

**FINANCIAL ASSISTANCE
FUNDING OPPORTUNITY ANNOUNCEMENT**



**U.S. Department of Energy
Office of Science
Office of Biological and Environmental Research**

Terrestrial Ecosystem Science

Funding Opportunity Number: DE-FOA-0000749

Announcement Type: Initial

CFDA Number: 81.049

ISSUE DATE: July 20, 2012

Application Due Date: November 12, 2012, 11:59 PM Eastern Time

**Pre-Application: August 17, 2012, 4:30 PM Eastern Time
(Required)**

NOTE: REQUIREMENTS FOR GRANTS.GOV

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 Central Contract Registry CCR 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.

Registration Requirements: There are several one-time actions you must complete in order to submit an application through Grants.gov (e.g., obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number, register with the Central Contract Registry (CCR), register with the credential provider, and register with Grants.gov). Use the Grants.gov Organization Registration Checklist at <http://www.grants.gov/assets/OrganizationRegCheck.pdf> to guide you through the process. Designating an E-Business Point of Contact (EBiz POC) and obtaining a special password called an MPIN are important steps in the CCR registration process. **The CCR is migrating from CCR.gov to SAM.gov: registering early will give applicants enough time to address any challenges posed by the transition** (https://www.sam.gov/sam/transcript/SAM_Quick_Guide_Grants_Registrations-v1.6.pdf). Applicants, who are not registered with CCR and Grants.gov, should allow at least 21 days to complete these requirements. It is suggested that the process be started as soon as possible.

IMPORTANT NOTICE TO POTENTIAL APPLICANTS: 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).

Questions: 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. Part VII of this Funding Opportunity Announcement (FOA) explains how to submit other questions to the Department of Energy (DOE).

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

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PART I – FUNDING OPPORTUNITY DESCRIPTION

GENERAL INQUIRIES ABOUT THIS FOA SHOULD BE DIRECTED TO:

Technical/Scientific Program Contact:

Program Manager: Dr. Daniel Stover
Phone: (301) 903-0289
E-mail: Daniel.Stover@science.doe.gov

STATUTORY AUTHORITY:

Public Law 95-91, US Department of Energy Organization Act
Public Law 109-58, Energy Policy Act of 2005

APPLICABLE REGULATIONS:

U.S. Department of Energy Financial Assistance Rules, codified at 10 CFR Part 600
U.S. Department of Energy, Office of Science Financial Assistance Program Rule, codified at 10 CFR Part 605

SUMMARY:

The Office of Biological and Environmental Research (BER) of the Office of Science (SC), U.S. Department of Energy (DOE) hereby announces its interest in receiving research applications for terrestrial ecosystem science. The goal of the Terrestrial Ecosystem Science (TES) program is to improve the representation of terrestrial ecosystem processes in Earth system models thereby improving the quality of climate model projections and providing the scientific foundation needed to inform DOE's energy decisions. The TES program will consider applications on measurements, experiments, modeling and synthesis that provide improved quantitative and predictive understanding of the terrestrial ecosystem that, in turn, can affect atmospheric greenhouse gas concentration changes and thereby affect the greenhouse gas forcing of climate. In addition, the Earth System Modeling (ESM) Program, which funds development of the Community Earth System Model (CESM) will consider applications focused on development and coupling of the CESM land model component. The emphasis of this Funding Opportunity Announcement (FOA) is to understand non-managed terrestrial ecosystems in the context of a changing climate. Applicants should pose their research applications in the context of representing terrestrial ecosystem processes in Earth system models.

SUPPLEMENTARY INFORMATION:

The goal of the TES program is to improve the representation of terrestrial ecosystem processes in Earth system models thereby improving the quality of climate model projections and providing the scientific foundation needed to inform DOE's energy decisions. TES uses a systems approach to understand ecosystems over multiple scales that can be represented in models (e.g., single process models, ecosystem models, and the CESM). This emphasis on the capture of advanced understanding in models has two goals. First, it seeks to improve the representation of these processes in coupled models, thereby increasing the sophistication of the projections from those models. Second, it encourages the community to exercise those models and to compare the results against observations or other data sets to inform future research directions. Current information on the TES program can be found at <http://tes.science.energy.gov/>.

The goal of the ESM program is to support development of the CESM and community model evaluation tools, to improve and test the detailed processes in the CESM components including the Community Land Model (CLM), individually and coupled to the climate system. Current ESM projects are described on the Climate and Earth System Modeling website <http://www.climatemodeling.science.energy.gov/>.

The TES and ESM programs will consider applications designed around measurements, experiments, modeling and synthesis to provide improved quantitative and predictive understanding of terrestrial ecosystem processes that can affect atmospheric greenhouse gas concentration changes and thereby affect the greenhouse gas forcing of climate. The emphasis of this FOA is to understand the feedbacks from terrestrial ecosystems in response to a changing climate. Applicants should pose their research goals, objectives, and approach in the context of representing terrestrial ecosystem processes in Earth system models. The emphasis on applicability to models can be accomplished through process research that specify mechanisms for the incorporation of results into state of the art process, ecosystem or Earth system models, by proposing direct improvements to such models or through synthesis activities that draw on existing data sets.

Both single investigator projects and multi-investigator projects are encouraged. Multi-investigator projects are expected to integrate the efforts of a multi-disciplinary team to tackle problems that cannot be effectively addressed by a single investigator. All projects should clearly delineate an integrative, hypothesis-driven approach or synthesis activity and clearly describe how the results of the research will improve our ability to understand and predict the role of the terrestrial ecosystems in a changing climate.

In addition to full applications, submission of innovative exploratory applications is encouraged. Proposed research is intended to fill critical knowledge gaps, including the exploration of some high-risk approaches. BER also encourages the submission of innovative "high-risk" applications with potential for future high impact on terrestrial ecosystem research. The probability of success and the risk-reward balance will be considered when making funding decisions.

Applicants are encouraged to consider utilization of, or collaboration with, sites that have existing support (e.g., former FACE, existing AmeriFlux projects, SPRUCE or Ngee Arctic) thereby leveraging ongoing investments, archived samples and long-term data sets. Applicants are encouraged to employ a model-inspired approach to pose their research questions, which in turn provides a direct link to improving the model or process representation. Given extensive efforts by DOE to develop the CESM (including the CLM) applicants are encouraged to link their activities to these efforts where appropriate. Results are expected to extend to bioregion scales, and also contribute to continental scale analysis of carbon cycle problems that are analyzed by e.g. the North American Carbon Program (NACP) (<http://nacarbon.org/nacp/>).

In late 2011, the carbon cycle science community released “A U.S. Carbon Cycle Science Plan” (<http://www.carboncyclescience.gov/USCarbonCycleSciencePlan-August2011.pdf>) – written by a committee chaired by Anna Michalak, Robert Jackson, Gregg Marland, and Christopher Sabine. Applicants are encouraged to review this report with particular emphasis on Goals 1 and 3 in the context of terrestrial ecosystems and this FOA. In addition, a 2010 BER workshop outlined science needs for basic research in climate science, including terrestrial ecosystem science as described in the workshop report (http://science.energy.gov/~media/ber/pdf/Climate_roadmap_workshop_2010.pdf). Applicants are encouraged also to review this report with particular emphasis on the summary and chapters on “Terrestrial Science” and “Latitudinal Opportunities for Integrated Research Efforts” to familiarize themselves with the identified science needs.

While the TES program supports a broad spectrum of fundamental research in terrestrial ecosystem science and will consider research applications within this scope, this FOA encourages applications in the following specific Science Areas:

- The role of belowground processes and mechanisms across scales (e.g., soil carbon transformation/stability, root dynamics, mycorrhizal interactions, and plant mediated (e.g. root exudates, priming, hydrological) biogeochemical transformations) associated with a changing climate;
- New or improved understanding of carbon pathways, fluxes and ecosystem function with particular emphasis on Arctic and tropical ecosystems;
- The role of natural disturbances in carbon cycling, particularly disturbances associated with changing climate (e.g., changes in atmospheric carbon, precipitation, nutrients);
- New or improved understanding of critical carbon processes at the terrestrial-aquatic interface which have the potential for direct feedbacks to the climate system (e.g., soil carbon transformation, methane biogeochemistry). Research under this science area must contain a direct link to terrestrial processes and is limited to terrestrial ecosystems and their immediate interface with freshwater and brackish water systems, such as riparian zones, hyporheic zones and wetlands. Research that focuses on aquatic processes, agricultural systems, ocean systems, and ecosystem services is out of scope and will not be considered;

- CLM developments, including development, coupling and testing of submodels related to land biogeophysics (<http://www.cesm.ucar.edu/models/clm/biogeophysics.html>), the hydrologic cycle (<http://www.cesm.ucar.edu/models/clm/hydrologic.html>), biogeochemistry (<http://www.cesm.ucar.edu/models/clm/biogeochemistry.html>), and ecosystem dynamics (<http://www.cesm.ucar.edu/models/clm/ecosystem.html>). Attention to scale-aware and scale-appropriate parameterization development is a priority; and
- Synthesis activities that draw broad insights into, and improve our understanding of, terrestrial ecosystems and their role in forcing climate change will be considered. These lower cost activities should leverage existing models, sites and datasets.

Belowground processes are a critical component to carbon cycling, yet these processes are currently over-simplified or ignored in most large-scale models. Applications focusing on belowground ecosystems should seek to quantify rates and magnitudes of carbon accretion. Additionally, applications focusing in this area should seek to understand processes and properties that control transformation of biomass into organic matter, including studies of stabilization mechanisms of the long residence time components, their fate, and ecosystem feedbacks. Research is needed on these processes for different climate and vegetation conditions (e.g., as represented by AmeriFlux research sites) where results can be spatially scaled to estimate carbon changes across climate zones and bioregions. Products of research that focus on belowground carbon processes (e.g., organic matter stabilization and dynamics, carbon turnover rates, root and microbial respiration, carbon/nitrogen/other relationships) should provide new insights and model representations for coupled interactions, residence time and other carbon source or sink properties of belowground ecosystem components.

Ecosystem processes at terrestrial interfaces have traditionally been excluded or oversimplified in model representation. Despite recent advances in wetland ecology, the current process level understanding of key carbon-related processes at this interface is insufficient. It is well known that terrestrial-aquatic interfaces (e.g., riparian zones, hyporheic zones and wetlands) play a critical role in carbon cycling and have the potential to provide major feedbacks to the climate system. Shifts in oxic and anoxic conditions at these interfaces could have significant impacts on important greenhouse gas biogeochemistry, such as methane and carbon dioxide, for example. The goals of applications focusing on the terrestrial-aquatic interface should be to improve the representation of these processes in models at a variety of scales from plot to global. The terrestrial-aquatic research focus is limited to those processes that incorporate and connect directly to terrestrial ecosystems. **Research that focuses strictly on aquatic processes, agricultural systems, ocean systems, and ecosystem services is out of scope and will not be considered.**

Applications that include the collection of carbon flux measurements must contribute to the AmeriFlux Network (<http://public.ornl.gov/ameriflux/>) and must specify the nature and timing of data submission to AmeriFlux as part of the data management plan. The establishment of new carbon flux measurement locations will be balanced carefully against the value of existing sites. Potential applicants are encouraged to review the existing AmeriFlux locations and to consider opportunities for collaboration as alternatives to the establishment of new sites. For applications that seek to sustain existing AmeriFlux locations, priority will be placed on hypothesis-based

research and sites that have a strong record of measurement performance and prompt delivery of data products to the AmeriFlux archive for use by the broader scientific community. There is an established archive for reporting AmeriFlux data (<http://public.ornl.gov/ameriflux/data-guidelines.shtml>), and supported projects will be expected to comply rigorously with reporting guidelines and standards.

Modeling, synthesis and integration activities should consider utilization of available AmeriFlux and FACE data products. Applications should identify large computational requirements and their proposed plan for acquiring access to appropriate computational resources.

DOE's Climate Change research is an integral component of the U.S. Global Change Research Program (USGCRP) (<http://www.globalchange.gov/>), which is closely coordinated with other Federal carbon cycle research through the Carbon Cycle Science Program (<http://www.carboncyclescience.gov/>). The website for the Carbon Cycle Science Program includes a "Relevant Documents" section that provides links to key documents outlining science needs for U.S. carbon science research programs.

Collaboration

Multi-disciplinary and inter-institutional collaborations are strongly encouraged to enhance and strengthen research capabilities as needed. Collaboration could include institutions such as universities, industry, non-profit organizations, Federal Agencies, and Federally Funded Research and Development Centers (FFRDCs), which include the DOE National Laboratories. Collaborations involving the DOE National Laboratories are permitted; however, the efforts must reflect specific and unique capabilities/expertise at the collaborating DOE National Laboratory. These financial collaborations should show clear scientific leadership from the submitting institution and reflect an appropriate level of effort from the DOE National Laboratory.

All collaborative applications must include letters of agreement from each collaborator who would receive funding. These letters should specify the contributions the collaborators intend to make if the application is accepted and funded. **Applications for multi-investigator projects must present a management structure** for integrating collaborating investigators. Involvement of students and post doctoral scientists is encouraged. **The lead submission must include all budgetary information for all funded Co-PIs.**

Refer to <http://science.doe.gov/grants/colab.asp> for details on submission for collaborative research applications: *Collaborations Among Private Sector or Academic Organizations; or Collaborations Between Private Sector or Academic Organizations, FFRDCs and Federal Agencies*. The preferred submission for collaborations involving a collaborator responsible for a smaller portion of the overall project is for a single application submission from the Lead with a subaward. (National Laboratories and Federal agency collaborators must submit separately.) For advice concerning the correct submission, contact the Technical Program Contact for this FOA.

Data Sharing Policy: Research data obtained through public funding are a public trust. As such, these data must be publicly accessible. To be in compliance with the data policy of the U.S. Global Change Research Program of full and open access to global change research data, **applications submitted in response to this FOA must include a description of the researcher's data sharing plans if the proposed research involves the acquisition of data in the course of the research that would be of use to the climate research and assessment communities.** This includes data from extensive, long-term observations and experiments and from long-term model simulations of climate that would be costly to duplicate. **The description must include plans for sharing the data that are to be acquired in the course of the proposed research, particularly how the acquired data will be preserved, documented, and quality assured, and where it will be archived for access by others.** Data of potentially broad use in climate change research and assessments should be archived, when possible, in data repositories for subsequent dissemination. Examples of DOE-funded data repositories may be found at <http://cdiac.ornl.gov/>, http://www-pcmdi.llnl.gov/ipcc/about_ipcc.php. The repository where the researcher intends to archive the data should be notified in advance of the intention, contingent on a successful outcome of the application review. If data are to be archived at the researcher's home institution or in some other location, the application must describe how, where, and for how long the data will be documented and archived for access by others. Researchers are allowed an initial period of exclusive use of the acquired data to quality assure it and to publish papers based on the data, but they are strongly encouraged to make the data openly available as soon as possible after this period. DOE's Office of Biological and Environmental Research defines the exclusive use period to be one year after the end of the data acquisition period for the proposed performance period of the award but exceptions to extend this period may be justified for unique or extenuating circumstances. **Explicit data management and data sharing plans are required and should be included as Appendix 6 (i.e., not counted in the page limitation).**

Availability of User Facilities and Other Specialized Resources

DOE has responsibility for programs and facilities that offer unique and complementary resources that support research in terrestrial ecosystem science. Potential applicants are encouraged to consider use of these programs/facilities in developing their applications. **The applicant must certify that site coordinators and/or advisory panels have agreed to plans for the proposed research.** This certification should be in the form of a letter of support included with the application. Examples of available user facilities and other specialized resources include:

NGEE Arctic (Next Generation Ecosystem Experiment)

DOE supports process studies and modeling to assess carbon cycle dynamics in high-latitude terrestrial ecosystems. The NGEN Arctic project focuses on thawing permafrost in a warming Arctic, and how associated changes in biogeochemical processes and vegetation dynamics will affect feedbacks to the climate system. Fundamental knowledge gained in these investigations will improve representation of ecosystem dynamics, subsurface biogeochemistry, and land-atmosphere processes in regional and global models, and improve predictions of climate change in tundra ecosystems. Field sites for the NGEN Arctic project are currently being established at locations in Alaska. More information on the study and the method for contacting NGEN Arctic project staff to discuss collaborative research is described on the project web site (<http://ngee.ornl.gov/>).

Green Ocean Amazon (GOAmazon) ARM Campaign

The Atmospheric Radiation Measurement (ARM) Climate Research Facility plans to deploy to Manaus Brazil for the Green Ocean Amazon (GOAmazon) campaign. The scientific focus of GOAmazon is on atmospheric, terrestrial ecosystem, carbon cycle, and coupling questions concerning tropical systems in the Amazon. This planned campaign will provide a dataset vital to constrain tropical forest model parameterizations for organic aerosols, cloud and convection schemes, and terrestrial vegetation components. The dataset also will provide insights into how these are perturbed by pollution and how they influence climate. The results will be used to improve and validate climate models at a range of scales. Linkages to the terrestrial ecosystems and carbon cycle could contribute to a broader understanding of this climatically sensitive and poorly understood ecosystem. More information about this planned study can be found at: http://science.energy.gov/~media/ber/pdf/GOAmazon2014_200dpi.pdf.

Spruce and Peatland Responses Under Climate and Environmental Change (SPRUCE)

DOE supports an experiment to assess the response of northern boreal and peatland ecosystems to increases in temperature and elevated atmospheric CO₂ concentrations. The SPRUCE experiment currently is being established at the Marcell Experimental Forest in northern Minnesota. More information on the study, a listing of currently funded collaborators, and the method for contacting SPRUCE project staff to discuss collaborative research is described on the project web site (<http://mnspruce.ornl.gov/>).

Free Air Carbon Dioxide Enrichment (FACE)

DOE has supported a number of FACE experiments (<http://public.ornl.gov/face/index.shtml>) that have recently undergone destructive harvest. Some of these sites have maintained archives of treatment and control plant material and soil which are available for use by the scientific community. DOE strongly encourages the community to consider the use of these unique and valuable samples as part of applications to this solicitation. For more information contact the appropriate FACE site coordinator (http://public.ornl.gov/face/global_face.shtml).

Environmental Molecular Sciences Laboratory (EMSL)

The Environmental Molecular Sciences Laboratory (EMSL) (<http://www.emsl.pnl.gov/>) located at the Pacific Northwest National Laboratory (PNNL), is a national scientific user facility providing integrated experimental and computational resources for investigating the complex molecular scale process occurring at microbe/mineral/water interfaces in the terrestrial

biosphere. Advanced imaging, nanoSIMS, NMR spectroscopy, computed x-ray tomography, high-resolution mass spectrometry and transcriptomics/proteomics are a few of the many capabilities at EMSL available at no charge through a user proposal process (contact Nancy Hess, nancy.hess@pnnl.gov).

Center for Accelerator Mass Spectrometry (CAMS)

The Center for Accelerator Mass Spectrometry (CAMS) at Lawrence Livermore National Laboratory provides accelerator mass spectroscopy capabilities on a cost-recovery basis to the scientific community. In the context of carbon cycle studies, radiocarbon measurements can be used to determine the ‘age’ and rate of change of carbon stocks or as a biogeochemical tracer to elucidate processes and pathways. CAMS provides technical and analytical support to several existing research projects in the carbon cycle sciences. More information on the applicability of CAMS capability to carbon cycle science is available at <https://cams.llnl.gov/naturalcarbon.php?id=8>.

High Performance Computing Centers

DOE supports high performance computing centers, which provide compute cycles to the scientific user community, including the National Energy Research Scientific Computing Center (NERSC) at the Lawrence Berkeley National Laboratory (<http://www.nersc.gov>), Molecular Science Computing (MSC) capability at EMSL (<http://www.emsl.pnl.gov/capabilities/computing/>), and the National Center for Computational Sciences (NCCS) at the Oak Ridge National Laboratory (<http://nccs.gov>).

Joint Genomics Institute

The Joint Genome Institute (JGI) in Walnut Creek, California provides the scientific community access to state of the art genomic sequencing capabilities for microbial, plant, and other (non-pathogen) targets. In all cases, the aim of the JGI is to provide to the national and international scientific community the genome-derived “parts lists” that support further discovery (<http://www.jgi.doe.gov>). These resources are available at no charge through a user proposal process.

Synchrotron Light Sources

DOE also provides users with access to synchrotron light sources that are capable of providing structural and chemical information often unavailable with conventional sources of x-rays. DOE laboratories with synchrotrons include: Argonne National Laboratory (<http://www.aps.anl.gov/>); Brookhaven National Laboratory (<http://www.nsls.bnl.gov/>); Lawrence Berkeley National Laboratory (<http://www.als.lbl.gov/>); and Stanford Synchrotron Radiation Laboratory (<http://www-ssrl.slac.stanford.edu/index.html>). Use of the synchrotron light sources is available at no charge through a user proposal process.

Any Other Special Requirements:

The application narrative should begin with a cover page that includes: the project title, the Lead PI's name and complete contact information, whether the application is for a **Full** or **Exploratory** project, up to five project key words, and a table listing the Lead PI and institution and all funded Co-PIs, their institutions **and the amount of funding requested of each year for the project for each funded investigator**. A sample cover page is available at http://science.energy.gov/ber/research/cesd/preapp_cover_page_templ

Applications that previously have been submitted for review, but were declined, are required to address (within the Narrative Section) major issues and concerns raised from previous reviews and to describe how the application was improved and updated since the original submission. All applicants must check "NEW" on the SF-424 R&R when submitting. Do not select Revised or Resubmission.

All Lead PIs are required to attend TES PI meetings (generally a 2-day meeting) held in the Washington DC area in the spring of each year. Travel funds should be budgeted to allow at least the lead PI to attend this meeting.

PART II – AWARD INFORMATION

A. TYPE OF AWARD INSTRUMENT.

DOE anticipates awarding new grants under this Funding Opportunity Announcement (FOA).

B. ESTIMATED FUNDING.

It is anticipated that up to \$3,000,000 from TES and \$700,000 from ESM will be available for approximately 12 to 18 awards to be made in Fiscal Year 2013, contingent on the availability of appropriated funds. For a Full Application, applicants may request project support for up to three years with annual budgets not to exceed \$350,000/year total costs. The proposed research project should be designed to be completed within the three year period. For an Exploratory Application, applicants may request project support for up to two years with a total budget of up to \$150,000. Applicants should specify whether they are submitting a Full Application or an Exploratory Application.

DOE is under no obligation to pay for any costs associated with preparation or submission of pre-applications or applications. DOE reserves the right to fund, in whole or in part, any, all, or none of the applications submitted in response to this FOA.

C. MAXIMUM AND MINIMUM AWARD SIZE.

The award size will depend on the number of meritorious applications and the availability of appropriated funds.

D. EXPECTED NUMBER OF AWARDS.

The expected number of awards will depend on the number of meritorious applications and the availability of appropriated funds.

E. ANTICIPATED AWARD SIZE.

The award size will depend on the number of meritorious applications and the availability of appropriated funds.

F. PERIOD OF PERFORMANCE.

A maximum of three years will be considered. Out-year funding will depend upon suitable progress and the availability of funds. For an Exploratory submission, a maximum of two years will be considered.

G. TYPE OF APPLICATION.

DOE will accept new applications under this FOA.

PART III - ELIGIBILITY INFORMATION

A. ELIGIBLE APPLICANTS.

All types of entities are eligible to apply, except Federally Funded Research and Development Center (FFRDC) Contractors, and nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995.

B. COST SHARING.

Cost sharing is not required.

C. OTHER ELIGIBILITY REQUIREMENTS.

N/A

PART 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 a Grant Application Package**". Enter the CFDA and/or the funding opportunity number located on the cover of this FOA and then follow the prompts to download the application package.

B. LETTER OF INTENT AND PRE-APPLICATION.

1. Letter of Intent.

A Letter of Intent is not required.

2. Pre-application.

Pre-applications are required.

Potential applicants are required to submit a brief pre-application, referencing Funding Opportunity Announcement DE-FOA-0000749 for receipt by DOE by 4:30 p.m., Eastern Time, August 17, 2012.

Pre-applications are limited to three pages total, including a prescribed cover page. The cover page should include: the project title, the Lead PI's name and complete contact information, whether a New/Revised and Full/Exploratory application is anticipated, and a table listing the Lead PI and institution and all Co-PIs requesting funds, their institutions and the approximate amounts of funding requested for each institution for each year for the project. The narrative is limited to two pages. A sample cover page can be downloaded from

http://science.energy.gov/ber/research/cesd/preapp_cover_page_template/

It is important that the pre-application be in a single PDF file. The pre-application must be submitted electronically through the DOE Office of Science Portfolio Analysis and Management System (PAMS) website <https://pamspublic.science.energy.gov/>. **The Principal Investigator and anyone submitting on behalf of the Principal Investigator must register for an account in PAMS before it will be possible to submit a pre-application.** To register, click "Create New PAMS Account" on the website <https://pamspublic.science.energy.gov/> and follow the instructions for creating an account. You will be prompted to create a username and password and to enter your contact information. Registering to PAMS is a two-step process; once you create an individual account, you must associate yourself with ("register to") your institution. Follow the onscreen instructions to do this.

All PIs and those submitting on behalf of PIs are encouraged to establish PAMS accounts as soon as possible to avoid submission delays. You may establish a PAMS account at <https://pamspublic.science.energy.gov/>.

To access PAMS, please use either Internet Explorer or Firefox. Currently, PAMS does not support the Chrome or Safari browsers, but an upgrade in the future will make it possible to use them.

To submit the pre-application, log in to PAMS. Select “View Funding Opportunity Announcements” and find the current announcement in the list. Click on “Actions/Views” for this announcement, select “Submit Pre-application” from the dropdown menu, and follow the instructions from there. Note that you must select one and only one Principal Investigator (PI) per pre-application; click on “Select PI” on the far right side of the screen and then select the appropriate PI from the list of all registered users from your institution returned by PAMS. If the PI for whom you are submitting does not appear on the list, he or she has not yet registered in PAMS. For your convenience, you may have PAMS send an email invitation to the PI to register in PAMS. To do so, choose “Invite PI” at the top left of the “Select PI” screen. You can enter an optional personal message to the PI in the “Comments” box that PAMS presents, and it will be included in the email sent by PAMS to the PI. To upload the pre-application as an attachment into PAMS, select “Attach File” at the far right side of the screen. Search for your file and then select “Attach” to upload the file. You may enter an optional description of the file you are attaching. Using the dropdown at the bottom of the screen, save the pre-application and then submit it to DOE. Upon submission, the PI will receive an email from the PAMS system acknowledging receipt of the pre-application.

You are encouraged to register for an account in PAMS at least a week in advance of the pre-application submission deadline so that there will be no delays with your submission.

For help with PAMS, please contact the Office of Science PAMS Support Center. The PAMS Support Center can be reached Monday-Friday 7:00 AM-6:00 PM Eastern Time. Telephone: (301) 903-5313, Email: scsc@science.doe.gov. All submission and inquiries about this Funding Opportunity Announcement must reference Funding Opportunity Announcement **DE-FOA-0000749**.

Pre-applications will be reviewed for conformance with the guidelines presented in this FOA and suitability in the technical areas specified in this FOA. A response to the pre-applications encouraging or discouraging formal applications will be communicated to the applicants by September 14, 2012. Pre-applications will be reviewed by BER program managers for responsiveness to this FOA. Only those applicants who receive an “encourage” response from DOE should submit a full application. No other full applications will be considered. Applicants who have not received a response regarding the status of their pre-application are responsible for contacting the program to confirm this status.

Pre-applications should describe the research objectives, the technical approach(es), and the proposed team members, their expertise and their roles in the proposed project. The intent in requesting a pre-application is to save the time and effort of applicants in

preparing and submitting a formal application that may be inappropriate for the program. Since one purpose of the pre-application is to facilitate planning of the merit review and the selection of reviewers without conflicts of interest, we request that applicants ensure that the list of supported or unsupported participants is comprehensive.

Pre-applications will be reviewed relative to the scope and research needs as outlined in this FOA and outlined in the Climate Research Roadmap workshop report (at http://science.energy.gov/~media/ber/pdf/Climate_roadmap_workshop_2010.pdf). Biographical data are not required for pre-applications, nor is an institutional endorsement necessary.

C. CONTENT AND FORM OF APPLICATION – SF 424 (R&R).

You must complete the mandatory forms and any applicable optional forms (e.g., SF-LLL-Disclosure of Lobbying Activities) in accordance with the instructions on the forms and the additional instructions below. **Files that are attached to the forms must be in Adobe Portable Document Format (PDF) unless otherwise specified in this FOA.**

1. SF 424 (R&R).

Complete this form first to populate data in other forms. Complete all the required fields in accordance with the pop-up instructions on the form. The list of certifications and assurances referenced in Field 17 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.

By submitting an application in response to this FOA the Applicant certifies that:

- 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,
- 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,
- If the Applicant's financial assistance application is chosen for award and the award is in excess of \$1,000,000, the applicant will, by the end of the fiscal year, upgrade the efficiency of their facilities by replacing any lighting that does not meet or exceed the energy efficiency standard for incandescent light bulbs set forth in Section 325 of the Energy Policy and Conservation Act (42 U.S.C. 6295).

2. RESEARCH AND RELATED Other Project Information.

Complete questions 1 through 6 and attach files. The files must comply with the following instructions:

Project Summary/Abstract (Field 7 on the Form).

The project summary/abstract must contain a summary of the proposed activity suitable for dissemination to the public. It should be a self-contained document that identifies the name of the applicant, the project director/principal investigator(s) (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. The project summary must not exceed 1 page when printed using standard 8.5” by 11” paper with 1” margins (top, bottom, left and right) with font not smaller than 11 point. To attach a Project Summary/Abstract, click “Add Attachment.”

Project Narrative (Field 8 on the Form).

The project narrative (submitted by the lead institution) **must not exceed 20 pages** for Full Applications and **must not exceed 10 pages** for Exploratory Applications, of technical information, including charts, graphs, maps, photographs, and other pictorial presentations, when printed using standard 8.5” by 11” paper with 1 inch margins (top, bottom, left, and right). *Applications that are not compliant with either the page or budget limitations described above may be declined administratively without review.* EVALUATORS WILL ONLY REVIEW THE NUMBER OF PAGES SPECIFIED IN THE PRECEDING SENTENCE. The font must not be smaller than 11 point. Letters of endorsement from unfunded collaborators should also be included, if applicable, but do not count toward the 20 page limit. Please do not submit general letters of support as these are not used in making funding decisions.

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 application narrative should begin with a cover page that includes: the project title, the Lead PI's name and complete contact information.

The cover page must also include the following information (this page will not count in the project narrative page limitation):

Applicant/Institution:

Street Address/City/State/Zip:

Principal Investigator:

Postal Address:

Telephone Number:

Email:

Funding Opportunity Announcement Number: DE-FOA-0000749

DOE/Office of Science Program Office: Office of Biological & Environmental Research

DOE/Office of Science Program Office Technical Contact: Dr. Daniel Stover

DOE Grant Number (if Renewal or Supplemental Application):

Is this a Collaboration? If yes, please list ALL Collaborating Institutions/PIs.

The cover page should also include a table listing the Lead PI and institution and all funded Co-PIs, their institutions **and the amount of funding requested for each year for the project for each funded investigator.**

The project narrative must include:

Project Objectives:

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

The Project Narrative comprises the research plan for the project, it should contain enough background material in the Introduction, including review of the relevant literature, to demonstrate sufficient knowledge of the state of the science. The major part of the narrative should be devoted to a description and justification of the proposed project, including details of the method to be used. It should also include a timeline for the major activities of the proposed project, and should indicate which project personnel will be responsible for which activities.

Project Timetable:

This section should outline as a function of time, year by year, all the important activities or phases of the project, including any activities planned beyond the project period. Successful applicants must use this project timetable to report progress.

Appendix 1: Biographical Sketch.

Provide a biographical sketch for the project director/principal investigator (PD/PI) and each senior/key person listed in Section A on the R&R Budget form. **Provide the biographical sketch information as an appendix to your project narrative. Do not attach a separate file. The biographical sketch appendix will not count in the project narrative page limitation.** The biographical information (curriculum vitae) 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.

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. You may use an abbreviated style such as the *Physical Review Letters* convention for citations (list only the first author). You may also use this convention in the application bibliography.

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.

Identification of Potential Conflicts of Interest or Bias in Selection of Reviewers. Provide the following information in this section.

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. For publications or collaborations with more than 10 authors or participants, only list those individuals in the core group with whom the Principal Investigator interacted on a regular basis while the research was being done. 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 five years. Also, list the names and current organizational affiliations of your graduate students and postdoctoral associates during the past five years.

Appendix 2: Current and Pending Support.

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 subawardees, 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. **Provide the Current and Pending Support as an appendix to your project narrative. Do not attach a separate file. The Current and Pending Support Appendix will not count in the project narrative page limitation.**

Appendix 3: Bibliography & References Cited.

Provide a bibliography of any references cited in the Project Narrative. Each reference must include the names of all authors (in the same sequence in which they appear in the publication), the article and journal title, book title, volume number, page numbers, and year of publication. Include only bibliographic citations. Applicants should be especially careful to follow scholarly practices in providing citations for source materials relied upon when preparing any section of the application. In order to reduce the number of files attached to your application, **please provide the Bibliography and References Cited information as an appendix to your project narrative. This appendix will not count in the project narrative page limitation.**

Appendix 4: Facilities & Other Resources.

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 provide the Facility and Other Resource information as an appendix to your project narrative. Do not attach a separate file. This appendix will not count in the project narrative page limitation.**

Appendix 5: Equipment.

List major items of equipment already available for this project and, if appropriate identify location and pertinent capabilities. **Provide the Equipment information as an appendix to your project narrative. Do not attach a separate file. This appendix will not count in the project narrative page limitation.**

Appendix 6: Data Management and Data Sharing Plan

Provide a clear description and plan for sharing the research data and data products that are to be acquired in the course of the proposed research, particularly how the acquired data will be preserved, documented, and quality assured, and where it will be archived for access by others. In order to reduce the number of files attached to your application, **please provide the data management and data sharing plan information as an appendix to your project narrative. Do not attach a separate file. This appendix will not count in the project narrative page limitation.**

Appendix 7: Other Attachment.

If you need to elaborate on your responses to questions 1-5 on the “Other Project Information” document, **please provide this information as an appendix to your project narrative. Do not attach a separate file. This appendix will not count in the project narrative page limitation.**

Do not attach any of the requested appendices described above as files for fields 9, 10, 11, and 12, instead follow the above instructions to include the information as appendices to the project narrative file (these appendices will not count in the project narrative page limitation).

3. RESEARCH AND RELATED BUDGET.

Complete the Research and Related Budget form in accordance with the instructions on the form and the following instructions. You must complete a separate budget for each year of support requested. The form will generate a cumulative budget for the total project period. You must complete all the mandatory information on the form before the NEXT PERIOD button is activated. You may request funds under any of the categories listed as long as the item and amount are necessary to perform the proposed work, meet all the criteria for allowability under the applicable Federal cost principles, and are not prohibited by the funding restrictions in this FOA (See PART IV, G).

Budget Justification (Field K on the form).

Provide the required supporting information for the following costs (See R&R Budget instructions): equipment; domestic and foreign travel; participant/trainees; material and supplies; publication; consultant services; ADP/computer services; subaward/consortium/contractual; equipment or facility rental/user fees; alterations and renovations; and indirect cost type. Provide any other information you wish to submit to justify your budget request. **Attach a single budget justification file for the entire project period in Field K.** The file automatically carries over to each budget year.

4. R&R SUBAWARD BUDGET ATTACHMENT(S) FORM.

Budgets for Subrecipients, other than DOE FFRDC Contractors. You must provide a separate cumulative R&R budget for each subrecipients that is expected to perform work estimated to be more than \$100,000 or 50 percent of the total work effort (whichever is less). If you are selected for award, you must submit a multi-year budget for each of these subrecipients. Download the R&R Budget Attachment from the R&R SUBAWARD BUDGET ATTACHMENT(S) FORM and e-mail it to each subsubrecipient that is required to submit a separate budget. After the Subsubrecipient has e-mailed its completed budget back to you, attach it to one of the blocks provided on the form. Use up to 10 letters of the subsubrecipient's name (plus.xfd) as the file name (e.g., ucla.xfd or energyres.xfd).

5. 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.

6. SF-LLL Disclosure of Lobbying Activities.

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	Attach to
SF 424 (R&R)	Form	N/A
RESEARCH AND RELATED Other Project Information	Form	N/A
Project Summary/Abstract	PDF	Field 7
Project Narrative, including required appendices	PDF	Field 8
RESEARCH & RELATED BUDGET	Form	N/A
Budget Justification	PDF	Field K
PROJECT/PERFORMANCE SITE LOCATION(S)	Form	N/A
SF-LLL Disclosure of Lobbying Activities , if applicable	Form	N/A

D. SUBMISSIONS FROM SUCCESSFUL APPLICANTS.

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

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

E. SUBMISSION DATES AND TIMES.

1. Letter of Intent.

A Letter of Intent is not required.

2. Pre-application.

Pre-applications are required.

Potential applicants are required to submit a brief pre-application, referencing Funding Opportunity Announcement DE-FOA-0000749 for receipt by DOE by 4:30 p.m., Eastern Time, **August 17, 2012**.

Pre-applications are limited to three pages total, including a prescribed cover page. The cover page should include: the project title, the Lead PI's name and complete contact information, whether a New/Revised and Full/Exploratory application is anticipated, and a table listing the Lead PI and institution and all Co-PIs requesting funds, their institutions and the approximate amounts of funding requested for each institution for each year for the project. The narrative is limited to two pages. A sample cover page can be downloaded from

http://science.energy.gov/ber/research/cesd/preapp_cover_page_tmpl/

It is important that the pre-application be in a single PDF file. The pre-application must be submitted electronically through the DOE Office of Science Portfolio Analysis and Management System (PAMS) website <https://pamspublic.science.energy.gov/>. **The Principal Investigator and anyone submitting on behalf of the Principal Investigator must register for an account in PAMS before it will be possible to submit a pre-application.** To register, click "Create New PAMS Account" on the website <https://pamspublic.science.energy.gov/> and follow the instructions for creating an account. You will be prompted to create a username and password and to enter your contact information. Registering to PAMS is a two-step process; once you create an individual account, you must associate yourself with ("register to") your institution. Follow the onscreen instructions to do this.

All PIs and those submitting on behalf of PIs are encouraged to establish PAMS accounts as soon as possible to avoid submission delays. You may establish a PAMS account at <https://pamspublic.science.energy.gov/>.

To access PAMS, please use either Internet Explorer or Firefox. Currently, PAMS does not support the Chrome or Safari browsers, but an upgrade in the future will make it possible to use them.

To submit the pre-application, log in to PAMS. Select “View Funding Opportunity Announcements” and find the current announcement in the list. Click on “Actions/Views” for this announcement, select “Submit Pre-application” from the dropdown menu, and follow the instructions from there. Note that you must select one and only one Principal Investigator (PI) per pre-application; click on “Select PI” on the far right side of the screen and then select the appropriate PI from the list of all registered users from your institution returned by PAMS. If the PI for whom you are submitting does not appear on the list, he or she has not yet registered in PAMS. For your convenience, you may have PAMS send an email invitation to the PI to register in PAMS. To do so, choose “Invite PI” at the top left of the “Select PI” screen. You can enter an optional personal message to the PI in the “Comments” box that PAMS presents, and it will be included in the email sent by PAMS to the PI. To upload the pre-application as an attachment into PAMS, select “Attach File” at the far right side of the screen. Search for your file and then select “Attach” to upload the file. You may enter an optional description of the file you are attaching. Using the dropdown at the bottom of the screen, save the pre-application and then submit it to DOE. Upon submission, the PI will receive an email from the PAMS system acknowledging receipt of the pre-application.

You are encouraged to register for an account in PAMS at least a week in advance of the pre-application submission deadline so that there will be no delays with your submission.

For help with PAMS, please contact the Office of Science PAMS Support Center. The PAMS Support Center can be reached Monday-Friday 7:00 AM-6:00 PM Eastern Time. Telephone: (301) 903-5313, Email: scsc@science.doe.gov. All submission and inquiries about this Funding Opportunity Announcement must reference Funding Opportunity Announcement **DE-FOA-0000749**.

Pre-applications will be reviewed for conformance with the guidelines presented in this FOA and suitability in the technical areas specified in this FOA. A response to the pre-applications encouraging or discouraging formal applications will be communicated to the applicants by September 14, 2012. Pre-applications will be reviewed by BER program managers for responsiveness to this FOA. Only those applicants who receive an “encourage” response from DOE should submit a full application. No other full applications will be considered. Applicants who have not received a response regarding the status of their pre-application are responsible for contacting the program to confirm this status.

Pre-applications should describe the research objectives, the technical approach(es), and the proposed team members, their expertise and their roles in the proposed project. The intent in requesting a pre-application is to save the time and effort of applicants in preparing and submitting a formal application that may be inappropriate for the program. Since one purpose of the pre-application is to facilitate planning of the merit review and the selection of reviewers without conflicts of interest, we request that applicants ensure that the list of supported or unsupported participants is comprehensive.

Pre-applications will be reviewed relative to the scope and research needs as outlined in this FOA and outlined in the Climate Research Roadmap workshop report (at http://science.energy.gov/~media/ber/pdf/Climate_roadmap_workshop_2010.pdf) . Biographical data are not required for pre-applications, nor is an institutional endorsement necessary.

3. Formal Applications.

Formal applications submitted in response to this FOA must be received by **November 12, 2012**, 11:59 PM Eastern Time, to permit timely consideration of awards in Fiscal Year 2013. **You are encouraged to transmit your application well before the deadline. APPLICATIONS RECEIVED AFTER THE DEADLINE WILL NOT BE REVIEWED OR CONSIDERED FOR AWARD.**

F. INTERGOVERNMENTAL REVIEW.

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

G. FUNDING RESTRICTIONS.

Cost Principles. Costs must be allowable, allocable, and reasonable in accordance with the applicable Federal cost principles referenced in 10 CFR Part 600 and 2 CFR 215. The Cost Principles for commercial organizations are located in FAR 31.2.

Pre-award Costs. Recipients may charge to an award resulting from this FOA 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 and 2 CFR 215. Recipients must obtain the prior approval of the awarding agency / 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.

You must COMPLETE the one-time registration process (all steps) before you can submit your first application through Grants.gov. We recommend that you start this process at least three weeks before the application due date. It may take 21 days or more to complete the entire process. Use the Grants.gov Organizational Registration Checklists at <http://www.grants.gov/assets/OrganizationRegCheck.pdf> to guide you through the process. IMPORTANT: During the CCR 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).

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 CCR registration annually. **The CCR is migrating from CCR.gov to SAM.gov: registering early will give applicants enough time to address any challenges posed by the transition** (https://www.sam.gov/sam/transcript/SAM_Quick_Guide_Grants_Registrations-v1.6.pdf).

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

Part V - APPLICATION REVIEW INFORMATION

A. CRITERIA.

1. Initial Review Criteria.

Prior to a comprehensive merit evaluation, DOE will perform an initial review in accordance with 10 CFR 605.10(b) to determine that (1) the applicant is eligible for the award; (2) the information required by the FOA has been submitted; (3) all mandatory requirements are satisfied; and (4) the proposed project is responsive to the objectives of the funding opportunity announcement.

2. Merit Review Criteria.

Applications will be subjected to scientific merit review (peer review) and will be evaluated against the following evaluation criteria which are listed in descending order of importance codified at 10 CFR 605.10(d):

1. Scientific and/or Technical Merit of the Project;
2. Appropriateness of the Proposed Method or Approach;
3. Competency of Applicant's Personnel and Adequacy of Proposed Resources; and
4. Reasonableness and Appropriateness of the Proposed Budget.

The evaluation process will include program policy factors such as the relevance of the proposed research to the terms of the FOA and the agencies' programmatic needs. Note that external peer reviewers are selected with regard to both their scientific expertise and the absence of conflict-of-interest issues. Both Federal and non-Federal reviewers may be used, and submission of an application constitutes agreement that this is acceptable to the investigator(s) and the submitting institution.

B. REVIEW AND SELECTION PROCESS.

1. Merit Review.

Applications that pass the initial review will be subjected to a formal merit review and will be evaluated based on the criteria codified at 10 CFR Part 605.10(d) in accordance with the guidance provided in the "Office of Science Merit Review System for Financial Assistance." This Merit Review System is available at: <http://www.sc.doe.gov/grants/merit.asp>.

2. Selection.

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

3. Government Discussions and Award.

The Government may enter into discussions with a selected applicant for any reason deemed necessary, including but not limited to: (1) the budget is not appropriate or reasonable for the requirement; (2) only a portion of the application is selected for award; (3) the Government needs additional information to determine that the recipient is capable of complying with the requirements in 10 CFR Part 600 and 605; 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.

DOE is striving to make **awards within 6 months**. The time interval begins on the date applications are due or the date the application is received. It is anticipated that selections will be completed by the winter of 2012 and awards will be made by the spring of FY 2013.

Part 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 Part 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.

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

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

B. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS.

1. Administrative Requirements.

The administrative requirements for DOE grants and cooperative agreements are contained in 10 CFR Part 600 and 10 CFR Part 605 (See: <http://ecfr.gpoaccess.gov>). Grants and cooperative agreements made to universities, non-profits and other entities subject to Title 2 CFR are subject to the Research Terms and Conditions located on the National Science Foundation web site at <http://www.nsf.gov/bfa/dias/policy rtc/index.jsp>.

DUNS and CCR Requirements

Additional administrative requirements for DOE grants and cooperative agreements are contained in 2 CFR, Part 25 (See: <http://ecfr.gpoaccess.gov>). Prime awardees must keep their data at CCR current. 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://ecfr.gpoaccess.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 CCR.

2. Special Terms and Conditions and National Policy Requirements.

Special Terms and Conditions and National Policy Requirements.

The DOE Special Terms and Conditions for Use in Most Grants and Cooperative Agreements are located at <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms>. The National Policy Assurances to Be Incorporated As Award Terms are located at <http://www.nsf.gov/bfa/dias/policy rtc/appc.pdf>.

Intellectual Property Provisions.

The standard DOE financial assistance intellectual property provisions applicable to the various types of recipients are located at <http://energy.gov/gc/standard-intellectual-property-ip-provisions-financial-assistance-awards>.

C. REPORTING.

Reporting requirements are identified on the Federal Assistance Reporting Checklist, DOE F4600.2, attached to the award agreement. For a sample Checklist, see <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Awards Forms.

PART VII - QUESTIONS/AGENCY CONTACTS

A. QUESTIONS.

Questions regarding the content of the FOA 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. More information is available at https://www.fedconnect.net/FedConnect/PublicPages/FedConnect_Ready_Set_Go.pdf. DOE will try to respond to a question within 3 business days, unless a similar question and answer have already been posted on the website.

Applications submitted through FedConnect will not be accepted.

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:

Technical/Scientific Program Contact:

Program Manager: Dr. Daniel Stover

Phone: (301) 903-0289

E-mail: Daniel.Stover@science.doe.gov

PART VIII - OTHER INFORMATION

A. MODIFICATIONS.

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

B. GOVERNMENT RIGHT TO REJECT OR NEGOTIATE.

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

C. COMMITMENT OF PUBLIC FUNDS.

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

D. PROPRIETARY APPLICATION INFORMATION.

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

“The data contained in pages _____ 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.

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, <https://cms.doe.gov/node/12613>.

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. AVAILABILITY OF FUNDS

Funds are not presently available for this award. The Government's obligation under this award is contingent upon the availability of appropriated funds from which payment for award purposes can be made. No legal liability on the part of the Government for any payment may arise until funds are made available to the Contracting Officer for this award and until the awardee receives notice of such availability, to be confirmed in writing by the Contracting Officer.