

Personal Comments on Discussion Questions for the Smart Grid Executive Forum Panelists and Presenters

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Panel Questions (Business Case for a Smart Grid)

- **What is the business case for a smart grid?**

The business case is different depending on which party we're talking about. For example a consumer may be able to justify an investment in smart grid technology to save on energy costs. An ISO/RTO might focus more on the ability to improve overall efficiency of network resources, greater situational awareness and better decision making capability through the use of smart grid technologies. As a country, the US standards to benefit from a reduced dependency on foreign oil, reductions in green house gas emissions and more efficient electricity production, transport and consumption.

- **Is the technology for smart grid deployment readily available?**

There are technologies available today that can perform many of the functions associated with a Smart Grid, such as smart meters, smart appliances, demand response capabilities, micro-grid technology and more. However, these technologies were not designed to work on national Smart Grid standards and therefore may not be able to fully participate in the "fully interoperable" Smart Grid that will exist when all of the national Smart Grid standards are developed and implemented.

- **Is there a need to invest in R&D for the smart grid, and if so, what are the most critical areas?**

The most urgent need today is for Smart Grid standards that cover the entire electricity supply chain. Investment in R&D is needed to develop the technical architecture, data and communication standards that are so essential to achieving the national Smart Grid. Specific areas that urgently require investment include economic analysis of Microgrids and the integration of Energy Management Systems and Distribution Management Systems.

- **What type of emerging standards need to be developed to assure smart grid interoperability?**

National business practices for demand response, net metering and distributed generation

Data and Communication standards for demand response, net metering, distributed generation and intelligent device control (e.g. FACTS)

An interoperability certification test suite to verify interoperability of products claiming to be Smart Grid compliant

- **Are the skills of the existing workforce adequate for smart grid deployment or do we need a more educated workforce?**

No. System planners and operations personnel will need to be trained to manage and operate the Smart Grid. State and federal regulators need to understand the new business models that are emerging and must rethink regulations that were designed around “electricity consumption” to focus more on “electricity efficiency”.

- **If you had an option to prioritize smart grid efforts to meet the stimulus bill, what would you recommend be done first?**

Start by developing a Smart Grid Vision and Architecture that addresses all aspects of the Smart Grid spectrum. Use the architecture to drive the development of Smart Grid standards and protocols.

- **How do you see the transition from the legacy solutions to smart grid solutions occurring?**

The Smart Grid will be an evolutionary process that methodically introduces intelligence into the existing grid, without negatively impacting customer service and reliability. The lines between transmission and distribution will blur as more supply resources (including DR) come online across the distribution network and consumers have greater ability to perform as both demand and supply resources.

Presenter Questions

- **What are the risks associated with deploying today’s smart grid technologies?**

As Smart Grid standards begin to emerge some technologies that are being implemented today could be obsolete, resulting in stranded investments or the need to upgrade.

- **Are the vendors providing technology variety needed to implement smart grid?**

Vendors are providing much of the technology today needed to implement “a” Smart Grid, but because there is a lack of Smart Grid standards there are no technologies available that implement “the” National Smart Grid.

- **What changes will fully deployed smart grid make to utility strategic planning and to a utility’s organization?**

The existing grid was designed for one way power flow (from generator to consumer) which led to the development of a tightly managed, central control approach for system planning and operations. With the introduction of Smart “sense and respond” devices for both supply and demand that can operate across the entire grid the central control approach will need to evolve into a more distributed control paradigm. New planning tools and processes are needed that incorporate these new Smart Grid capabilities. System operations will need more robust capabilities to deal with the exponential growth

of data produced by the Smart Grid and faster acting decision support capabilities that operates under a distributed control paradigm.

- **What are the barriers to wide scale deployment of a Smart Grid within the next 5 years? How should those barriers be addressed?**

Lack of Smart Grid standards, business practices and regulations on a national basis. Availability of compliant Smart Grid products. Coordination of Smart Grid implementations across different jurisdictions.

- **Should the smart grid be deployed first at the customer level or at the system level?**

Many Smart Grid capabilities require the coordination of deployment across the electricity supply chain. For example the implementation of Smart Meters at a customer premise are of little value if a Load Serving Entity or Distribution Company has not implemented the complimentary technologies within their own system to utilize the capabilities of these smart meters. As another example, a dynamic pricing implementation requires coordination from the ISO/RTO's through distribution/LSE and down to the customer.

- **What difference will public policies and/or regulatory requirements make in the deployment of the smart grid?**

National Smart Grid policies and regulations are required in order for the nation to achieve a Smart Grid that supports full customer involvement and complete integration across the electricity supply chain.