The Smart Grid and New York State

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Electricity demand continues to rise sharply in the United States, and is predicted to grow an additional 30 percent by 2030.[1] Utility companies and consumers are caught between 20th Century infrastructure and inefficiency and 21st Century consumer technology. In a society that is ever more dependent on reliable and consistent sources of electricity, the U.S. must look for new ways to upgrade its energy infrastructure.

In certain areas of the country demand has outstripped supply, resulting in brownouts and blackouts over the last decade. While temporarily losing power might seem a mere inconvenience, it can do great damage to the business sector in addition to endangering the lives of citizens. According to the U.S. Department of Energy, reliability challenges "are estimated to cost American business more than $100 billion on average each year."[2] The infamous northeast blackout of 2003 alone left over 14 million people in the New York City and surrounding areas without power and is estimated to have resulted in $1 billion in damages.

Some energy experts believe that smart grid technology, with its ability to sense problems before they occur and increase communications between energy providers and consumers, is the answer.

What Is The Smart Grid?

Smart grid uses digital technology to deliver electricity to consumers to save energy, reduce costs and increase reliability. It also enables two-way flow of electricity and information and is capable of monitoring everything from power plants to consumer preferences. For example, during periods of peak demand, information can be sent to power plants notifying them of exactly how much power is needed. Under the current system, power plant operators sometimes overestimate the demand for power on a given day which leads to wasted energy and unnecessary pollution.

In 2008, in an effort to solidify the goals and definitions of smart grid technology, the U.S. Department of Energy created a Smart Grid Task Force which developed the seven characteristics of a smart grid:[3]

- Enable active participation by consumers
- Accommodate all generation and storage options
- Enable new products, services and markets
- Provide power quality for the range of needs in a digital economy
- Optimize asset utilization and operating efficiency
- Anticipate and respond to system disturbances in a self-healing manner
- Operate resiliently against physical and cyber attacks and natural disasters

Smart grid technology has also received national attention as part of the American Recovery and Reinvestment Act of 2009, better known as the stimulus package, which allocated $11 billion in spending for

[1] Edison Electric Institute. http://www.eei.org/ourissues/ElectricityGeneration/Documents/bar_dmdelcinc.pdf
[2] "The Smart Grid: An Introduction," U.S. Department of Energy, http://www.oe.energy.gov/DocumentsandMedia/DOE_SG_Book_Single_Pages(1).pdf
[3] "Metrics for Measuring Progress Toward Implementation of a Smart Grid, U.S. Department of Energy, http://www.oe.energy.gov/DocumentsandMedia/Smart_Grid_Workshop_Report_Final_Draft_08_12_08.pdf

smart grid initiatives. Secretary of Energy Steven Chu said of the Act, "The modernization of the nation's electricity system has to be an integral part of this."[4]

However, the Act does not specify how that money should be spent nor does it address any barriers that might prevent a smart grid from being implemented. Hearings on the smart grid are planned for the spring of 2009 under Senate Energy and Natural Resources Committee Chairman Jeff Bingaman (D-NM), with the goal of introducing legislation to clarify the details of the Act.[5]

The Smart Grid and New York

New York State has already taken the first steps towards adopting smart grid technology. In February 2009, The New York Public Service Commission (NYPSC), which monitors and regulates New York State utility companies, established minimum functioning requirements for Advanced Metering Infrastructure (AMI),[6] a key component of the smart grid. AMI is a two-way metering system that provides customers with pricing information to inform them of their energy consumption decisions while sending customer consumption information to a central data collection site. Additionally, because usage data is being sent from the customer to the utility company in real time, utility companies can get an exact reading on how much electricity is being consumed.

The NYPSC estimates that half the cost of installing the AMI will be made up in savings made in the reduction of traditional services, such as dispatching employees to read meters, as well as faster outage detection.

Governor David Paterson (D) has been supportive of measures to update the state's antiquated grid system and has made energy efficiency a cornerstone of his policy agenda. In his 2009 State of the State address, Gov. Paterson announced his "45 in 15" program whereby 45 percent of the state's electricity will come from improved energy efficiency and clean renewable energy by 2015. Implementation of a smart grid could help New York achieve this goal and, theoretically, consumers would be given greater ability to choose to receive their electricity from renewable resources using this technology.

Unresolved Issues

There are several hurdles that must be overcome before a smart grid can be implemented on a large scale, however.

Chief among these issues is the cost of smart grid technologies, which energy experts speculate will far outweigh the benefits of moving to a national, one-size-fits-all smart grid. Edward Krapels, the CEO of Anbaric Transmission, a company that works on grid issues, says it makes more sense to keep electricity that's generated in a given region, rather than sending it hundreds of miles away. He states that the East and West coasts can harvest wind power and solar energy can be used in the Southwest. Krapels says it makes sense to only have a "super grid" is in the middle of the country.[7]

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[4] "The Secretaries, the Stimulus and the Smart Grid," *New York Times*, February 18, 2009, http://greeninc.blogs.nytimes.com/2009/02/18/the-secretaries-the-stimulus-and-the-smart-grid/

[5] "Senate Panel to Discuss Details of Setting Up Electric 'Smart Grid,'" *New York Times*, March 2, 2009, http://www.nytimes.com/gwire/2009/03/02/02greenwire-senate-panel-to-examine-details-benefits-of-sma-9921.html

[6] "PSC Moves Ahead with Advanced Metering Requirements," New York Public Service Commission, February 12, 2009. http://www3.dps.state.ny.us/pscweb/WebFileRoom.nsf/0/73F14A5AD8956ECE8525755B005CAFBF/$File/pr09008.pdf?OpenElement

[7] "Electricity grid gets boost from Congress," *The Washington Times*, March 16, 2009, http://www.washingtontimes.com/news/2009/mar/16/electricity-grid-gets-boost-from-congress

Also, while the stimulus package provides some funding for smart grid development, it is far from being enough to transform the nation's entire grid. It remains undecided who will be responsible for paying for the smart grid: the federal government, the states, or utility companies. While ultimately taxpayers and ratepayers will provide the funding, this disagreement is another potential source of delaying updating the nation's grid.

There is disagreement over whether the state or federal governments should have ultimate authority over the grid and this issue must be resolved for a smart grid to be implemented on a nation-wide scale. Although Congress gave the final authority to the Federal Energy Regulatory Commission (FERC) under the Energy Policy Act of 2005, the 4th Circuit Court of Appeals Ruled in February 2009 that FERC cannot overrule a state's decision to reject a transmission project.[8] The case involved two utility companies who were seeking to construct high-voltage power lines in Maryland and Virginia which would deliver electricity to New York City.

U.S. Rep. James Sensenbrenner (R-WI) points out that much of the nation's renewable energy comes from the nation's interior while its population centers are along the coasts, and says that the regulatory process must be streamlined for siting new transmission lines.[9]

Because renewable energy is intermittent, new technology is required to regulate how and when these resources are used, says Tom Casey, CEO of Current Group, a company that designs and sells smart grid technology. On February 25, 2009, Mr. Casey told the House Select Committee on Energy Independence and Global Warming that "more intelligence" must be in the grid for renewable energy to reach its full potential.

Conclusion

The smart grid incorporates a variety of technologies that have the potential to make energy production, transmission and consumption more efficient. However, because the technology is new, it remains to be seen how a smart grid system would be implemented and operated over a vast statewide or nationwide network, even though several countries in Europe, including Italy and Denmark, have already starting transitioning to smart grid technology. In the United States, Austin, TX and Boulder, CO are at the forefront of incorporating smart grid technologies.

Unresolved regulatory issues and the costs of a smart grid have the potential to delay or prevent the U.S. from moving to a nationwide system. If these delays continue, there is the possibility that the country will operate on a patchwork of regional grids using either 20th or 21st century technology as some municipal and state governments choose to move forward with smart grid technology.

[8] "Electricity grid gets boost from Congress," *The Washington Times*, March 16, 2009, http://www.washingtontimes.com/news/2009/mar/16/electricity-grid-gets-boost-from-congress

[9] Ibid.

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About New York AREA: Founded in November 2003, the New York Affordable Reliable Electricity Alliance (New York AREA) is a diverse group of more than 125 business, labor, and community groups whose mission and purpose is to ensure that New York has an ample and reliable electricity supply, and economic prosperity for years to come. New York AREA helps to educate policy makers, businesses, and the general public regarding the necessity and importance of safe, low-cost and reliable electricity. For additional information visit: www.area-alliance.org.

Additional Information

U.S. Department of Energy – "*The Smart Grid – An Introduction"*
http://www.oe.energy.gov/1165.htm

Energybiz Magazine – January/February 2009 – *"Changing How the World Works – The Elements of a Smart Grid."*
http://energycentral.fileburst.com/EnergyBizOnline/2009-1-jan-feb/Tech_Front_World_Works.pdf