



Power System  
Engineering, Inc.



# Smart Grid and the Stimulus Bill (ARRA)

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## American Recovery and Reinvestment Act

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**ILLINOIS MUNICIPAL UTILITIES ASSOCIATION**

## Introduction – What is a Smart Grid?

- Popular subject matter over the last several years
- Technology ranges from AMI, OMS, GIS, to SCADA, new electric distribution, “smarter databases”...
  - Not one technology or strategy fits all utilities
- Not a purchased product, but a concept of deployment
- Smart Grid definitions are user-specific, but include:
  - Automatic data collection from multiple applications
  - Adaptive integrated communications mediums
  - Integrated software suites that share databases

**A smart grid leverages your existing assets and applications**

## Definition: Smart Grid Functions: EISA 1306 (d)

“Ability to develop, store, send, receive digital information on electric use, cost, price, time of use, storage, (generation) or other information relevant to electric devices, grid, or utility operations...to and from a computer or other control device...to monitor, maintain, reconfigure, recover system...measure, store, and report power quality data...manage loads and congestion...provide reserves, frequency regulation...etc.”

# The “Drivers” to Develop a Smart Grid

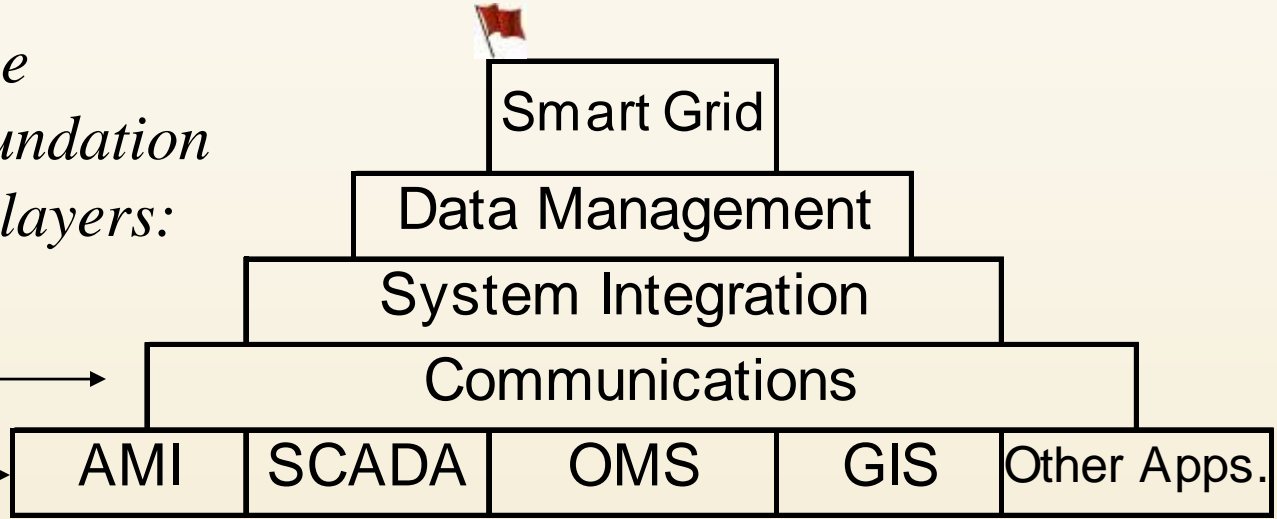
- Aging utility workforce
  - 40% to 50% eligible to retire within the next 10 years
  - Need to do more with less personnel
- Increasing power demands on aging infrastructure
- Increasing energy costs
- Increasing regulatory demands
- Increasing environmental concerns
- Increasing demands on improved reliability

**Funding: The stimulus package means billions of dollars for Smart Grid deployment**

# Smarter Grid Building Blocks & Evolution

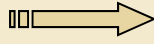
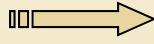
*The foundation & layers:*

From Strategic Comm Plan  
Today's Applications



Chronological Order ↑

*Somewhat like building a cathedral.*



# How to Implement a Smart Grid

- Establish the precedent and stakeholder buy-in
  - Management culture change typically needed
  - Often facilitated by a third party
- Create an Overall Utility Strategic Plan
  - Focused on “operational excellence”
  - Based on operational needs analysis
- Develop a Technology Work Plan
  - Roadmap to implement overall strategic plan
  - Include a Strategic Communications Plan (SCP)
- Follow your technology roadmap

Upfront planning allows you to move forward wisely



# Implementing a Smart Grid: Conclusions

- A Smart Grid is not a “Big Bang” event
  - Done in steps – it will take time
  - Analogous to building a cathedral over generations
- Technology will always be changing
  - Plan for the change
  - Great technology improvements in interoperability
  - Technology costs have come down significantly
- Operational pressures will not go away

**The time to start planning is now!**

# Stimulus Breakdown

## **\$4.5 billion from DOE for “smart grid and transmission activities”**

Breakdown FOA (demos), NOI (investments) for smart grid issued 4/16/09 allocates:

- \$3.375 billion in grants to fund up to 50% of qualifying **“Investments”**
- \$615 million in grants to fund up to 50% of qualifying **“Demonstrations”**

NOI - Notice of Intent

FOA - Funding Opportunity Announcements



# Definitions

**Smart Grid Investments:** rapid deployment of technology for operational performance, data, jobs (*Section 1306, EISA, as amended*)

**Smart Grid Demonstrations:** test, analyze, demonstrate proof-of-concept: cutting edge technologies, limited size, strict experimental design, data intensive. (*Section 1304, EISA, as amended*)

# Investment Grant Applications

## Qualifying:

Investments, such as metering and other devices capable of providing “smart grid functions” (*EISA 1306 (b)*)

## Application deadlines are:

July 29, 2009

December 2, 2009

March 31, 2010

*“We expect all funds gone in first round, second at latest, unless new rules.”*

Note: All \$\$ awarded by 9/30/10; spent by 9/30/15

# Investment Grant Applications

## Criteria

- Is the project feasible?
- Is the application comprehensive?
- Projected project impact/sustainable benefits of smart grid functions/useful data?
- How many jobs are created?
- Possible need for diversity of projects technologies and geographic locations.

# Investment Grant Applications

## Additional Thoughts

- Need to include distribution system benefits, along with power supply, cost, environmental, and other benefits
- Size will matter, as will regionality
- End-to-end connectivity matters
- Ability to integrate renewables, DG matters
- Consumer rate (TOD, TOU, RTP) may matter
- Joint action agencies appear to meet size, region, connectivity requirements

# Demonstration Grant Applications

## Demonstrations:

- *Co-ops and Municipals will receive 2-to-4 awards, ranging between \$5 million to \$20 million each.*
- *By contrast, investor-owned utilities are expected to receive 6-to-8 awards, ranging from \$20 million to \$40 million each.*

## CRN Approach:

- Smart Grid Regional Demonstrations
- Utility-Scale Energy Storage Demonstrations
- Grid Monitoring Demonstrations

***Application deadline: July 29, 2009***

*Thank You!*

**Power System Engineering, Inc.**

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