Empowering smarter energy choices

If Thomas Edison were here today, he would be all-too familiar with our electrical infrastructure — not much has changed in a century. Alexander Graham Bell, on the other hand, would need to go back to school to understand the technology advances in communications. Everything from the low-tech of answering machines to the high-tech of cell phone functionality would be foreign to Bell.

The smart grid can help the world of energy attain the same types of advances and advantage that have revolutionized communications. And it's a capabilities revolution we need. The time for a smarter grid is now:

- Global energy consumption is projected to triple by 2050.[1]
- Power outages and disturbances cost the U.S. economy over $100 billion annually.[2]
- Power generation contributes a staggering 40 percent of total U.S. carbon emissions.[3]

We need the functionality, flexibility and decision-enabling knowledge of a smart grid to manage the power needs of today's energy-hungry world, to help lower carbon emissions, and to help improve our energy security. With shovel-ready technologies available to deploy a smarter grid today, Thomas Edison might be asking, "what are you waiting for?"

A new role for energy legislation: Enacting the smart grid

The old way:

Energy laws and regulations have dealt primarily with consumer issues such as reliability, service standards and fair pricing per kWh consumed, without focusing on infrastructure, efficiency, or system details.

The smarter way:

A holistic view of energy policy enables utilities to operate profitably while encouraging efficiency. It empowers consumers to make choices to manage energy usage and save money, while promoting investment in smarter technologies that will transform the way we power the world.

The facts:

- On February 17, 2009, the American Recovery and Reinvestment Act was signed into law, providing billions in funding to help transform today's grid into a smarter, more intuitive system. $4.5 billion will be available for activities to modernize the electric grid.
- The American Recovery and Reinvestment Act calls for approximately $30 billion in energy initiatives, including the power grid, renewable energy, advanced battery technology, and energy efficiency, which will result in hundreds of thousands of jobs.[4]
- Government investments of $16 billion+ in smart grid incentives could result in the creation of up to 280,000 new jobs, with 150,000 being created in the first year alone.[5]
- Another great benefit for our country is the opportunity to lead and to create a market for these sophisticated and advanced solutions globally, demonstrating our leadership and technology prowess. We invented the internet…why not the energy internet?

Smart Grid benefits merit additional legislative action – outside of the economic stimulus plan

Challenges/Obstacles	Legislation that can help
Today, utilities' revenues are based on the amount of electricity sold, putting the energy efficiencies delivered through a smarter grid in direct conflict with utilities' bottom lines.	Ultimately, policy will be needed to encourage and reward utilities for driving efficiency and conservation. California has demonstrated this principle by breaking the link between a utility's sales and profits through decoupling policies. Decoupling has led to relatively flat per capita energy usage for 30 years, while the U.S. on average has increased per capita energy usage by 50 percent.[6] States can also incent efficiency by establishing stand-alone Energy Efficiency Resource Standards (EERS) and/or enabling utilities to count "efficiency" in their Renewable Portfolio Standards (RPS). Both aim to reduce demand growth by setting energy savings targets that encourage more efficient generation, transmission and end use. Currently, 18 states have included efficiency in an EERS or as part of RPS.[7]
We operate in a 21st century society, built on an electrical infrastructure with little intelligence. For a smarter grid to become a reality, utilities will need to upgrade systems to manage the complexities of our modern solutions — enabling increased efficiencies, clean renewable energy sources and consumer empowerment to become everyday energy realities.	Tax incentives, such as accelerated depreciation for smart grid-related property, encourage infrastructure investments. Accelerated depreciation essentially allows utilities to "reduce" taxable income in a given year. This tactic is used in many industries to encourage businesses to invest in new technologies.
Studies have shown that when consumers are informed and empowered by time-of-use pricing information, they can reduce peak demand by more than 15% and total demand by more than 10%.[8] Unfortunately, not all states have time-of-use pricing in place.	National guidelines for real-time and time-of-use pricing would help the 50 PUCs and 3,000+ electric utilities and co-ops in the U.S. more rapidly adopt these necessary consumer incentives and ultimately lead to quicker adoption of these technologies.

[1] U.S. Army Corps of Engineers. *Energy Trends and Their Implications for U.S. Army Installations.* Washington: Government Printing Office, 2005. (ERDC/CERL TR-05-21).
[2] EPRI, "Electricity Technology Roadmap: 2003 Summary and Synthesis. Power Delivery and Markets." 2003
[3] American Geophysical Union, 2008
[4] Speaker Nancy Pelosi. Current Legislation. "American Recovery and Reinvestment Act." http://www.speaker.gov/newsroom/legislation?id=0273#energy. 18 February 2009.
[5] KEMA. "The U.S. Smart Grid Revolution: KEMA's perspective for job creation." 23 December 2008. Prepared for the GridWise Alliance.
[6] California Public Utility Commission. "California's Decoupling Policy." http://www.cpuc.ca.gov/cleanenergy/design/docs/Deccouplinglowres.pdf.
[7] FERC, Electric Market Overview: Energy Efficiency Resource Standards (EERS) and Goals.
[8] Department of Energy's Pacific Northwest Laboratory, GridWise project, January 9, 2008

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