

FY 2014 Budget Request

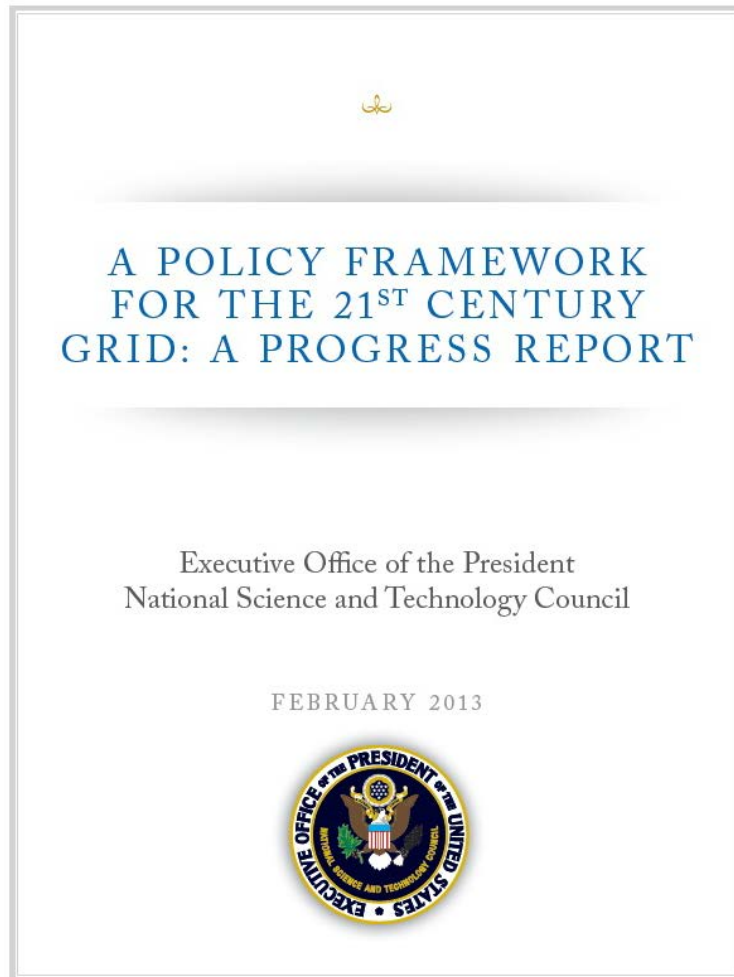
Office of Electricity Delivery and Energy Reliability



Patricia A. Hoffman, Assistant Secretary

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The Importance of a Modern Grid



“...A smarter, modernized, and expanded grid can serve as a platform for American leadership in a clean and secure energy future and power a National economy that is built to last.”

- *A Policy Framework for the 21st Century Grid: A Progress Report*
White House Report, February 2013

Mission and Goals

*The **Office of Electricity Delivery and Energy Reliability (OE)** drives electric grid modernization and resiliency in the energy infrastructure.*

OE supports the DOE mission and its goals:

DOE Mission

The mission of the Department of Energy is to ensure America's security and prosperity by addressing its energy, environmental, and nuclear challenges through transformative science and technology solutions

Goals:

Transform our Energy Systems

Goal 1: Catalyze the timely, material, and efficient transformation of the nation's energy system and secure U.S. leadership in clean energy technologies.

The Science and Engineering Enterprise

Goal 2: Maintain a vibrant U.S. effort in science and engineering as a cornerstone of our economic prosperity with clear leadership in strategic areas.

Secure Our Nation

Goal 3: Enhance nuclear security through defense, nonproliferation, and environmental efforts.

Management and Operational Excellence

Goal 4: Establish an operational and adaptable framework that combines the best wisdom of all Department stakeholders to maximize mission success.

OE FY 2014 Request

FY 2012 Current	FY 2013 Annualized CR	FY 2014 Request
\$136M	\$140M	\$169M

	Request Amount (in thousands)
Clean Energy Transmission and Reliability	32,000
<i>Transmission Reliability and Renewables Integration</i>	<i>18,000</i>
<i>Advanced Modeling Grid Research</i>	<i>10,000</i>
<i>Energy Systems Predictive Capability</i>	<i>4,000</i>
Smart Grid	14,400
Electricity Systems Hub	20,000
Energy Storage	15,000
Cyber Security for Energy Delivery Systems	38,000
National Electricity Delivery	6,000
Infrastructure Security and Energy Restoration	16,000
<i>Infrastructure Security and Energy Restoration</i>	<i>6,000</i>
<i>Operational Energy and Resilience</i>	<i>10,000</i>
Program Direction	27,615
TOTAL, Electricity Delivery and Energy Reliability	169,015

Infrastructure Security and Energy Restoration

FY 2014 Request: \$16 M

In collaboration with all levels of industry and State and local governments, the ISER program leads efforts for securing the U.S. energy infrastructure against all hazards, reducing the impact of disruptive events and responding to and facilitating recovery from energy disruptions

New in FY 2014: Establishes the Operational Energy and Resilience (OER) Program

- An enhanced capability that will enable the Department to better protect against and mitigate threats and hazards, with the ultimate goal of quicker recovery by industry and the communities they serve. Better equips DOE to respond to man-made and natural events, such as Hurricane Sandy, that affect the energy infrastructure
- In FY 2014, the request for OER supports:
 - Standing up the **Energy Resilience and Operations Center (E-ROC)**
 - Will provide continuous monitoring of the status of the nation's critical energy infrastructure, and a robust, state-of-the-art ability to assess, visualize, and synthesize data, resulting in a more focused, regionally based, rapid response to events
 - Building field presence by placing DOE Energy Advisors in Federal Emergency Management Agency regional offices who will proactively work with states, regions, and facility owners to develop practices and identify potential technology solutions to enhance resiliency and improve restoration
 - Will provide needed energy expertise on the ground for Federal emergency response efforts

Cybersecurity for Energy Delivery Systems

FY 2014 Request: \$38 M

In response to the growing sophistication of cyber threats, OE's cybersecurity program addresses the unique cyber security needs of energy sector control systems

- The FY 2014 request supports:
 - Research and development to improve cybersecurity technologies and capabilities for control systems used in critical energy infrastructure
 - Enhancing situational awareness and further developing operational capabilities to help energy sector asset owners cost effectively strengthen cybersecurity protections, increasing the resiliency of the Energy Sector
 - Developing Electricity Subsector Cybersecurity Capability Maturity Model (ES-C2M2) benchmarks, which will help utilities identify areas for cybersecurity investment, prioritize cybersecurity resources in a way that most effectively reduces risk, and compare their cybersecurity capabilities with other utilities
 - Initiating a pilot to apply the cybersecurity capability maturity model to the oil and natural gas sector
 - Pilot and deploy situational awareness tools to help identify, for example, abnormal communications, malware, and data exfiltration

Clean Energy Transmission and Reliability

FY 2014 Request: \$32 M

The CETR program focuses on modeling and analysis to achieve the goals of enhanced reliability and resiliency of U.S. energy systems

- **Transmission Reliability and Renewables Integration**

- Accelerates the development of commercial-ready applications that leverage the availability of high resolution, time-synchronized data on the electric system, collected from deployed synchrophaser-based sensors funded through the Recovery Act, to meet reliability objectives

- **Energy Systems Predictive Capability**

- Highlights and expands efforts to develop near real-time analysis of events that could impact energy reliability, a capability that is critical during emergency situations
 - Robust analyses to assist decision makers in developing appropriate strategies when assessing the risk and reliability of energy assets, systems and networks.
 - Analytic efforts that include reliability assessments, energy security modeling and visualization, and energy infrastructure risk analyses

- **Advanced Modeling Grid Research**

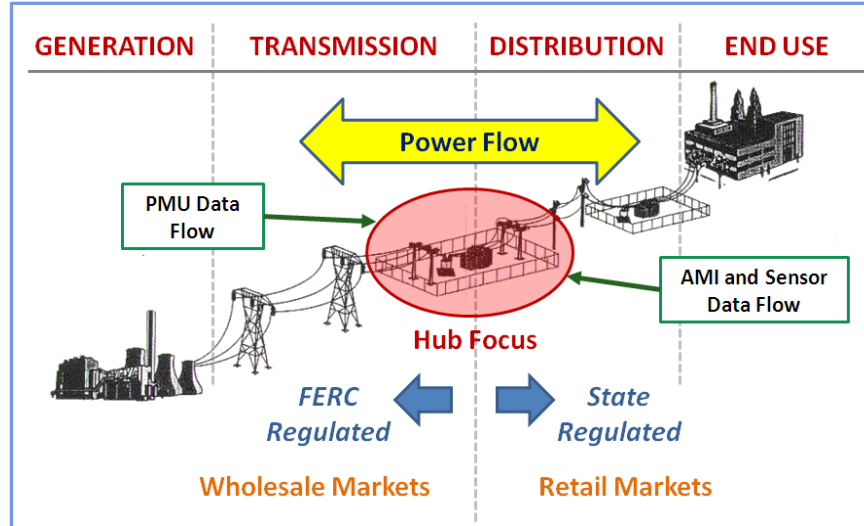
- Continues development of computational, mathematical, and scientific understanding (suitable for application in a large-scale, dynamic environment) needed to transform the tools and algorithms that underpin electric system planning and operations

Highlights of the FY 2014 Request

Electricity Systems Hub

FY 2014 Request: \$20 M

The new Electricity Systems Hub will focus on the interface between transmission and distribution as the point where power and information flows intersect with markets and regulations



- Recent outages due to extreme weather events (e.g., Hurricane Sandy, snow storms, and tornados) have highlighted the importance of bridging transmission and distribution to improve system resiliency and robustness
- The integrated Hub approach will produce creative solutions to address the barriers and challenges associated with this “pinch point” of grid modernization

Other OE Programs

Smart Grid (\$14.4M)

Supports the development of an efficient, fully integrated “smart” grid through the integration of digital information and communication technologies into the power system.

Energy Storage (\$15.0M)

Develops grid-scale storage technologies to reduce power disturbances, reduce generation need at peak demand, and improve system flexibility to better incorporate renewable resources.

National Electricity Delivery (\$6.0M)

Provides technical assistance to states and regions on electricity policies and programs that increase access to reliable, affordable and sustainable energy sources, including analysis of emerging system challenges and advanced transmission approaches. This program was formerly called Permitting, Siting, and Analysis.