Office of Electricity Delivery and Energy Reliability

(dollars in thousands)

	FY 2009 Current Approp.	FY 2009 Current Recovery	FY 2010 Current Approp.	FY 2011 Congressional Request	FY 2011 vs. FY 2010 $	FY 2011 vs. FY 2010 %
Research and Development	83,119	0	124,900	144,293	+19,393	+15.5%
Operations and Analysis	11,451	0	0	0	——	——
Permitting, Siting and Analysis	0	0	6,400	6,400	——	——
Infrastructure Security & Energy Restoration	0	0	6,187	6,188	+1	+0.0%
Program Direction	21,180	22,500	21,420	29,049	+7,629	+35.6%
Congressionally Directed Projects	19,648	0	13,075	0	-13,075	-100.0%
Smart Grid Investment Program (EISA 1306)	0	3,375,700	0	0	——	——
Smart Grid Regional and Energy Storage Demos	0	700,000	0	0	——	——
Workforce Training	0	100,000	0	0	——	——
Interoperability Standards and Framework	0	10,000	0	0	——	——
Interconnection Planning and Analysis	0	80,000	0	0	——	——
State Asistance on Electricity Policy	0	50,000	0	0	——	——
Enhancing State and Local Gov. Energy Assurance	0	55,000	0	0	——	——
Other Recovery Act	0	102,512	0	0	——	——
Subtotal, Electricity Delivery & Energy Reliability	*135,398*	*4,495,712*	*171,982*	*185,930*	*+13,948*	*+8.1%*
Use of Prior Year Balances and Other Adjustments	-769	0	0	0	——	——
Total, Office Electricity Delivery & Energy Reliability	134,629	4,495,712	171,982	185,930	+13,948	+8.1%

The FY 2011 Office of **Electricity Delivery and Energy Reliability (OE)** budget request is $185.9 million, $14.0 million more than the FY 2010 Appropriation, which reflects increased investments in research and development, particularly in energy storage, advanced grid modeling and power electronics.

The FY 2011 request supports the efforts of the Research and Development program; the Permitting, Siting, and Analysis program; and the Infrastructure Security and Energy Restoration program to modernize the electric grid, enhance security and reliability of the energy infrastructure, and facilitate recovery from disruptions to the energy supply. The proposed budget provides a balanced and diverse portfolio of activities, including:

Research and Development ($144.3 million)

- In FY 2011 the research and development program's portfolio comprises four subprograms:
  - **Clean Energy Transmission and Reliability ($35.0 million):** Supports the development of transmission-related technologies that will improve grid reliability, efficiency, and security. Continues expansion of phasor measurement unit (PMU) capabilities and initiates the Advanced Modeling Grid Research activity, in developing the analytical tools that will use the new data captured by the PMU-based networks and Smart Grid technologies deployed on the grid. Supports the completion of High Temperature Superconductivity wire development and phase-out of the program.
  - **Smart Grid Research and Development ($39.3 million):** Continues efforts to achieve a coordinated deployment of Smart Grid technologies, including the development of Smart Grid functions for renewable systems, plug-in hybrid electric vehicles, and other end-use applications. Supports a new activity, Power Electronics, which will engage universities in developing solid-state devices such as wide-bandgap semiconductors, improving grid performance and efficiency while reducing costs.
  - **Energy Storage ($40.0 million):** Focuses on development and deployment of storage devices, through research, bench testing and extensive field testing in collaboration with utilities, with a goal of moving technologies towards commercialization. Initiates analysis on new methods for identifying promising locations for pumped storage and Compressed Air Energy Storage (CAES) systems. Accelerates research into prototype electrode development and testing for advantages and challenges for each new battery material. Expands research into integration of renewable energy resources into the grid.
  - **Cyber Security for Energy Delivery Systems ($30.0 million):** Continues the test bed assessment of SCADA systems; development of advanced cyber security technologies, including trust anchors to build trustworthy networks from untrusted components; development of modeling and simulation tool to evaluate risk of newly discovered vulnerabilities, and research to develop a resilient infrastructure for Smart Grid that can withstand cyber attacks.

Permitting, Siting and Analysis ($6.4 million)

- Supports grid modernization by providing technical and financial assistance to States, regional entities, and other Federal agencies to develop and improve policies, market mechanisms, State laws, and programs that facilitate the development of the electricity infrastructure required to access clean energy resources; issues permits for international transmission lines and electricity exports; and implements other responsibilities under the Energy Policy Act of 2005 such as recommending energy corridor designations.

Infrastructure Security and Energy Reliability ($6.2 million)

- Supports efforts to enhance the security of our Nation's critical energy infrastructure from all threats and hazards. Continues infrastructure reliability activities including advancements in power outage and restoration visualization and modeling, assistance to states and local government emergency response activities, and application of a robust systems analysis to identify critical assets and interdependencies.

Program Direction ($29.1 million)

- Supports 82 federal FTEs, as well as 31 indirect FTEs at the National Energy Technology Laboratory that support OE programs. The increase primarily reflects an additional 29 FTEs associated with the ongoing management of Recover Act projects.