NY REV: Market Design and Platform Technology Working Groups

BNL Smart Grid Workshop

Jim Gallagher
Executive Director
New York State Smart Grid Consortium

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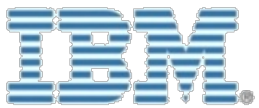
NYS SmartGrid Consortium

Consortium Overview



Consortium Mission

A Forum for Advancing Grid Modernization in NY State

- Maintain vision of future grid
- Advocate benefits for producers, suppliers, and consumers
- Support initiatives that demonstrate capabilities of advanced grid technologies
- Provide technical resources for industry and policy makers
- Priorities for 2014/2015
  - Real world projects - - Multiple microgrid demonstrations
  - Utility of the Future (REV)
  - Strengthen research and international collaboration

NY's Reforming the Energy Vision (REV)

Proceeding Considering

- Fundamental changes in ways utilities provide distribution service
- Aligning electric utility practices and regulation with technological advances in information management, pricing, power generation and distribution
- Improving system efficiency, empowering customer choice, and encouraging greater penetration of clean generation and energy efficient technologies and practices. Must be customer centric!
- New business models

The Distribution System Platform

Key Functions of the DSP

- Designs and operates distribution system that integrates DERs as major means of meeting system and customer needs
- Optimize operations by balancing production and load in real time
- Monetize system & social values
- Use market based means where appropriate, leverage outside capital
- Coordinate interactions among customers, the distribution system and energy services companies (DSP markets and NYISO)

Introduction: Market Design & Platform Technology Groups (MDPT)

Purpose

Provide guidance for utility 5 year Distributed System Implementation Plans (DSIPs) on near- and mid-term market design and platform technology issues

Process

- Two stakeholder working groups—one focused on DSP Market Design and one focused on Platform Technology.
  - Report to NYS DPS by August 17, 2015
- Expert Advisory Group
- Co-led by NYS Smart Grid Consortium, NYPSC and RMI

NYS SmartGrid Consortium

MDPT Participating Organizations

AES
Alstom Grid
Association for Energy Affordability Inc.
Brattle
Brookhaven National Lab
Buffalo Niagra Medical Campus
CAISO
Central Hudson
City of New York
Con Ed
Direct Energy
DOE
Energy Spectrum
EPRI
Georgia Tech
Google
Green Charge Networks
Iberdrola
IBM
Innovation and Technology Inc.
IPPNY
Landis & Gyr
LBNL

National Grid
Newport Group
NRDC
NREL
NRG
NY BEST
NYISO
NYPA
NYSEG / RGE
NYSERDA
Pace University
Pacific Northwest National Laboratory
PSEG LI
RAP
Related Co.
RESA (Con Ed Solutions)
Siemens
Silver Spring
Smarter Grid Solutions
Solar City
Spirae
Stoel Rives LLC
SunPower

Market Design Group

Proposed Approach and Key Questions to Address

- What defines the DSP market, and how might it evolve from near-term to mid-term to long-term?
- With a focus on the near and mid-term term, what functionalities and capabilities must DSP and market actors provide to achieve REV's goals?
- How will different actors interact and what are the implications for data availability and transparency?
- What elements of market design must be standardized across DSPs and what rules are needed to adequately govern the market?

Platform Technology Group

Proposed Approach and Key Questions to Address

- What are the platform technologies needed to support market design, while complementing and enhancing grid operations?
- What are the standards and protocols for key interfaces? If a pre-defined standard does not exist, what are the needs for a standard and the appropriate standards body to create it?
- What are the technology and human resource gaps and options that should be considered?

Sub-Working Groups

Market Design

- Task Group 1: Identify Market Actors and Interactions
- Task Group 2: Identify DSP Functions and Capabilities
- Task Group 3: Identify Near and Mid-Term DSP Products and Transactional Mechanisms
- Task Group 4: Develop Use Cases
- Task Group 5: Specify Near Term Data Needs and Transparency requirements
- Task Group 6: Clarify Typology of Market Rules

Platform Technology

- Task Group 1: Technology to Support the DSP Platform
- Task group 2: Technology Deployment Strategy
- Task Group 4: Interface Standards

Note: Task Groups 2 and 4 are splitting the previously identified topic area of Platform Technology Task Grou 3, Technology Capability Requirements

- Task Group 5: Vision of the Future market

DSP Market Design – Essential Characteristics

- Establish DSP Structure that optimizes distribution system operations, improves reliability, and enhances affordability through improved integration of DER
- Competitive distribution markets utilized to procure and compensate DER for value of services provided
- Initial DSP markets focused on DER to offset of defer distribution infrastructure investments and to address reliability and operational needs (initially RFPs/auctions)
- Complement and not replicate existing NYISO wholesale markets

DSP Market Design – Essential Characteristics (cont'd)

- Forecast granular locational benefits and costs of DER within a long term planning context- Create a locational and temporal based distribution system "adder."
- Basic market design and interactions uniform across DSPs, but value of products based on specific location and time
- Evolve the markets over time based on sophistication of participant capabilities and infrastructure capabilities.
- Customer experience enhanced through new technological approaches and innovative competitive offerings (e.g. digital marketplace, automated demand response).

DSP Platform Technology– Essential Charcteristics

- Improved system/DER/load visibility for real time network monitoring/balancing
- Pervasive use of system intelligence to enable automate grid operations and dynamic load management
- Improved integration of utility and NYISO planning and operations
- Strategic implementation of AMI where determined appropriate
- Communications and data management infrastructure in place to support overall market and operational requirements
- Cyber secure

Key Functions and Capabilities of DSP

1) Enhanced Distribution Planning

- Probabilistic forecasting
- Identify DER hosting capacity
- Locational and temporal based marginal costs (distribution)
- Integrated utility/NYISO planning
- Identify and prioritize locations needing Dist. System capacity/operational relief . Move towards price signals.
- Establish Distribution Planning Working Group

Key Functions and Capabilities of DSP (continued)

2) Expanded Distribution Grid Operations

- Optimize load, supply and other power parameters at local distribution level. Emphasis on automated response.
- Orchestrate multi-directional power flows from DER
- Improve load and network monitoring and visibility to aid situational awareness and rapid response to atypical events
- Cyber security

Status and Next Steps

- Report released August 17, 2015 – filed with NYS DPS
  - Will inform DSIP guidelines
- Further work needed in several priority areas
  - Planning methods and processes
  - Data availability to customers and DER providers
  - AMI
  - Standards and Protocols/Use Cases

Contact Information

New York State Smart Grid Consortium
387 Park Avenue South
3rd Floor
New York, NY 10016

James T. Gallagher, Executive Director

jgallagher@nyssmartgrid.com

NewYorkRevWorkingGroups.com

NYSSmartGrid.com