



Regulatory Obstacles to Achieving a Smart Grid

Smart Grid America Forum

Kirk D. Rasmussen
October 27, 2009

Disclaimers

- These are my views, not necessarily those of my firm – Winstead PC.
- These are my views, not necessarily those of my clients.

A Dawn of a New Age

- GE “pays” approx. \$6M to run two commercials during Super Bowl XLIII regarding the smart grid and wind energy
- My mother is confused as to what GE wants her to buy



Smart Grid - Defined

- One definition of the “smart” grid:
 - *“It is the policy of the United States to support the modernization of the Nation's electricity transmission and distribution system to maintain a reliable and secure electricity infrastructure that can meet future demand growth and to achieve each of the following, which together characterize a Smart Grid.”*
 - *Energy Independence and Security Act of 2007*

Components of a Smart Grid

- Increased use of digital information and controls technology to improve reliability, security, and efficiency of the electric grid.
- Dynamic optimization of grid operations and resources, with full cyber-security.
- Deployment and integration of distributed resources and generation, including renewable resources.
- Development and incorporation of demand response, demand-side resources, and energy-efficiency resources.
- Deployment of “smart” technologies (real-time, automated, interactive technologies that optimize the physical operation of appliances and consumer devices) for metering, communications concerning grid operations and status, and distribution automation.

Components of a Smart Grid, Cont.

- Integration of “smart” appliances and consumer devices.
- Deployment and integration of advanced electricity storage and peak-shaving technologies, including plug-in electric and hybrid electric vehicles, and thermal-storage air conditioning.
- Provision to consumers of timely information and control options.
- Development of standards for communication and interoperability of appliances and equipment connected to the electric grid, including the infrastructure serving the grid.
- Identification and lowering of unreasonable or unnecessary barriers to adoption of smart grid technologies, practices, and services.

Impacts of ARRA

- The American Recovery and Reinvestment Act of 2009 (ARRA) includes funding to enhance energy independence and modernize infrastructure. Some of the money will flow through the states, which will evaluate proposals and issue grants. Some of it will flow through the Department of Energy (DOE), which will have its own application and evaluation process. Some of it will come in the form of loan guarantees.

Impacts of ARRA, Cont.

- Smart Grid demonstration projects
- Energy Efficiency and Conservation Block Grant
- Transportation, including electric vehicles
- Renewable energy loan guarantees
- Research in energy efficiency, renewables, batteries and clean fossil energy
- Broadband Technologies Opportunities Program

The Takeaway Message

- Participation in a regulated market is different than a fully competitive market – success depends on more than just designing a better mousetrap and obtaining funding



A Few of the Regulatory Hurdles to Achieving a Smarter Grid

- **Who is the Regulator?**
- **Punishment of Innovation**
- **The Lightning Quick Speed of Regulation**
- **What is it?**
- **Who Keeps the Data?**
- **Who Gets to Pay for It?**

Who is the Regulator?

- Electric Regulation
 - Federal Energy Regulatory Commission
 - State public utility commission (e.g., PUCT)
 - Municipal utility
 - Electric Cooperative
- Lots of Others
 - FCC, EPA, TCEQ, GLO, etc., etc., etc.

Punishment of Innovation

- Utilities must demonstrate prudence and reasonableness of investment for earning a return and recovering expenses
 - *“In establishing an electric utility's rates, the regulatory authority shall establish the utility's overall revenues at an amount that will permit the utility a reasonable opportunity to earn a reasonable return on the utility's invested capital **used** and **useful** in providing service to the public in excess of the utility's **reasonable** and **necessary** operating expenses.”*
 - PURA § 36.051

Punishment of Innovation

- Historical utility regulation rewards safe capital investment, not innovation
 - Incentive to build what worked last time
 - No reward for innovation
 - Punishment of mistakes and failure
- Historical (and current) utility ratemaking based on kWh consumed, not kWh reduced
 - Utility rates based on kWh metered/consumed
 - Utilities recover less if kWh's reduced

Punishment of Innovation

- A case study
 - Utility desires to smart up the grid with the installation of automated meters
 - Utility begins installing a number of automated meters on its system (2004)
 - Regulator initiates a rulemaking and approves a type of smart meter that is different from what utility is installing (2007)

Punishment of Innovation

- A case study, cont.
 - In its next rate proceeding, several parties, including commission staff challenge the prudence of utility's investment in the original automated meters (2009)
 - The ALJs determine that 41.82% of utility's investment in automated meters should not be recovered (2009)
 - A happy ending? The Commission finds that utility acted prudently and allows utility to recover the full costs of its automated meters (2009)

The “Lightning” Quick Speed of Regulation

- Technology is able to advance much more quickly than regulation
 - Where in the technology stream do you jump in?
 - Just wait until you see what’s coming next
 - How much testing before it works?
 - Pilot projects, pilot projects, and more pilot projects
 - You test it first, then I’ll think about it -- see Punishment of Innovation discussion --

The “Lightning” Quick Speed of Regulation

- Examples
 - Meter technology
 - Energy storage
 - Retail rate structure

What is it?

- Many smart grid facilities have a number of applications across the utility landscape
 - Smart grid technologies can be difficult to assign to one particular market segment
 - Knowing (or defining) what something is, can be necessary to getting it in place
 - Rate recovery, cost allocation, etc.
 - Market rules may restrict use of certain technologies by certain market participants

What is it?

- Case Study
 - Energy storage systems in the unregulated environment
 - Is it a transmission and distribution utility asset?
 - Is it a generation asset?
 - Is it a customer asset?
 - Who owns the energy that is stored?

Who Keeps the Data?

- Advanced meters and smart grid systems will generate a large volume of information
- A number of entities and individuals will want access to much of the information
- Strong consumer concern over data privacy and security
- National security concerns

Who Gets to Pay for It?

- In an unregulated environment, determining who benefits most and who gets to pay for a particular facility can be difficult
 - Allocation of costs to non-regulated market participants can be problematic
 - Many smart grid technologies can be difficult to pigeon-hole into one particular market segment

Who Gets to Pay for It?

- “Selling” the cost of smart grid facilities can be difficult
 - Commercial and industrial customers
 - Increased cost
 - Residential customers
 - Lack of perceived value
 - Utility operators
 - Loss of revenue

Who Gets to Pay for It?

- **A Case Study**
 - Municipal utility seeks to increase solar resources
 - Bids returned are 5 to 10 times the current wholesale market prices
 - Pressure from regulators to pursue project regardless of financial impact
 - Feed in tariffs well above market price of electricity

Solutions?

- Clearly stated value proposition to:
 - Regulators
 - Utilities
 - Consumers
 - Market participants
- Legislative directives
- Flexible regulators
- Reshaping the regulatory paradigm
- Looking for win/win solutions

The Takeaway Message, Cont.

- **Designing a better mousetrap and obtaining funding in a regulated market may be just the beginning of a successful journey**





Questions?

Kirk D. Rasmussen

214.745.5410

krasmussen@winstead.com