

**FINANCIAL ASSISTANCE
FUNDING OPPORTUNITY ANNOUNCEMENT**



U. S. Department of Energy

National Energy Technology Laboratory

Smart Grid Research, Development, and Demonstration

Funding Opportunity Number: DE-FOA-0000313

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**CFDA Number: 81.122 Electricity Delivery and Energy Reliability Research,
Development and Analysis**

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Letter of Intent Due Date:	Not Applicable
Pre-Application Due Date:	Not Applicable
Application Due Date:	06/22/2010 at 3:00:00 PM Eastern Time

****Changes to the Funding Opportunity Announcement (FOA) are highlighted in **yellow**. Specific pages are as follows: 6, 8, and 29.**

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 Announcement (e.g., obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number, register with the Central Contractor Registration (CCR), and register with Grants.gov). 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.

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

Applicants must register with the CCR. CCR website: <http://www.ccr.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/NNSA will try to respond to a question within 3 business days, unless a similar question and answer have already been posted on the website.

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 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.

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).

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Section I - FUNDING OPPORTUNITY DESCRIPTION

DESCRIPTION

This funding opportunity announcement (FOA) is issued by the Department of Energy, National Energy Technology Laboratory (NETL) in support of the Smart Grid Research & Development (R & D) Program within the Office of Electricity Delivery and Energy Reliability (OE). OE, in accordance with Title XIII of the Energy Independence and Security Act of 2007 (EISA), is tasked with accelerating the commercialization, deployment and integration of advanced digital systems that are needed to modernize the nation's electricity delivery network for enhanced interoperability and cyber security. The goal of the Smart Grid R & D program is to develop an integrated, national electric/communication/information technology infrastructure with the ability to dynamically optimize grid operations and resources and incorporate demand response and consumer participation. The Smart Grid R & D Program Vision is that:

By 2030, the power grid has evolved into an intelligent energy delivery system that supports plug-and-play integration of dispatchable and intermittent low-carbon energy sources, and provides a platform for consumer engagement in load management, national energy independence, innovation, entrepreneurship, and economic security. This smart grid supports the best and most secure electric services available in the world and connects everyone to abundant, affordable, high quality, environmentally conscious, efficient, and reliable electric power.

Smart grid, as defined herein, is the electric delivery network, from generation to the customer, integrated with the latest advances in digital and information technology to improve the electric system reliability, efficiency, security, and resiliency. The smart grid is characterized by seven defining functions¹:

- Enabling informed participation by customers
- Accommodating all generation and storage options
- Enabling new products, services, and markets
- Providing the power quality for the range of needs in the 21st century
- Optimizing asset utilization and operating efficiently
- Addressing disturbances – automated prevention, containment, and restoration
- Operating resiliently against physical and cyber attacks and natural disasters

Highly adaptive protection and control systems are needed to enable smart grid functionality. This announcement consists of three (3) areas of interest addressing the need to develop:

1. Integrated distribution management systems for distribution automation
2. Advanced sensing, monitoring, and control technologies for enhanced asset utilization and grid reliability
3. Voltage regulation and overvoltage protection for high penetration of renewable generation

The aforementioned topic areas stem from key technical challenges and high priority activities identified in the *Technology Development* and *Modeling* chapters of the Smart Grid R&D Multi-

¹ These functions were identified by smart grid stakeholders through regional meetings convened under the Modern Grid Strategy project of the National Energy Technology Laboratory (NETL). The Modern Grid Strategy website is at <http://www.netl.doe.gov/moderngrid/>

Year Program Plan (MYPP),² which was developed with significant input and contributions from a broad stakeholder group including representatives from electric utilities, technology providers, universities, national laboratories, and government agencies.

The objective of this announcement is to select projects that will support achieving the Smart Grid 2030 Targets of:

- 20% reduction in the nation's peak **electricity** demand
- 100% **electricity supply** availability to serve all critical loads at all times, and a range of reliability services for other loads
- 40% improvement in system efficiency and asset utilization to achieve a load factor of 70%
- 20% **of the nation's** electricity capacity **derived** from distributed and renewable energy sources (200 GW)

AREAS OF INTEREST

This FOA includes three (3) Areas of Interest. Applicants should prepare and submit applications as follows:

- Applicants may submit more than one application.
- An application must target only one Area of Interest, e.g., it cannot target Area of Interest 1 AND Area of Interest 3
- For Areas of Interest 2 and 3 Subtopics, an application may be submitted for either Subtopic, or both Subtopics may be addressed in the same application, e.g., an application may target Area of Interest 2, Subtopic A and Subtopic B, or an application may target only Area of Interest 3, Subtopic B. An application cannot target Subtopics from 2 separate areas of interest.
- Applicants must clearly identify the Area of Interest and Subtopic, if applicable, they are applying to in the Project Narrative.
- Detailed instructions on naming the Project Narrative file are provided in section IV-B-2.

Applicants must submit their application under the Program Area of Interest and/or Subtopic that they feel best fits the majority of the effort to be performed, and the application must clearly identify the Area of Interest and/or Subtopic being addressed. If the DOE believes an application fits more appropriately in a Program Area of Interest and/or Subtopic other than the one to which it was submitted, DOE may evaluate the application under the more appropriate Area of Interest and/or Subtopic. Do not submit identical applications under more than one Area of Interest and/or Subtopic.

Each application submitted in response to this funding opportunity announcement must include phases/tasks for research and development, as well as demonstration of the proposed technology under a real-world situation. As such, the inclusion of a commercialization entity and an electric utility (investor owned, municipal or rural electric cooperative) is highly encouraged. For each Area of Interest and/or Subtopic, the demonstration phase must last a minimum of six (6) months to allow collection of a sufficient amount of operational data following deployment of the proposed technology/solution. Applicants may propose a project that consists only of the demonstration phase. However, such applications must thoroughly describe the research and development that

² The Smart Grid Research & Development Multi-Year Program Plan: 2010-2014 (draft) is available at http://www.smartgrid.gov/sites/default/files/oe_mypp.pdf

has already been conducted on the proposed technology and provide evidence that the proposed technology is sufficiently developed for demonstration. Applications that fail to address both the R&D and demonstration aspects of the proposed technology will not be considered for award.

Cooperative Agreements that result from this FOA will be structured to include the R&D effort and the demonstration as separate Budget Periods, or will include a go/no-go decision point prior to initiation of the demonstration phase. As such, applications should be prepared so that R&D and demonstration tasks (along with associated budget estimates) can be readily identified. Moreover, since cost share requirements differ for R&D and demonstration projects, ability to distinguish between R&D and demonstration work will result in a more accurate determination of overall project cost share.

During the demonstration phase, recipients are to accumulate a minimum of six (6) months of operational data. Commercialization of the proposed technology/solution is a Program expectation; therefore, as set forth in the Statement of Project Objectives, tasks will be included to identify potential markets and marketing strategies and anticipated penetration rates for the technology(ies)/solutions being developed and/or demonstrated.

AREA OF INTEREST 1: INTEGRATED DISTRIBUTION MANAGEMENT SYSTEMS FOR DISTRIBUTION AUTOMATION

Integrated distribution management systems (DMS) are needed for a more flexible, automated, and self-healing grid with many distributed energy resources (DER)³ to achieve the Smart Grid 2030 Target of grid reliability and resilience. The DMS must be capable of integrating advanced distribution engineering modeling and analysis tools with utility management systems (such as supervisory control and data acquisition/energy management systems, outage management systems, meter data management systems, customer information systems, and automated mapping and facilities management systems) and associated databases for interoperability⁴ throughout the integrated system. The goal of this area of interest is development of an integrated DMS that will enhance capabilities of distribution automation in anticipating and responding to disturbances or malicious attacks while continually optimizing its own performance, as well as in dispatching DER and reconfiguring power flow to isolate faulted or damaged equipment. Other benefits include innovative customer services, reduced operations and maintenance costs, and increased throughput on existing lines via more effective power flow control.

Development of the integrated DMS must fully address all of the following R&D needs:

First, due to the combinations of vendors and software configurations involved, R&D is needed for interoperability and communication between utility management systems and associated databases and distribution engineering modeling and analysis tools.

Second, R&D is needed to advance the capability of distribution engineering modeling tools to

³ DER comprises distributed generation (renewable generation such as those derived from solar and local wind sources, and non-renewable generation on or near the loads), storage (battery-based and non-battery-based devices), and demand-side resources (e.g., smart appliances, electric vehicles or plug-in hybrid electric vehicles, and electricity-using equipment in industrial or commercial applications engaging in smart grid functions).

⁴ Interoperability is the capability of two or more networks, systems, devices, applications, or components to share and readily use information securely and effectively with little or no inconvenience to the user. Reference: GridWise Architecture Council, "Introduction to Interoperability and Decision Maker's Interoperability Checklist, v1.0," available at <http://www.gridwiseac.org/about/publications.aspx>

model smart grid operations. Many existing tools have some capability for incorporating distributed induction-, synchronous-, and inverter-based generators including engine generator sets, micro-turbines, wind generators, and PV arrays. However, they have little or no modeling capability for demand response, distributed storage, or dynamic feeder reconfiguration. They are not designed for simulating the hour-by-hour operation of distribution systems over the long time periods (years to decades) required to analyze benefits of smart grid assets and their respective operational strategies. Moreover, the distribution system descriptions used by these models today often lack information on secondary distribution system and customer characteristics that will be needed in the future to facilitate integration of DER.

Third, increased penetration of DER and integration of smart grid technologies is expected to rapidly change the nature of distribution systems. As a result, R&D is needed for model-based analysis to capture and maintain an accurate representation of the distribution system in real- or near real-time. Changes to the circuit topology due to events such as outages, switching orders, protective device operation, and phasing often need to be propagated through several independent data management systems within a utility before they are updated in the analysis tools. In many cases, the distribution system model must be updated manually. Thus, the ability to automatically and continuously update the distribution system model in distribution engineering tools is required to accurately reflect a distribution feeder's most recent operational configuration.

Applications submitted in response to Area of Interest 1 should discuss how the proposed integrated DMS will meet the following general requirements:

- Management and forecasting of demand response, distributed generation, and storage resources
- Dispatch of active and reactive power (through aggregation of DER) for optimization of losses and voltage profile
- Optimal operation of voltage control and distribution automation
- Detection, isolation, and response to faults, vulnerabilities, and threats
- State estimation to facilitate accurate and near real-time reliability and security assessment
- Integration of network models, market models, and renewable resource models

This Program Area of Interest addresses the R&D needs discussed in the following MYPP sections:

3.2.4.4. Advanced Control Methods and Topologies

3.2.4.5. Decision and Operations Support

3.3. Modeling (Distribution Engineering Tools)

AREA OF INTEREST 2: ADVANCED SENSING, MONITORING, AND CONTROL TECHNOLOGIES FOR ENHANCED ASSET UTILIZATION AND GRID RELIABILITY

Area of Interest 2 contains two (2) Subtopics designated as 2A and 2B. The objective of this area of interest is to enhance utilization of available assets and reduce disturbance frequencies and durations. Projects proposed for this Area of Interest will support achieving the Smart Grid 2030 Targets of operational/system efficiency and grid reliability/resilience.

2A. PROGNOSTIC HEALTH MANAGEMENT (PHM)

PHM technologies are sought to increase the reliability of the grid and the lifetime of the assets themselves. The grid assets in need of PHM include new and legacy equipment critical to ensuring reliable grid operations, such as transformers, switchgear, cables, generators, and motors. PHM technologies **should** be capable of monitoring grid assets for signatures of incipient

failure, e.g., temperature and pressure (and gradients), dielectric properties of insulating fluids/materials, arcing (signatures and by-products), voltage magnitude, current magnitude, real and reactive power flow direction, and phase angle. PHM technologies should also facilitate use of the sensed information to optimally manage distributed resources and support adaptive protection and control, e.g., by changing the operating points of equipment to extend their life and avoid unplanned outages.

2B. DISTRIBUTION SYSTEM SENSING

Distributed sensors are needed to improve the detection and isolation of system power quality issues, faults, and equipment failure. Phasor measurement units (PMU) already allow for accurate measurement of phase angle, which could be used to prevent unintentional islanding or facilitate grid re-synchronization following an islanding event. However, existing PMUs are mainly intended for transmission level use, and are too costly for widespread deployment in distribution systems. While most electric utilities employ such real-time monitoring of transmission line conditions and major equipment in their substations, very little has been done for monitoring distribution facilities beyond the substation.⁵ Without monitoring capabilities, utilities in general would not have adequate information to respond to, not to mention to prevent occurrence of, any power disturbance events (power outages and power quality phenomena) beyond the substation. The annual cost of such power disturbances to the U.S. economy is enormous – on the order of \$100 billion according to EPRI.⁶ Additionally, lack of monitoring information would lead to system efficiency loss, as the distribution system performance could not be optimized according to changing conditions.

Technology R&D activities addressing Program Subtopics 2A & 2B can help increase sensing and monitoring capability at the distribution level. Costs must be low for the sensors, including their installation and maintenance, to enable adoption. Other criteria include ease of installation, removal, and inspections; little or no maintenance over installed life; small sensor sizes and protection from damage; and electromagnetic compatibility.

For both Program Subtopics 2A and 2B, applications should discuss how the proposed sensing, monitoring, and control technologies will meet the following functional requirements:

- Sensors to meet the defined sensing capabilities, including communication technologies and means to power the collection of prescribed measurements, reception/validation of control signals, and transmission of collected data
- All hardware and software components to conform to appropriate standards for operation, performance, communication, cyber security, and interoperability
- Advanced data processing for integrated data analysis, along with advanced simulation, modeling, and visualization to provide timely information for decision support
- Integration with control equipment to automate distribution system operations in coordination with transmission and generation system operations
- Broad applicability to existing distribution substation designs and legacy/new equipment

This Program Area of Interest addresses the R&D needs discussed in the following MYPP sections:

⁵ U.S. Department of Energy, National Energy Technology Laboratory, A Systems View of the Modern Grid, Appendix B2: Sensing and Measurement, March 2007 (available at <http://www.netl.doe.gov/smartgrid/refshelf.html>)

⁶ The “Electricity Technology Roadmap: 2003 Summary and Synthesis” report by EPRI is available at <http://mydocs.epri.com/docs/CorporateDocuments/StrategicVision/Roadmap2003.pdf>

- 3.2.4.1. Advanced Sensing and Measurement
- 3.2.4.5. Decision and Operations Support

AREA OF INTEREST 3: VOLTAGE REGULATION AND OVERVOLTAGE PROTECTION FOR HIGH PENETRATION OF RENEWABLE GENERATION

Standards-conforming voltage regulation and protection coordination schemes are critically important for achieving the Smart Grid 2030 Target of high penetration levels of distributed and renewable energy generation. Introducing renewable generation at the customer side of the point of connection reduces the load demand on the distribution system, and in turn leads to reduced losses and improved voltage profiles on the feeder. The objective of this Program Area of Interest is to accomplish substantial increased use of distributed resources for supplying power during peak load periods and other functions and services in support of electric distribution systems. For Area of Interest 3 applications are sought in one or both of the following Subtopics:

3A. VOLTAGE REGULATION

R&D is needed in the voltage regulation aspects of distribution system design to identify the best approaches to voltage control for accommodating high penetration of renewable generation. This involves replacing a system that has local voltage sensing, no communication, and line drop compensation with a new, coordinated multipoint voltage-sensing approach. This new approach could lead to improved voltage profiles within all voltage regulation “zones” and less chance of exceeding American National Standards Institute (ANSI) limits under various conditions.

Fast voltage regulation is needed for addressing flicker and weather-induced fluctuations in high-penetration scenarios. R&D is required to develop rapid-response (almost instantaneous) reactive control capability within DER components such as inverters and power conditioning devices (e.g., static volt-ampere reactive compensators and solid-state dynamic voltage-restoration devices). A limited amount of energy storage capability – perhaps equal to a few minutes of a feeder’s rated capacity – might be needed to help manage various aspects of this regulation process, but much of it can be accomplished with reactive power only.

Applications for Subtopic 3A should discuss how the proposed fast voltage regulation system will meet the following general requirements:

- Minimization of voltage flicker and moderation of sags, swells, and other rapid changes in voltage and power that result from fluctuating wind and solar resources, along with other power variations
- Autonomous operation and low negative feedback gain factor
- Coordination with slow voltage regulation schemes that are required for managing distribution system voltage profiles or microgrid operation in high-penetration scenarios

3B. OVERVOLTAGE PROTECTION

Overvoltage occurs when a distributed generator (DG)⁷ produces more power than the local loads require, and the resulting reverse power flows through the series impedance. The voltage drop across the series impedance will now be negative because of the reversal in the direction of power

⁷ DG includes renewable resources, such as photovoltaics and wind, plus internal-combustion and turbine-driven generators, which have been installed for some time by consumers who require high levels of reliability.

flow, so the voltage rises at the DG end, becoming the utility voltage plus the voltage across the series impedance. If the utility voltage were already set fairly high, it is easy to envision a situation in which the DG can push the load node voltage over the utility regulation limits defined in ANSI C84.1 or even the allowed overvoltage threshold.⁸ With certain distribution circuit configurations, this reverse power flow condition could cause the step voltage regulators to malfunction.

Such an overvoltage occurrence necessitates the development of advanced network control and protection technologies that work safely, efficiently, and reliably in the presence of high-penetration DER and changing network conditions. To allow for system reconfiguration under high-penetration scenarios, protection and control systems need to be adaptive. The traditional autonomous protection techniques comprising simple overcurrent relays must give way to a secure communication-intensive approach with transfer tripping signals or encoded pilot signals for most DER on the system. In addition, more advanced directional relays and dynamic relay settings may be needed for overcurrent functions at key feeder circuit breakers, reclosers, and sectionalizing switches because of the constantly changing fault levels associated with changing source aggregations on the system. These advanced protection schemes could prevent sympathetic tripping, which is the unnecessary tripping of a circuit breaker or recloser resulting from a fault located on an entirely different part of the power distribution system.

Applications for Subtopic 3B should discuss how the proposed overvoltage protection solutions will meet the following general requirements:

- Implementation of a cost-effective, reliable communication scheme that has the level of security needed for protective relaying and can respond fast enough (cycles) to successfully accomplish the control objectives
- Algorithms and procedures (software) to control the scheme and provide dynamic protection settings that can deal with all the possibilities

This Program Area of Interest addresses the R&D needs discussed in the following reports:

MYPP – Section 3.2.4.4. Advanced Control Methods and Topologies
Renewable Systems Interconnection: Comprehensive Summary⁹ – Sections 2.1.1. Voltage Regulation and 2.1.5. Protection Coordination

⁸ ANSI/IEEE Std 1547-2003 IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems.

⁹ The RSI comprehensive summary report is available at <http://www.e2rg.com/reports>

Section II - AWARD INFORMATION

A. TYPE OF AWARD INSTRUMENT

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

B. ESTIMATED FUNDING

Approximately \$30,000,000 in DOE funding is expected to be available for new awards under this announcement.

C. MAXIMUM AND MINIMUM AWARD SIZE

Ceiling (i.e., the maximum amount for an individual award made under this announcement): \$6,000,000 for Area of Interest 1, \$3,000,000 for Areas of Interest 2 and 3 (DOE Share)

Floor (i.e., the minimum amount for an individual award made under this announcement): \$ 500,000 for all areas of interest (DOE Share)

D. EXPECTED NUMBER OF AWARDS

Under this announcement, DOE expects to make the following number of awards for each Program /Topic Area:

<u>Program/Topic Area</u>	<u>Number of Awards</u>
Area of Interest 1	Three
Area of Interest 2	Four
Area of Interest 3	Four

E. ANTICIPATED AWARD SIZE

The anticipated award size for projects under each Program/Topic Area in this announcement is:

<u>Program/Topic Area</u>	<u>Award Size</u>
Area of Interest 1	\$500,000 to \$6,000,000
Areas of Interest 2 and 3	\$500,000 to \$3,000,000

F. PERIOD OF PERFORMANCE

The anticipated period of performance for projects under each Program Area /Subtopic in this announcement is:

<u>Program Area / Subtopic</u>	<u>Period of Performance</u>
Area of Interest 1	3 to 5 years over multiple budget periods
Areas of Interest 2 and 3	up to 3 years over multiple budget periods

G. TYPE OF APPLICATION

DOE will accept new applications under this announcement.

Section III - ELIGIBILITY INFORMATION

A. ELIGIBLE APPLICANTS

All types of entities are eligible to apply, except other Federal agencies, 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

The cost share must be at least 20% of the total allowable costs for research and development and at least 50% of the total allowable costs for demonstration projects (i.e., the sum of the Government share 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.)

C. OTHER ELIGIBILITY REQUIREMENTS

Federally Funded Research and Development Center (FFRDC) Contractors. FFRDC contractors may be proposed as a team member on another entity's application subject to the following guidelines:

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/NNSA 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/NNSA 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 20% 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.

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 located on the cover of this announcement and then follow the prompts to download the application package.

B. CONTENT AND APPLICATION FORMS

You 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 (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://management.energy.gov/business_doe/business_forms.htm under Certification and Assurances.

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), 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 after awards are made. The project summary must not exceed 2 pages 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. To attach a Project Summary/Abstract, click "Add Attachment."

Project Narrative (Field 8 on the Form)

The project narrative must not exceed 35 pages, 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. Applicants must identify the Area of Interest and/or Subtopic they are applying to in the project Narrative and identify the Area of Interest and/or Subtopic in the file name. For example if an applicant were applying to Area of Interest 1 (Project01.pdf); if applying to Area of Interest 2 Subtopic 2A (Project02A.pdf); and, if applying to Area of Interest 3 Subtopics A and B (Project03AB.pdf). To attach the Project Narrative, click "Add Attachment" and save the information in a single file using the naming convention described above.

The project narrative must include:

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.

Roles Of Participants: Describe the roles and the work to be performed by each participant, business agreements between the applicant and participants, and how the various efforts will be integrated and managed.

Facilities And Other Resources: Identify the facilities (e.g., office, laboratory, computer, etc.) to be used at each performance site listed and, if appropriate, indicate their capacities, pertinent capabilities, relative proximity, and extent of availability to the project. Describe only those resources that are directly applicable to the proposed work. Provide any information describing the other resources available to the project such as machine and electronics shops.

Equipment: List important items of equipment already available for this project and, if appropriate, note the location and pertinent capabilities of each. If you are proposing to acquire equipment, describe comparable equipment, if any, already at your organization and explain why it cannot be used.

Bibliography And References, If Applicable: Provide a bibliography for any references cited in the Project Narrative section. This section must include only bibliographic citations.

Statement Of Project Objectives (SOPo): The Department of Energy's, National Energy Technology Laboratory uses a specific format for the Statement of Project Objectives in its awards. In announcements such as this one, where the Government does not provide a Statement of Project Objectives, the Applicant is to provide one, which the DOE will then use to generate the Statement of Project Objectives to be included in the award.

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 should not exceed one-half page and should summarize the effort and approach to achieve the objective(s) of the work for each Phase.

C. TASKS TO BE PERFORMED

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

During the demonstration phase, recipients are to accumulate a minimum of 6 months of operational data. Tasks and/or subtasks should be included for a data collection plan that includes parameters to be measured, reasoning for selection of identified parameters, methodology/technology employed to take measurements, data collection methodology or automated system description, data reduction or manipulation required, and a method and format to present data. Commercialization of the proposed technology/solution is a Program expectation. Tasks/subtasks that describe the identification/analysis of potential markets and marketing strategies and the anticipated penetration rates for the technology(ies)/solutions being developed/demonstrated should be included.

PHASE I

Task 1.0 - Project Management and Planning

(Description includes work elements required to revise and maintain the Project Management Plan and to manage and report on activities in accordance with the plan)

Subtask 1.1

(Description)

Task 2.0 - (Title)

PHASE II (Optional)

Task 3.0 - (Title)

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 on the "Federal Assistance Reporting Checklist" that will be delivered. These reports shall also be identified within the text of the Statement of Project Objectives. See the following examples:

1. Task 1.1 - (Report Description)
2. Task 2.2 - (Report Description)

E. BRIEFINGS/TECHNICAL PRESENTATIONS (if applicable)

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. Briefings shall be given by the Recipient to explain the plans, progress, and results of the technical effort. The first briefing (kick-off meeting) will be presented within 30 days of the effective date of the Award. Additional briefings will be required for annual site visits/inspections. A final briefing will be presented at least 30 days prior to expiration of the Award.

The Recipient shall provide and present technical paper(s) at the DOE/NETL Annual Contractor's Review Meeting to be held at the NETL facility located in Pittsburgh, PA or Morgantown, WV.

Other Attachments (Field 12 on the form)

If you need to elaborate on your responses to questions 1-6 on the "Other Project Information" document, attach a file in field 12.

Also, attach the following files:

Project Management Plan

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

A. Executive Summary: Provide a description of the project that includes the objective, project goals, and expected results. For purposes of the application, this information is included in the Project Narrative (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, by budget period, 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, and anticipated yearly costs for subsequent performance/budget periods 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 conclusions of budget periods and the entire project. The success criteria should be objective and stated in terms of specific, measurable, and repeatable data. Usually, the success criteria pertain to desirable outcomes, results, and observations from the project.

[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.]

Save this plan in a single file named "pmp.pdf" and click on "Add Attachments" in Field 12 to attach.

Commitment Letters from Third Parties Contributing to Cost Sharing

If a third party, (i.e., a party other than the organization submitting the application) proposes to provide all or part of the required cost sharing, the applicant must include a letter from the third party stating that it is committed to providing a specific minimum dollar amount of cost sharing. The letter should also identify the proposed cost sharing (e.g., cash, services, and/or property) to be contributed. Letters must be signed by the person authorized to commit the expenditure of funds by the entity and be provided in a PDF format. Save this information in a single file named "CLTP.pdf" and click on "Add Attachments" in Field 12 to attach.

Environmental Questionnaire

You must complete an environmental questionnaire (EQ) for each work location proposed for the project. The EQ form (NETL F 451.1-1/3) may be downloaded at <http://www.netl.doe.gov/business/forms.html>. Save the questionnaire in a single file named "Env.pdf" and click on "Add Attachments" in Field 12 to attach. If multiple work sites are involved, the individual EQs should be combined into a single file and submitted as previously described.

3. RESEARCH AND RELATED SENIOR/KEY PERSON

Complete this form before the Budget form to populate data on the Budget form. Beginning with the PD/PI, provide a profile for each senior/key person proposed. A senior/key person is any individual who contributes in a substantive, measurable way to the scientific/technical development or execution of the project, whether or not a salary is proposed for this individual. Subrecipients and consultants must be included if they meet this definition. For each senior/key person provide:

Biographical Sketch. Complete a biographical sketch for each senior/key person and attach to the "Attach Biographical Sketch" field in each profile. 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.

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.

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 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.

4. RESEARCH AND RELATED BUDGET (TOTAL FED + NON-FED)

Complete the Research and Related Budget (Total Fed & Non-Fed) 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 announcement (See Section IV.G).

Budget Justification (Field K on the form).

Provide the required supporting information for the following costs (See R&R 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. If cost sharing is required, provide an explanation of the source, nature, amount, and availability of any proposed cost sharing. Attach a single budget justification file for the entire project period in Field K. The file automatically carries over to each budget year.

5. R&R SUBAWARD (TOTAL FED + NON-FED) FORM

Budgets for Subrecipients, other than DOE FFRDC Contractors. You must provide a separate cumulative R&R budget for each subrecipient that is expected to perform work estimated to be more than \$100,000 or 50 percent of the total work effort (whichever is less). Download the R&R Budget Attachment from the R&R SUBAWARD BUDGET (Total Fed + Non-Fed) FORM and e-mail it to each subrecipient that is required to submit a separate budget. After the Subrecipient 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 subrecipient's name as the file name.

6. 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.

7. DISCLOSURE OF LOBBYING ACTIVITIES (SF-LLL)

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 and 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
Project Management Plan	PDF	Field 12
Commitment Letters from Third Parties	PDF	Field 12
Environmental Questionnaire	PDF	Field 12
RESEARCH & RELATED SENIOR/KEY PERSON Profile (Expanded) (Optional)	Form	N/A
Biographical Sketch	PDF	Attach to appropriate block
Current and Pending Support	PDF	Attach to appropriate block
RESEARCH AND RELATED BUDGET (Total Fed + Non-Fed)	Form	N/A
Budget Justification	PDF	Field K
R&R SUBAWARD BUDGET (Total Fed + Non-Fed) ATTACHMENT(S) FORM , if applicable	Form	N/A
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/NNSA 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 should be received by June 18, 2010, not later than 8:00 PM Eastern Time. 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 600. The cost principles for commercial organization 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 600. 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

You must COMPLETE the one-time registration process (all steps) before you can submit your first application through Grants.gov (See www.grants.gov/GetStarted). 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).

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 funding opportunity announcement has been submitted; and (3) all mandatory requirements are satisfied, and (4) the proposed project is responsive to the objectives of the funding opportunity announcement. Applications that fail to pass the initial review will not be forwarded for merit review and will be eliminated from further consideration.

2. Merit Review Criteria

All applications that pass the initial review process will receive a detailed and consistent technical evaluation utilizing the evaluation criteria described below. The following criteria are applicable to all the previously described Areas of Interest and Subtopics.

Criterion 1: Technical Merit (30%)

- Reasonableness and feasibility of the proposed project to meet the objectives of the Funding Opportunity Announcement including achieving the Smart Grid 2030 targets.
- Extent to which the proposed project adequately addresses the stated requirements.
- Extent to which the proposed project will support achieving the seven defining functions of a smart grid.
- Degree of technical innovation as compared to existing/available smart grid technology/solutions.
- Validity of the approach and likelihood of success based on the level of maturity and commercial acceptance of the proposed technology/solutions.
- Extent to which the proposed work is based on sound scientific and engineering principles.
- Adequacy and completeness of the approach to address interoperability and cyber security concerns associated with integration of the new technology/solution into the existing environment. [Although sensitive cyber security details (that would jeopardize system security if they were exposed) should not be revealed in the application, sufficient detail should be provided to enable ascertaining the cyber security merits of the proposed project.]

Criterion 2: Significance and Impact (25%)

- Degree to which the proposed project would improve electric system reliability, efficiency, security, and resiliency.
- Significance of the proposed development vs. existing practices – Extent to which the proposed project considers benefits in terms of anticipated performance improvements

(technical, operational, and environmental aspects) and cost savings over present practices.

- Degree to which the proposed technology/solution is broadly applicable and adaptable for similar applications.
- Demonstrated commitment to commercializing the resultant technology/solution.
- Completeness of the commercialization discussion in identifying potential markets and marketing strategies, and addressing penetration rates for the technology(ies)/solutions being developed/demonstrated.
- Adequacy of the discussion of the viability and practicality of the proposed technology and/or solution in meeting the needs of the target market in a cost effective manner.

Criterion 3: Project Approach (25%)

- Appropriateness, rationale, and completeness of the Statement of Project Objectives (SOPO) in describing the proposed tasks.
- Comprehensiveness of the Project Management Plan (PMP) in explaining how the project will be managed to achieve project objectives, including risk assessment and risk mitigation,
- Adequacy of the project timetable/schedule and milestones to successfully accomplish project objectives on time and within the proposed budget.
- Appropriateness and completeness of the demonstration description, including performance objectives, the criteria and requirements used in selecting demonstration site(s), data collection/evaluation/analysis, the delivery of project demonstration data and information to the Smart Grid Information Clearinghouse, and how success will be measured/validated.
- Adequacy of the discussion of the viability and practicality of the proposed technology and/or solution in meeting the needs of the target market in a cost effective manner.

Criterion 4: Project Team Experience and Capabilities (20%)

- Credentials, capabilities, and experience of proposed team members/key personnel.
- Degree to which the roles and responsibilities of the project team are clearly described.
- Extent of utility involvement/contribution.
- Degree of participation by a commercialization entity, Suitability and adequacy of the facilities to successfully demonstrate the proposed technology/application.
- Demonstrated experience of the project team in applying relevant smart grid technologies to power systems.
- Degree of commitment of the team members to the proposed project as evidenced by letters of commitment and planned cost-share contributions.

3. Other Selection Factors

The selection official will consider the following program policy factors in the selection process:

1. Proposals may be selected for award that result in a portfolio of projects that provides the greatest positive impact on deployment and usefulness of smart grid technologies and/or applications.
2. Desirability to select projects for award that represent a diversity of technological concepts, applications, and technical approaches.
3. It may be desirable to support complementary and/or duplicative efforts or projects, which, when taken together, will best achieve the research goals and objectives of the DOE program.
4. It may be desirable to select different types and sizes of organizations in order to provide a balanced programmatic effort and a variety of technical perspectives.
5. Desirability to select project(s) of less technical merit than other project(s) if such a selection will optimize use of available funds by allowing more projects to be supported, will not be detrimental to the overall objectives of the program, or presents a significantly lower risk for successful execution due to the higher proposed level of cost share.

B. REVIEW AND SELECTION PROCESS

1. 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 under Financial Assistance, Regulations and Guidance at <http://www.management.energy.gov/documents/meritrev.pdf>.

2. Selection

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

3. 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 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 July 2010 and making awards by the end of September 2010.

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

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 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 OMB Circular A-110 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 600 (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>.

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://management.energy.gov/business_doe/business_forms.htm.

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://www.gc.doe.gov/financial_assistance_awards.htm.

Statement of Substantial Involvement

If the award is a cooperative agreement, the DOE Specialist and DOE Project Officer will negotiate a Statement of Substantial Involvement prior to award.

DOE's Statement of Substantial Involvement

Reviewing in a timely manner project plans, including project management, testing and technology transfer plans, and recommending alternate approaches, if the plans do not address critical programmatic issues;

Participating in project management planning activities, including risk analysis, to ensure DOE's program requirements or limitations are considered in performance of the work elements;

Conducting semiannual 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 OE, in coordination with the DOE Smart Grid R&D Program;

Promoting and facilitating technology transfer activities, including disseminating program results through presentations and publications;

Serving as scientific/technical liaison between awardees and other program or industry staff;

Working to identify and provide guidance on any issues related to availability of available Smart Grid technologies/supplies;

Providing the Recipient with guidance on any cyber-security requirements that may be necessary.

The DOE also intends to utilize resources at the National Energy Technology Laboratory (NETL) to assist in determining the appropriate data to be gathered and to provide an overall programmatically consistent approach for technical, economic, and benefit analysis based on the gathered data. In support of this effort, the Project Officer will be significantly involved to:

- Assist demonstration project team in establishing project goals, metrics, and data requirements;
- Determine specific data to be collected, frequency of collection, & method of collection;
- Determine approach to use raw data;
- Determine baseline costs and performance prior to introduction of Smart Grid technologies and systems;
- Determine demonstration costs and performance; and
- Compare cost and performance of demonstration circuit(s) before and after

introduction of Smart Grid technologies and systems.

C. REPORTING

Reporting requirements are identified on the Federal Assistance Reporting Checklist, DOE F 4600.2, attached to the award agreement. For a sample Checklist, see <http://www.management.energy.gov/documents/DOEF4600pt292009.pdf>.

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 3 business days, unless a similar question and answer have already been posted on the website.

Questions and comments concerning this FOA shall be submitted not later than 3 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/NNSA cannot answer these questions.

B. AGENCY CONTACT

Name:	Carla Winaught
E-mail:	Carla.Winaught@netl.doe.gov
FAX:	(304) 285-4683
Telephone (Optional):	(304) 285-4530

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.

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.

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 http://www.gc.doe.gov/documents/gc62_advance.pdf 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 <http://www.gc.doe.gov/documents/patwaivclau.pdf>.

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.