the proposed concept, including the following:

- a) The degree to which development of the proposed technology can be expected to contribute to a developmental breakthrough for the challenges described in the topic area.
- b) The thoroughness and relevance of the scientific, engineering, and technical information and data provided to support readiness of the proposed technology.
- c) The degree to which the proposed work is based on sound scientific and engineering principles.

Merit Criterion 2 - Technical Approach (35%)

The application will be evaluated to determine the overall quality, soundness, and reasonableness of the applicant's technical approach to fulfill the requirements of the proposed work, including the following:

- a) The likelihood that the overall approach will result in successful achievement of the objectives and deliverables described in the applicable topic area, including the extent to which the proposed Statement of Project Objectives is organized, logical and complete, with appropriate technical decision points.
- b) The extent to which the proposed approach satisfies the requirements, goals and objectives of the applicable topic area.

Merit Criterion 3 - Technical Capabilities, Facilities and Equipment (10%)

The application will be evaluated in terms of the qualifications and relative experience of key personnel assigned to the project (including subcontractors and consultants, if considered key personnel), the qualifications of the participating organizations, the proposed management of the effort, and the facilities and equipment, as outlined according to the following factors:

- a) Ability and commitment of key personnel and subcontractors to support successful completion of the project including: scientific mastery of the described technology, pertinent systems operations and analysis experience, project management experience,

- and demonstrated R&D experience and capabilities relevant to the proposed work.
- b) The extent of prior corporate experience in managing projects of similar type, size and complexity, and in successfully completing similar R&D projects.
 - c) The project organization, showing responsibilities and lines of authority (both technical and administrative, including participating organizations and key subcontractors) is clearly described and optimized to assure successful project execution.
 - d) The appropriateness and availability of facilities, equipment, and their relevance to technology development and/or commercial applications as applicable.

Merit Criterion 4 – Project Management Plan (10%)

This criterion relates entirely to the stand-alone Project Management Plan (PMP) requirements described in the guidance described in Section IV, Item 3B. to this FOA. If the application does not include this stand-alone PMP, evaluators will be instructed to assign a score of zero to this criterion. The application will be evaluated on the degree to which the PMP defines or identifies the following:

- a) Adequacy and completeness of the PMP in establishing the technical scope, budget, and schedule baselines, in identifying key milestones and decision points, in controlling project performance relative to these baselines and decision points, and in defining the actions that will be taken when these baselines must be revised.
- b) Adequacy and completeness of the identification of, and mitigation strategies for, project risks, including technical, organizational, cost share support and other risks affecting the potential for success.

3. Other Selection Factors - Program Policy Factors:

The Selection Official will consider program policy factors in the selection process. These factors, while not indicators of the Application's merit, e.g., technical excellence, cost, applicant's ability, etc., may be essential to the process of selecting the application(s) that, individually or collectively, will best achieve the program objectives. Program policy factors may be used by the Source Selection Official to select projects when such selection is deemed likely to result in a superior overall research and development portfolio (including both new and complimenting previous or existing projects).

- It may be desirable to select for award a group of projects which represents a diversity of technical approaches and methods;
- It may be desirable to support complementary and/or similar efforts or 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 different technical perspectives;
- It may be desirable, because of the nature of the energy source, the type of projects envisioned, or limitations of past efforts, to select for award a group of projects with a broad or specific geographic distribution;
- It may desirable, that different types and sizes of projects be selected for award in order to best support the program budget.

The above factors will be independently considered by the Selection Official in determining the optimum mix of applications that will be selected for support. These policy factors will provide the Selection Official with the capability of developing, from the competitive funding opportunity, a broad involvement of organizations and organizational ideas, which both enhance the overall research effort and upgrade the program content to meet the goals of the DOE.

B. REVIEW AND SELECTION PROCESS

1. Merit Review

Applications Subject to Merit Review

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

2. Selection

Selection Official Consideration

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

3. Discussions and Award

Government Discussions with Applicant

The Government may enter into discussions with a selected applicant for any reason deemed necessary, including but not limited to: (1) the budget is not appropriate or reasonable for the requirement; (2) only a portion of the application is selected for award; (3) the Government needs additional information to determine that the recipient is capable of complying with the requirements in 10 CFR Part 600; and/or (4) special terms and conditions are required. Failure to resolve satisfactorily the issues identified by the Government will preclude award to the applicant.

C. ANTICIPATED NOTICE OF SELECTION AND AWARD DATES

Selection and Award Date

DOE anticipates notifying applicants selected for award by the end of August 2014 and making awards by the end of September 2014.

Section VI - AWARD ADMINISTRATION INFORMATION

A. AWARD NOTICES

1. Notice of Selection

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

Organizations whose applications have not been selected will be advised as promptly as possible. This notice will explain why the application was not selected.

2. Notice of Award

A Financial Assistance Agreement issued by the Contracting Officer is the authorizing award document. The award normally includes either as an attachment or by reference: (1) Special Terms and Conditions; (2) Applicable program regulations, if any; (3) Application as approved by DOE; (4) DOE assistance regulations at 10 CFR part 600; (5) National Policy Assurances To Be Incorporated As Award Terms; (6) Budget Summary; and (7) Federal Assistance Reporting Checklist, which identifies the reporting requirements.

B. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS

1. Administrative Requirements

The administrative requirements for DOE grants and cooperative agreements are contained in 10 CFR 600 (See: <http://www.eCFR.gov>). Grants and cooperative agreements made to universities, non-profits and other entities subject to Title 2 CFR are subject to the Research Terms and Conditions located on the National Science Foundation web site at <http://www.nsf.gov/bfa/dias/policy/rtc/index.jsp>.

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 <http://www.sam.gov> current SAM is the government-wide system that replaced the CCR. If you had an active registration in the CCR, you have an active registration in SAM. Subawardees at all tiers must obtain DUNS numbers and provide the DUNS to the prime awardee before the subaward can be issued.

SUBAWARD AND EXECUTIVE REPORTING

Additional administrative requirements necessary for DOE grants and cooperative agreements to comply with the Federal Funding and Transparency Act of 2006 (FFATA) are contained in 2 CFR, Part 170. (See: <http://www.eCFR.gov>). Prime awardees must register with the new FSRS database and report the required data on their first tier subawardees. Prime awardees must report the executive compensation for their own executives as part of their registration profile in the System for Award Management (SAM).

2. Special Terms and Conditions and National Policy Requirements

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

The National Policy Assurances To Be Incorporated As Award Terms are located at <http://www.nsf.gov/bfa/dias/policy/rtc/appc.pdf> and at <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Award Terms.

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>.

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

Corporate Felony Conviction and Federal Tax Liability Representations

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

- (1) It is not a corporation that has been convicted (or had an officer or agent of such corporation acting on behalf of the corporation convicted) of a felony criminal violation under any Federal law within the preceding 24 months,
- (2) No officer or agent of the corporation have been convicted of a felony criminal violation for an offense arising out of actions for or on behalf of the corporation under Federal law in the past 24 months,
- (3) It is not a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

For purposes of these representations the following definitions apply:

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.

Foreign National Involvement

All applicants selected for an award resulting from this FOA may be required to provide information to the Department of Energy (DOE) in order to facilitate our responsibilities associated with foreign national access to DOE sites, information, technologies, and equipment. Foreign national is defined as any person who was born outside the jurisdiction of the United States, is a citizen of a foreign government, and has not been naturalized under U.S. law. If the selected applicant, including subrecipients/contractors, anticipates utilizing a foreign national person in the performance of an award, the selected applicant may be responsible for providing to the DOE representative specific information of the foreign national(s) to satisfy compliance with all of the requirements for access approval

Statement of Substantial Involvement

There will be substantial involvement between the DOE and the Recipient during performance of this Cooperative Agreement. The DOE Specialist and DOE Project Officer will negotiate a Statement of Substantial Involvement prior to award in which the DOE and Recipient will 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 (PMP), 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 as defined by the current PMP.
- 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 external suppliers, including DOE M&O contractors, to ensure effective integration of all work elements.
- Attending periodic program review meetings and reporting project status.
- Submitting technical reports and incorporating DOE comments.
- Presenting the project results at appropriate technical conferences or meetings as approved by the DOE Project Officer, not to exceed two per year.

DOE RESPONSIBILITIES: 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 the performance of the work elements.
- Conducting periodic program 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.
- Integrating and redirecting the work effort to ensure that project results address critical system and programmatic goals established by DOE – FE in coordination with the DOE and NETL Programs.
- Promoting and facilitating technology transfer activities, including disseminating program results through presentation and publication.
- Serving as scientific/technical liaison between awardees and other program or industry staff.

C. REPORTING

Reporting requirements are identified on the Federal Assistance Reporting Checklist, DOE F 4600.2, attached to the award agreement. A sample checklist is available at: <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Award Forms. At a minimum, DOE requires quarterly progress and financial reports, and a final comprehensive technical report.

Section VII - QUESTIONS/AGENCY CONTACTS

A. QUESTIONS

Questions regarding the content of the 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 will try to respond to a question within three (3) business days, unless a similar question and answer have already been posted on the website.

Questions and comments concerning this FOA shall be submitted not later than seven (7) calendar days prior to the application due date. Questions submitted after that date may not allow the Government sufficient time to respond.

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

B. AGENCY CONTACT

Name: Ashley Reichl
E-mail: Ashley.Reichl@netl.doe.gov

As stated in paragraph A, questions must be submitted through FedConnect or to grants.gov, as appropriate, and shall **not** be submitted to the Agency Contact. If questions are submitted directly to the Agency Contact, the Agency Contact will advise the interested party to submit the question via the appropriate portal and will not respond to questions via email.

Section VIII - OTHER INFORMATION

A. MODIFICATIONS

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

B. GOVERNMENT RIGHT TO REJECT OR NEGOTIATE

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

C. COMMITMENT OF PUBLIC FUNDS

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

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

D. PROPRIETARY APPLICATION INFORMATION

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

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

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

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

E. EVALUATION AND ADMINISTRATION BY NON-FEDERAL PERSONNEL

In conducting the merit review evaluation, the Government may seek the advice of qualified non-Federal personnel as reviewers. The Government may also use non-Federal personnel to conduct routine, nondiscretionary administrative activities. The applicant, by submitting 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. (See "Notice of Right to Request Patent Waiver" in paragraph G below.)

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

Program Covered Under Special Protected Data

Special Protected Data Statutes. This program is covered by a special protected data statute. The provisions of the statute provide for the protection from public disclosure, for a period of up to five (5) years 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 (10 CFR 600 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.

G. NOTICE OF RIGHT TO REQUEST PATENT WAIVER

Applicants may request a waiver of all or any part of the rights of the United States in inventions conceived or first actually reduced to practice in performance of an agreement as a result of this announcement, in advance of or within 30 days after the effective date of the award. Even if such advance waiver is not requested or the request is denied, the recipient will have a continuing right under the award to request a waiver of the rights of the United States in identified inventions, i.e., individual inventions conceived or first actually reduced to practice in performance of the award. Any patent waiver that may be granted is subject to certain terms and conditions in 10 CFR 784 at <http://energy.gov/gc/patents-licensing-and-patent-waivers> under the Patent Waivers.

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

H. NOTICE REGARDING ELIGIBLE/INELIGIBLE ACTIVITIES

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

I. CONFERENCE SPENDING (APRIL 2013)

The recipient shall not expend funds for the purpose of defraying the cost to the United States Government of a conference [described in subsection (c) of the Consolidated and Further Continuing Appropriations Act, 2013] that was more than \$20,000, or circumventing the required notification by the head of any such Executive Branch department, agency, board, commission, or office to the Inspector General or senior ethics official for any entity without an Inspector General, of the date, location, and number of employees attending such conference that is not directly and programmatically related to the purpose for which the grant or cooperative agreement was awarded.

J. FOREIGN ENTITY WAIVER REQUEST

As set forth in Section III.A.3, 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 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.

To request a waiver for this requirement, the Applicant must submit a waiver request in the Full Application, which includes the following information: entity name, country (or state) of incorporation, description of the work to be performed by that entity, and the location where the work will be performed. If the applicant is seeking a waiver to have a foreign entity serve as the prime recipient, the applicant must explain why it is necessary to have a foreign entity serve as the prime recipient. Waiver requests should explain how the waiver would further the purposes of this FOA and otherwise serve the interests of the Department of Energy. The Contracting Officer may require additional information before considering the waiver request. Save the Waiver Request(s) in a single file titled:
"LeadOrganization_Waiver.pdf"

K. PERFORMANCE OF WORK IN THE UNITED STATES WAIVER REQUEST

As set forth in Section III.D., at least 75% of the cost for the project (including subrecipient cost) shall be incurred in the United States, unless the Recipient can demonstrate to the satisfaction of the Department of Energy that the United States economic interest will be better served through a greater percentage of the work being performed outside of the United States.

To request a waiver for this requirement, the Applicant must submit a waiver request in the Full Application, which includes the following information: entity name, description of work to be performed outside the United States and the location where the work will be performed. Waiver requests should explain how the waiver would further the purposes of this FOA and otherwise serve the interests of the Department of Energy. The Contracting Officer may require additional information before considering the waiver request. Save the Waiver Request(s) in a single file titled:
"PerformanceofWork_Waiver.pdf"

L. REQUIREMENTS FOR SELECTED APPLICANTS

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. See 10 CFR 600.121, 10 CFR 600.220, or 10 CFR 600.311 for the applicable standards. If you have not had prior government awards or a recent accounting system review, the DOE may request that the Defense Contract Audit Agency (DCAA) or an independent auditor verify that the accounting system is acceptable. A resulting cooperative agreement may contain a Term and Condition that prohibits DOE reimbursement until the system is deemed acceptable.

Indirect Costs & Indirect Rates: Indirect costs are an acceptable cost component of an approved budget if they are adequately supported and properly allocated. Potential Recipients and major sub-recipients proposing indirect costs will need to demonstrate that the proposed indirect (e.g., overhead, G&A) rates were developed using a methodology acceptable for Government contracting, and in accordance with applicable Federal cost principles. If a current provisional indirect rate agreement has been issued by a Federal agency, that agreement should be provided with the Application as "RateAgreement.pdf" (see the table under "Summary of Required Forms/Files in Section IV above). The Recipient and major sub-recipients may be subject to an audit/review if an approved rate agreement is not available or an indirect rate audit has not been performed within the previous twelve months.

Compliance with the resultant Reporting Requirements Checklist requires the submission of an Annual Indirect Cost Proposal and Reconciliation. Potential Recipients and sub-recipients should be aware that this requirement mandates annual indirect cost reconciliations (i.e., Annual Indirect Cost Proposal) be prepared and submitted; this proposal is due within six (6) months of the Recipient and/or sub-recipient's fiscal year end. Since the Reporting Requirements Checklist instructions do not provide a format for this proposal, a suggested format can be found at <http://www.dcaa.mil/ice.htm>. This proposal is developed using the actual, allowable costs incurred by the Recipient during each fiscal year period. This is not a project-specific proposal; it must encompass the organization's entire business base (Government and commercial), and it must incorporate the total direct and indirect costs incurred to develop the actual indirect rates for each fiscal year. Because the proposal is not project-specific, the costs to prepare the proposal should be classified as indirect costs, part of the organization's indirect pool of expenses. If DOE is not the cognizant federal agency for negotiating and approving indirect rates, an informational copy of the proposal may be requested.

Annual Compliance Audits: If a for-profit entity is the Prime Recipient, an annual compliance audit performed by an independent auditor may be required. For additional information, please refer to 10 C.F.R. § 600.316 along with for-profit audit guidance documents posted under the "Coverage of Independent Audits" heading at <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms>

If an educational institution, non-profit organization, or state/local government is a Prime Recipient or SubRecipient and has expended greater than \$500K of Federal funds in a respective fiscal year, then an A-133 audit is required. For additional information, please refer to OMB Circular A-133 link below.

<http://www.whitehouse.gov/sites/default/files/omb/assets/omb/circulars/a133/a133.pdf>

Applicants shall propose sufficient costs in the project budget to cover the costs associated with the annual audit.

Notice of Potential Disclosure Under Freedom of Information Act: Applicants are advised that identifying information regarding all applicants, including but not limited to 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.