

Office of Electricity Delivery and Energy Reliability Recovery Program Plan

June 3, 2009

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Office of Electricity Delivery and Energy Reliability

Program Specific Recovery Plan

June 3, 2009

1 Introduction

The Office of Electricity Delivery and Energy Reliability (OE) is pleased to present the Program Specific Recovery Plan (PSRP), which summarizes the impact of the American Recovery and Reinvestment Act (Recovery Act) on the goals, measures, and activities of the Office. OE is poised to administer Recovery Programs, or Activities, which implement some of the highest priorities of the Administration, including the Smart Grid.

1.1 Specific PART and CFDA Information

Does this program align with an existing PART program? Yes, the Electric System Research and Development. However, PART measures have not been assigned to these Recovery Act because they are new.

Does this program align with an existing CFDA program? No.

2 Objectives

2.1 Program Purpose

The Recovery Act of 2009 indicates that the Office of Electricity Delivery and Energy Reliability (OE) shall receive \$4,500,000,000 for expenses necessary for electricity delivery and energy reliability activities to modernize the electric grid to include demand responsive equipment, enhance security and reliability of the energy infrastructure, energy storage research, development, demonstration and deployment, and facilitate recovery from disruptions to the energy supply, and for the implementation of programs authorized under title XXIII of the Energy Independence and Security Act of 2007 (EISA).

These objectives support the following GPRA Units:

- New Program – Grid Modernization

2.2 Public Benefits

The purpose of the Smart Grid technology program is to promote the implementation of digital upgrades to the electric grid that are necessary to enable it to work more efficiently and cost effectively. Modernizing the nation's electric delivery network will enhance operational intelligence and connectivity that will provide the optimal amount of information necessary for customers, distributors and generators to change their behavior in a way that reduces system demands and costs, increases energy efficiency, optimally allocates and matches demand and resources to meet that demand, and increases the reliability of the grid.

The societal benefits of both the Smart Grid Investment Grant and the Smart Grid and Energy Storage Demonstration Program, are to: reduce emissions, improve cost effectiveness, enhance reliability, and provide greater energy security and flexibility to accommodate new energy technologies, including renewable, intermittent and distributed sources. There are four benefits categories: 1) Economic (lowering electricity costs through network efficiencies); 2) Reliability (lowering the occurrence of power outages); 3) Environmental (reducing greenhouse gas emissions); and 4) Energy Security (reducing reliance on oil consumption). The Smart Grid performance measures are designed to measure these goals.

3 Projects and Activities

The table below describes the current funding profile for OE's ARRA programs.

• Table 1: ARRA Funding Amounts fby GRPA Unit

GPRA Unit Name		Funding (\$M)
New	Grid Modernization	4,500

The balance, \$490M, is currently unallocated while the proposed activities are being fully developed.

Making investments to modernize the Nation's electricity grid, securing a diverse and stable supply of reliable energy, and increasing efficiency are central to the Administration's effort to increase energy and economic security. OE is building upon its established program with new activities designed to support the implementation of "Smart Grid" technology. These activities, described below, work together synergistically to maximize the impact on the Nation's grid and advance the Administration's goals. The final activity is "Program Direction", which provides the cost-effective framework for the execution of the other activities.

Smart Grid Investment Grant Program [Energy Independence Security Act (EISA, Sec. 1306)]: \$3.3 billion is currently targeted for a competitive, merit-based matching grant program to stimulate investments by electric utilities and other entities for the deployment of Smart Grid technology.

Smart Grid Regional and Energy Storage Demonstration Projects (EISA, Sec. 1304): \$700 million is currently targeted to fund competitively awarded financial assistance projects for 1) regionally unique Smart Grid demonstration projects, 2) phasor measurement system demonstration and testing for a wide area, real time measurement and control network, 3) electrical energy storage demonstration and development projects and 4) demonstration and development projects for Smart Grid technologies.

Interoperability Standards and Framework (EISA, Sec. 1305): \$10 million will support the development of interoperability standards and a framework to ensure effective and consistent application of Smart Grid technologies.

Program Direction: \$22.5 million will be spent by OE in order to fully manage, oversee, and properly execute the Recovery funds as intended and according to the OMB and DOE reporting requirements. Until the enactment of the Recovery Act, OE has operated under an annual funding of approximately \$137 million. The Recovery Act provides an additional \$4.5 billion in FY 2009, which is about 33 times more than OE's annual appropriation. For Program Direction, OE has prioritized a number of Smart Grid initiatives to be funded by the Recovery Act that leverage existing departmental and office resources and systems, and ensures maximum effectiveness and transparency.

4 Characteristics

4.1 OMB-Requested Data Describing the Types of Financial Awards Used

• Table 2 Funding Characteristics of OE Recovery Act Programs

	Project/Activity	Financial Award	Potential Type of Recipients	Potential Type of Beneficiary
1	Smart Grid Investment Grant Program (EISA 1306)	Project Grants	Non-Government – General Other Private Institution/Organization	Other Private Institution/Organization
2	Smart Grid Regional and Energy Demonstration Projects (EISA 1304)	Project Grants	Non-Government – General Other Private Institution/Organization	Other Private Institution/Organization
3	Interoperability Standards and Framework (EISA 1305)	Project Grants	Government Federal	Federal Profit Organization
4	Program Direction	Federal Employment Contracts	Non-Government – General Other Private Institution/Organization	Profit Organization Small Business

4.2 Explanation of Types of Financial Awards (not uploaded to OMB)

The table above provides information on the type of financial awards used by OE in the execution of its portfolio of Recovery Act activities; this section of the document provides background. (Note that OE will compete all awards, except the award for the Interoperability Standards and Framework activity that was directed in the Recovery Act to go to NIST via an Inter-Agency Agreement. Even then, NIST is expected to compete portions of that work as appropriate.) The entries in the table are prescriptive, and based on the choices enumerated in the documentation provided by OMB.

In summary, a variety of procurement mechanisms will be utilized by OE to distribute the Recovery Act funds.

- A Notice of Intent (NOI) and subsequent Funding Opportunity Announcement (FOA) will be issued for the Smart Grid Investment Grant Program and a series of grants will be made from DOE Headquarters. The goal is to issue awards by fall 2009.
- An FOA will be issued by NETL for the Smart Grid Demonstration Program. Integrated teams of Smart Grid constituent groups (electricity providers and operators, products and services suppliers and end users, and local/State/ tribal governments, etc) are to be solicited.
- Solicitations performed at DOE headquarters or other site offices include: an interagency agreement that will be developed to transfer \$10 million to NIST for work on the Interoperability Standards.

5 Major Planned Milestones

The summary and detailed planned milestones are presented below:

5.1 Office-Level Milestones

The first textbox contains a schedule write-up:

Milestones for each OE Recovery Act activity are maintained in the DOE system that aggregates all Recovery Act-related information. The schedule for each activity is also maintained in Microsoft Project and readied for integration into the DOE master schedule. Each activity has associated with it a "level 5" work breakdown structure, and is resource-loaded. As grants are awarded, the schedule for each Award will be integrated into the OE level schedule, and will be readied for integration into the DOE master schedule. More information is available from the point of contact for the Program Specific Recovery Plan.

The table below enumerates the major milestones for the Program.

• Table 3: Program Level Major Milestones

ID	GRPA Unit	Milestone
1	(New) Grid Modernization	Final Funding Opportunity Announcement is issued for the Smart Grid Investment Grant Program
2	(New) Grid Modernization	Selections are made for round one of the Smart Grid Investment Grant Program
3	(New) Grid Modernization	All grants awarded

These milestones support the following GPRA Units:

- New Program – Grid Modernization

5.2 Milestones (to be uploaded to second section)

The table below enumerates each of the milestones for the activities which support the Grid Modernization Program:

- Smart Grid Investment Grants;
- Smart Grid Demonstration Program; and,
- Interoperability Standards and Framework;

• Table 4: Detailed Milestones

ID	Activity	Milestone	Target Date (must be mm/dd/yyyy)	Description (type is budgetary, legislative, management, performance, comments)
1	Smart Grid Investment Grants	Notice of Intent posted on IIPS, open for public comments for 20 days.	4/16/2009	Management
2	Smart Grid Investment Grants	Final Funding Opportunity Announcement is issued	6/15/2009	Management
3	Smart Grid Investment Grants	Closing date for first funding round, review of applications begins	7/31/2009	Management
4	Smart Grid Investment Grants	Selections are made for the first funding round.	10/1/2009	Management
5	Smart Grid Investment Grants	Closing date for second funding round, review begins	11/30/2009	Management
6	Smart Grid Investment Grants	Selections are made for the second funding round.	2/28/2010	Management

ID	Activity	Milestone	Target Date (must be mm/dd/yyyy)	Description (type is budgetary, legislative, management, performance, comments)
7	Smart Grid Investment Grants	Closing date for third funding round, review begins	3/20/2010	Management
8	Smart Grid Investment Grants	Selections are made for the third funding round.	6/30/2010	Management
9	Smart Grid Regional Demonstrations Program	Funding Opportunity Announcement is posted for public comment, 20 days allowed for comments	4/16/2009	Management
10	Smart Grid Regional Demonstrations Program	Final Funding Opportunity Announcement is issued	6/15/2009	Management
11	Smart Grid Regional Demonstrations Program	Closing date for solicitation, review of applications begins	7/31/2009	Management
12	Smart Grid Regional Demonstrations Program	Selections are made.	10/31/2009	Management
13	Interoperability Standards and Framework	Establish Interagency Agreement with NIST (Department of Commerce)	5/1/2009	Management

6 Monitoring and Evaluation

6.1 Summary of OE's Approach to Monitoring and Evaluation

6.1.1 DOE Corporate Approach

Recovery Leadership & Operations

The DOE Recovery Office is the central point for implementation and execution of Recovery Act activities. A recovery operations team will oversee implementation management, such as monitoring project status, evaluating cost and schedule progress, ensuring thorough reporting, coordinating with external entities, and holding monthly performance and review meetings with senior departmental managers on the implementation status of specific recovery projects.

Recovery Funding Oversight, Performance

In addition to DOE's standard funds control mechanisms, Recovery Act funds are subject to additional process controls to ensure funds are not co-mingled, are tracked to enable reporting, and are spent responsibly. DOE recovery funds are released for implementation in a staged approach. Programs develop initial project plans which include performance metrics which require management approval.

Office of Internal Review (OIR)

DOE's OIR helps programs ensure that internal controls are in place, effective, and support the risk based approach to managing Recovery Act activities. OIR programs are being implemented or expanded to ensure the Recovery Act objectives are met and DOE managers and partners are both held accountable for successful execution and also have the appropriate tools to ensure that success. These programs include coordinating DOE's "Internal Control Acknowledgment" program, conducting agency wide assessments and analyses and performing oversight of Recovery Act programs, including site and field visits. OIR worked with key impacted programs to produce initial vulnerability assessments identifying potential program specific and cross-cutting risks to ensure successful execution.

6.1.2 OE Specific Approach

OE's monitoring and evaluation plan is an adaptation of the one in use for baseline activities, provides maximum transparency in a cost-effective manner, and includes the following key features:

1. Integrates with the DOE corporate controls and DOE departmental mechanisms, including the DOE Recovery Office, the central point for implementation and execution of Recovery Act activities, and the Office of Internal Review, which ensures appropriate management of funds;
2. Segregates and applies additional controls to Recovery Act funds;
3. Uses Corporate Planning System to track the programmatic and financial performance of grants, augmented to track value associated with milestones and to provide alarms when necessary;
4. Uses various data collection mechanisms, including formal status reports, project reviews, demonstrations, site visits, and technical reviews, to ensure that OE maintains the latest, most accurate programmatic and financial status for each award;
5. Employs personnel skilled in grants administration and in the appropriate program management and technical domain areas;

6. Provides to OE and departmental management a quick-look report highlighting risk areas and potential problems on a monthly basis and appropriate detailed reports on a quarterly, monthly, or ad-hoc basis;
7. Uses modern risk management principles and techniques to continuously address risks and vulnerabilities;
8. Uses a NARA- compliant records management system to maintain official agency records;
9. Supports the Recovery Act monitoring and reporting requirements for financial, schedule, and performance data;
10. Includes comprehensive training on ethics, conduct, reporting, records management, and other Recovery Act requirements for federal staff, contractors, and awardees; and
11. Employs continuous verification and validation of activities, business processes, and databases at the Office, Activity, and Award level

7 Measures

The table below provides a snapshot of all the program measures associated with OE. For the purposes of PART, OE is treated as a single program. It should be noted that OE has been subject to a PART; however, all of the activities in the Recovery Act portfolio are new, and have not been through a PART assessment. It should be noted that this table includes a column tying the measures back to the Public Benefits outlined in Section 2.2. Also, the explanation of measure includes information on the data that will be collected through Smart Grid Funding Opportunity Announcement application requirements. Targets will be set once Smart Grid applications are received.

• Table 5: Performance Measures

Activity	Public Benefits	Measure Text	Measure Type	Measure Frequency	Direction of Measure	Unit of Measure	Explanation of Measure
Smart Grid Investment Grants/Demos	Economic	% reduction in the cost of electricity by customer class (i.e., residential, commercial and industrial classes)	Outcome	Annual	+	\$/kWh	Hourly load data by customer, tariff description by customer
Smart Grid Investment Grants/Demos	Economic Reliability Environmental Energy Security	% reduction in the consumption of electricity by customer class (i.e., residential, commercial and industrial classes)	Outcome	Annual	+	kW	Monthly electricity cost by customer, tariff description by customer
Smart Grid Investment Grants/Demos	Economic Environmental	% reduction in average transmission and distribution system losses	Outcome	Annual	+	MWh	MW consumed vs. MW delivered to distribution network
Smart Grid Investment Grants/Demos	Economic	% reduction in operations and maintenance costs	Outcome	Annual	+	\$	Reduction in operations and maintenance costs in transmission and distribution systems

Activity	Public Benefits	Measure Text	Measure Type	Measure Frequency	Direction of Measure	Unit of Measure	Explanation of Measure
Smart Grid Investment Grants/Demos	Economic Reliability	The percent improvement in reliability performance relating to outage duration and frequency, as measured by the System Average Interruption Frequency Index (SAIFI), the System Average Interruption Duration Index (SAIDI), the Customer Average Interruption Duration Index (CAIDI) and the Momentary Average Interruption Frequency Index (MAIFI).	Outcome	Annual	+	The reliability indices, SAIFI, SAIDI, CAIDI, and MAIFI	Measurement of reliability by utilities using IEEE standards
Smart Grid Investment Grants	Economic Reliability	% increase in line loading over static limits currently determined by off-line planning (regionally)	Outcome	Annual	+	MW	Information on dynamic line loading will be provided by phasor measurement networks
Smart Grid Investment Grants/Demos	Economic Environmental	The percentage increase of total load served by smart-grid-enabled distributed energy resources, renewable energy systems and energy storage devices	Output	Annual	+	MW	Measurement of the contribution of distributed and renewable energy resources on transmission and distribution systems

These measures support the following GPRA Units:

- New Program – Grid Modernization

8 Transparency and Accountability

8.1 DOE Corporate

DOE leverages its existing corporate systems to track and report on Recovery Act activities and to ensure effective funds management. The DOE's iManage Data Warehouse (IDW) is a corporate enterprise system integrating financial, budgetary, procurement, and program information to monitor project execution. Each Recovery Act program is tracked using unique Treasury Appropriation Fund Symbols (TAFS), and each component project is identified by a unique Project Identification Code (PIC).

IDW is a central data warehouse linking common data elements from each of the Department's corporate business systems and serving as a "knowledge bank" of information about portfolios, programs or projects including budget execution, accumulated costs, performance achieved, and critical milestones met. The IDW contains information from multiple corporate systems and will be a tool used to meet information needs for Recovery Act oversight and reporting to Recovery.gov.

The Performance Measure Manager (PMM) is the Department's performance tracking system. PMM tracks high-level budgetary performance and is being expanded to accommodate Recovery Act performance tracking needs. Performance evaluations will be organized and reported along with results from the Department's annual budgetary activities in the Annual Performance Report (APR) and posted on: www.energy.gov/recovery/. Performance results will be uploaded into the IDW for required agency reporting.

See DOE's Agency Wide Recovery Plan for additional information on DOE's financial and performance tracking mechanisms, found here: www.energy.gov/recovery/.

8.2 OE Specific

Program management staff in both OE and NETL will have oversight for the programs listed above and in some cases, OE will partner with other DOE program offices or other federal agencies to run these programs. These program entities are all well versed in the reporting requirements for the Recovery Act and in the best management practices for overall project management. They are poised to meet all the accountability and transparency needed for Recovery Act compliance.

OE is currently using an in-house program management information technology system called the Corporate Planning System (CPS). This system is being enhanced to house in one place all of the technical, budgetary and performance data necessary to comply with all required Recovery Act reporting from the award recipient and potential subcontractor. This system will allow OE to upload information to other internal DOE systems that will ultimately allow reporting to the Recovery.gov website for public review. As a part of complying with monthly Recovery Act reporting requirements and updates, program managers will be provided customized reports from CPS to highlight any program issues such as delayed milestones or budgetary issues.

OE has implemented an electronic Records Management system to support the office's compliance with DOE Order 243.1, presidential initiatives, and the E-Government Act and other related legislation. The system has been leveraged to provide a centralized repository for all OE-developed documents and records associated with the program, all records generated during the grant request evaluation process or other procurement process, and all reports and other essential communications received from funding recipients. The Records Management system provides version control and configuration management for documents under development as well as an auditable trail of the OE decision-making process and management oversight from initial planning through final implementation.

9 Federal Infrastructure Investments

Although OE's activities are not designed to directly impact federal infrastructure or to reduce DOE's environmental impact, they will have direct long term effects on the efficiency and reliability of the Nation's energy infrastructure. Federal leadership in stimulating the overhaul of the electrical grid to utilize Smart Grid technology will have significant effects on increasing energy efficiency resulting in the reduction of greenhouse gases and energy costs. The implementation of these activities will allow for clean, renewable sources of energy to be supplied to consumers across the electrical grid in a reliable manner. Providing these energy sources to consumers will increase the utilization of green energy sources in the green building trade.

10 Summary of Barriers to Implementation

For OE's Recovery Act activities the following barriers to implementation and their recommended mitigation strategies have been identified. A detailed discussion of the barriers and mitigation strategies is included in a separate **Barriers to Implementation** document.

Cross-cutting barriers

Barrier: Recruiting sufficient skilled reviewers to complete the grant application reviews in a timely fashion.

Mitigation: Develop and implement plans to fund review activities, recruit reviewers from national labs and other sources, enhance underlying IT infrastructure to increase efficiencies, and prepare for review activities.

Barrier: Financial invoices and quarterly reports will need to comply with Recovery Act requirements.

Mitigation: In coordination with the responsible offices inside and outside of DOE, develop and Implement a plan to acquire and deploy the necessary resources to perform financial reviews and audits.

Barrier: DOE rules (based on Federal regulations) for property purchased with federal funds require that DOE retain ownership of property greater than \$5000 in value, and exercise responsible ownership of that property.

Mitigation: Provide enhanced explanations for ownership in all contractual documentation and assign HQ points of contract for property issues.

Activity-specific barriers common to Smart Grid Investment Grant and Smart Grid Demonstration Programs

Barrier: Utilities may not have budgeted cost-sharing funds for synchrophasor related activities and may be unable to apply for those grants in 2009.

Mitigation: Request letters of intent from utilities for CY 2010 commitments or supporting letters from Public Utility Commissions (PUCs).

Barrier: Component demand may exceed component supply for synchrophasor installations.

Mitigation: Schedule installation projects to work around shortages and use upgrade kits rather than new equipment wherever possible.

Barrier: Grant awardees installing Phasor Measurement Unit (PMU) projects for the first time may require significant technical support to be successful.

Mitigation: Applicants must indicate the source of technical expertise as part of the application process and utilize the resources of the DOE-sponsored SynchroMetrology Laboratory of the National Institute of Standards and Technology (NIST) to test and calibrate PMUs. Implement additional knowledge-sharing opportunities, including wikis, call centers, and FAQs.

Barrier: Utilities are reluctant to share real-time operating conditions data with other utilities even though the data sharing is required for successful implementation of Regional SynchroPhasor projects.

Mitigation: Implement comprehensive non-disclosure agreements being developed by NERC and the phasor network communications specification being developed through DOE sponsorship to ensure safe and effective sharing of the minimal set of necessary data.

Barrier: Demand for smart grid hardware, equipment, and services may exceed supply as projects get underway.

Mitigation: Require letters of commitment from vendors, including scheduled delivery times, as part of the application process and consider requesting changes to existing Federal regulations to allow extensions to the two-year time frame for delays related to causes beyond a grant awardee's control.

Barrier: Interoperability frameworks and standards are being developed in parallel with the award of Smart Grid grants that involve the selection, acquisition, and installation of Smart Grid components. It is possible that selected components may be non-compliant with the final standards.

Mitigation: Applicants for Smart Grid grants will be expected to address interoperability as appropriate within their proposed projects based on currently available and published standards. Applicants will also be required to address plans for responding to changes in standards. The extent to which the interoperability requirement is addressed will be a key evaluation criteria.

Activity-specific barriers – Smart Grid Investment Grant Program

Barrier: Applicants may not realize precisely what certifications are required during the application process, and State Governors may not realize that they are required to certify how the States plan to use Recovery Act funds.

Mitigation: Clearly state the need for the certification requirements in the Notice of Intent (NOI) and the Funding Opportunity Announcement (FOA). In addition, confirm the certification status for each State Governor through the DOE liaison.

Barrier: Implementation of digital technology requires the application of advanced cyber security measures, but standards and procedures are still being developed and there are no established certification and accreditation procedures in place.

Mitigation: Three-pronged approach: 1) Require that grant awardees identify and implement best practices in cyber security; 2) Use Recovery Act funds to train and possibly accredit cyber security experts; and 3) Require adherence to current NERC standards for certification and accreditation.

Barrier: Procurement-related procedures and rules, including cost sharing of not more than 50%; no duplication of awards, or multiple awards for the same investment; and advanced payment of funds, must be incorporated into the NOI and subsequent FOA.

Mitigation: Work diligently with the various DOE offices to craft this language so that it is ready for the FOA.

Activity-specific barriers – Smart Grid Demonstration Program

Barrier: First time recipients will require significant support to meet DOE procurement requirements after award.

Mitigation: Provide additional tutorials and support materials for new recipients; identify recipients who may need additional monitoring and auditing; and prioritize the order of awards to allow technical monitors to quickly complete awards for experienced recipients in order to focus time and attention on new recipients.

Activity-specific barriers – Interoperability Standards and Framework Program

Barrier: Significant effort is required to build consensus and reach agreement among multiple stakeholders.

Mitigation: Employ sound project management practices to achieve activity goals including: using facilitators to build consensus; involving all stakeholders in meetings; encouraging collaboration through supportive policy statements from DOE; and reporting actions and issues to senior management on a regular basis.

11 Environmental Review Compliance

DOE will determine the appropriate level of National Environmental Policy Act (NEPA) review pursuant to NEPA and its implementing regulations (40 CFR Parts 1500-1508 and 10 CFR Part 1021) for individual projects, which will be proposed predominantly by applicants in response to DOE funding opportunity announcements. DOE will similarly comply with other environmental requirements with respect to particular proposals.