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Keeping the Lights on for Americans: Modernizing the Nation's Electric Grid

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A reliable and resilient electric grid is essential to meeting the rapidly-evolving needs of an increasingly digital society, enabling the integration of clean, renewable energy sources like wind and solar and paving the way to greater energy independence. In order to manage America's energy consumption more efficiently and cost-effectively, recover from disruptions more quickly and remain globally competitive, we must modernize our nation's electric grid.

In fact, a dramatic and exciting transformation is now underway. Under the American Recovery and Reinvestment Act, the Department of Energy awarded \$4.5 billion in funds to the electricity industry to help catalyze the adoption of smart technologies and systems designed to increase the electric grid's flexibility, reliability, efficiency, affordability and resiliency. At the heart of this transformation are advanced technologies, tools and processes working together to respond digitally to the ever-changing demand for electricity and an increasingly complex environment. As this modernization effort moves forward, Americans are experiencing fewer outages, more efficient operations, faster power restoration when disruptions occur, and cost savings. Over the last four years, we have also deployed a visualization capability across the country's grid that helps system operators identify and respond to deteriorating or abnormal grid conditions more quickly. Better awareness will lead to improved reliability, fewer blackouts, and faster restoration of power.

As storms increase in frequency and intensity, the ability to restore electricity quickly when disruptions occur -- in other words, resiliency -- will become even more important. Eight of the largest ten hurricanes have occurred over the past decade, destroying essential components of the energy infrastructure and resulting in significant economic losses. Smart grid investments are already making a difference in helping get the power back on more quickly. In the aftermath of Superstorm Sandy, for example, the Mid-Atlantic utility Pepco reported faster responses to restoration efforts as a result of outage alerts sent automatically from smart meters installed at customers' homes and businesses.

One of the important roles of the Department of Energy's Office of Electricity Delivery and Energy Reliability is to coordinate with federal partners, including the Department of Homeland Security and the Department of Defense, for national preparedness and response efforts against all types of hazards, whether they are natural such as storms or man-made such as physical or [cyber attacks](#). We also work closely with private sector partners and other stakeholders to support research and development of advanced technologies that will further enhance the resiliency of the energy sector (electricity, natural gas and petroleum) and help reduce the time it takes to recover from an energy disruption.

Clearly, this work is vital. The investments that we have made thus far are already creating important benefits now and for the future. But this is only the beginning. For the U.S. to continue prospering in an increasingly dynamic world filled with change, we must continue making significant investments in grid modernization.

Patricia Hoffman is Assistant Secretary of the U.S. Department of Energy's Office of Electricity Delivery and Energy Reliability.