



Plenary Discussion of the ICC's Smart Grid Orders

Smart Grid Orders

- Ameren Illinois Utilities (AIU) Docket Nos. 07-0585 et. al. (Cons.)
 - Rider QIP
- ComEd Docket No. 07-0566
 - Rider SMP

Discussion Outline

- Milestones for Workshop and Collaborative
- AMI – “Phase 0” Guidance
- Tasks for the Statewide Collaborative
 - Strategic Planning for Smart Grid (“SG”)
 - ICC’s Foundational Policy Questions
 - Benefits and Costs

ICC Milestones for SG Planning

- Phase 0 AMI Workshop (Oct '08 – Apr '09)
 - ComEd AMI Filing
 - Install and Monitor Meters
 - Phase 0 Report to Collaborative
- Statewide SG Collaborative
 - Facilitator Report (State wide) SG Policy Docket (ComEd)
 - SG Implementation Docket (ComEd)
 - Staff Report (AIU)
 - SG Plan Filing (AIU)

ICC Guidance for ComEd AMI Workshop

- AMI Workshop should:
 - develop project goals, timelines, and evaluation and technology selection criteria.
 - “fully investigate the measure of benefits from the utility side of the meter”
 - “customer side benefits necessary to perform a cost-benefit analysis shall be analyzed in the Statewide Smart Grid Collaborative.”
 - be completed in 6 months
- ComEd must file for approval of “goals, timelines, etc.” after AMI Workshop
- Evaluation of meters expected to take 12 months after meters are installed

Major Tasks of the Statewide Collaborative

- (1) Develop a “strategic plan” to guide SG deployment
 - (a) Goals
 - (b) Functionalities
 - (c) Timetables
- (2) Recommend policies to guide SG deployment
 - (a) Foundational policies (13 listed)
 - (b) Utility-specific issues
- (3) Analyze benefits and costs for utilities and consumers



"Norman won't collaborate."

What is a “strategic plan?”

- Key questions:
 - What do “we” do?
 - For whom do we do it?
 - How do we know if we are succeeding?
- Multi-year time horizon
- Requires monitoring and periodic updating

Task 1 (a): Goals

- Goals for electric service are set forth in the IL PUA
 - Safe, reliable, clean and reasonably priced electricity
- The strategic plan for SG should reflect IL PUA goals
- The strategic plan for SG should operationalize goals as clear time-limited statements of intended future conditions

Task 1 (b): Functionalities

US Congress defined the functionalities of the smart grid*

- **Digital Communications Systems and Data Management**
 - The ability to develop, store, send and receive digital information concerning electricity use, costs, prices, time of use, nature of use, storage, or other information relevant to device, grid, or utility operations, to or from or by means of the electric utility system, through one or a combination of devices and technologies.
 - The ability to develop, store, send and receive digital information concerning electricity use, costs, prices, time of use, nature of use, storage, or other information relevant to device, grid, or utility operations to or from a computer or other control device.
 - The ability to measure or monitor electricity use as a function of time of day, power quality characteristics such as voltage level, current, cycles per second, or source or type of generation and to store, synthesize or report that information by digital means.
- **Automated reliability management**
 - The ability to sense and localize disruptions or changes in power flows on the grid and communicate such information instantaneously and automatically for purposes of enabling automatic protective responses to sustain reliability and security of grid operations.
 - The ability to detect, prevent, communicate with regard to, respond to, or recover from system security threats, including cyber-security threats and terrorism, using digital information, media, and devices.

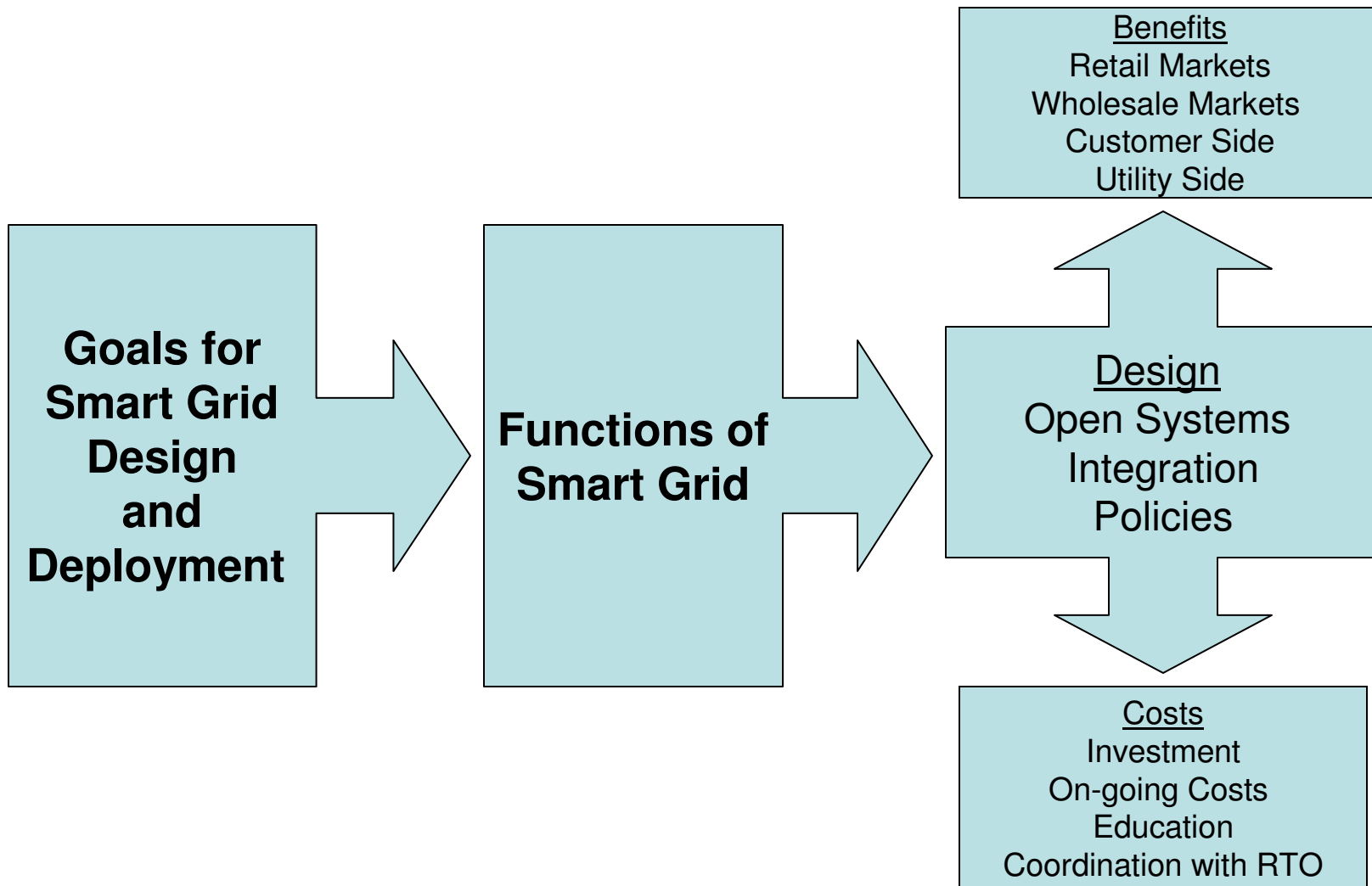
*Energy Independence and Security Act of 2007 (Title XIII – Smart Grid) Section 1306(d)

Task 1 (b): Functionalities (con't)*

- **Prices to Devices and Load Management**
 - The ability of any appliance or machine to respond to such signals, measurements, or communications automatically or in a manner programmed by its owner or operator without independent human intervention.
 - The ability to use digital controls to manage and modify electricity demand, enable congestion management, assist in voltage control, provide operating reserves, and provide frequency regulation.
- **Distribution Automation**
 - The ability to use digital information to operate functionalities on the electric utility grid that were previously electro-mechanical or manual.
- **Other Functions:** Such other functions as the Secretary may identify as being necessary or useful to the operation of a Smart Grid.

*Energy Independence and Security Act of 2007 (Title XIII – Smart Grid) Section 1306(d)

Goals and Functionalities



Task 2(a): Foundational Policies I

- **Consumer education**
 - 7) consumer education and dissemination of information about smart grid technologies, demand response programs and alternative rate structures;
- **Different pricing**
 - 5) implications of smart grid technology for future policies regarding rate design, consumer protection, and customer choice;
 - 11) mechanisms to flow through to customers any utility smart grid revenues;
 - 12) adoption of new demand response programs
- **Inclusion of non-utility and non-quantifiable costs and benefits**
 - 4) methods of estimating, calculating and assessing benefits and costs, including evaluation of non-quantifiable benefits (and costs);
 - 5) effect of statutory renewable resource, demand response and energy efficiency goals on smart grid planning and implementation;

Task 2(a): Foundational Policies II

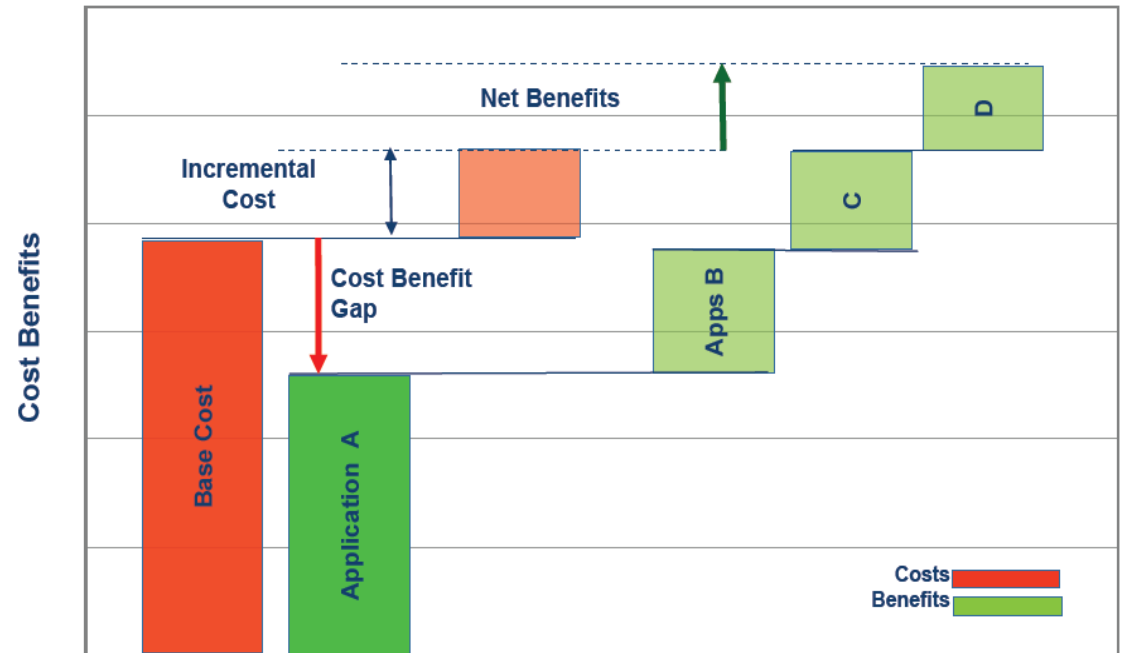
- **Definition of a smart grid and its functionalities;**
- **A new “rulebook”**
 - 2) principles Illinois should use to guide smart grid planning and deployment, for example, interoperability, open architecture, and non-discriminatory access;
 - 3) uniform standards;
 - 8) standards for interconnection of third party equipment;
 - 9) data collection, storage, management, security, and availability to third parties
 - 10) open architecture and inter-operability standards for technological connectivity to the RTO and/or ISO to which a utility may belong
 - 13) access by electricity market participants to smart grid functionalities;

Task 2(b): Utility Specific Issues

- ICC Order does not specifically these issues
- To be addressed in workshop

Task 3: Analyze Benefits and Costs

- Costs associated with Smart Grid Investments
- Benefits
 - Utility O&M
 - Consumer
 - Reduced Energy Consumption
 - Reduced Procurement Costs
 - Increased price and demand responsiveness



Source: "Smart Grid: Future Distribution Infrastructure," presented by ML Chan, KEMA

Traditional utility investment valuation does not incorporate all benefits

Approach must be more "holistic" (e.g., similar to energy efficiency evaluation)