REV and Grid Modernization in New York: Progress and Early Lessons Learned

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New York State Smart Grid Consortium
Consortium Overview

Unique Public-Private Partnership to advance grid modernization in New York State

- Promotes broad statewide implementation of a safe, secure, and reliable smart grid
- Members include world’s leading utilities, technology providers, policy makers and research institutions
  - Established in 2009 as a not-for-profit corporation
- Only organization of its kind in the US
- Focus during 2015-2018 on NY regulatory and utility reform, Puerto Rico, and long term technical challenges
NYS Smart Grid Consortium Members
New York State

- Overview and 2030 policy goals
- Programs & Initiatives
Drivers of Grid Modernization in NY

- Federal, State and Local Policies
  - Need to replace aging infrastructure
  - Renewable energy, efficiency, and carbon reduction targets
  - Reliability and Resiliency
  - Integration of DER
  - Affordability of power

- Post Hurricane Sandy: Impatience for change – both Consumers and Government
  - Technology Availability
    - Information, measurement, communications technology
    - Solar, wind, storage, EMS, microgrids, IoT devices
Reforming the Energy Vision (REV)

- Overview and State policy goals
- DSP
Background and Context NY Reforming the Energy Vision (REV)


- Fundamental changes in ways utilities provide distribution services
- Aligning electric utility practices and regulation with technology advances in information management, pricing, power generation and distribution
- Improving system efficiency, empowering customer choice and increasing penetration of clean energy technologies and practices
- Explore new business models and encourage innovation
  - Reduce risk, access new capital, encourage partnerships
Background and Context NY Reforming the Energy Vision (REV) – continued

Original Vision (2014-2016)

- “Forever change the way consumers buy and use energy”
- “Foster an electricity system that is nimble, distributed and consumer focused”
- End “utility regulatory model of last century and replace it with intelligent network platform to deal with multi-sided markets”

- Goal is a “clean, efficient, transactive and adaptable” future of electric supply

Press

New York: REV’d and Ready!!
New York Embarks on a Bold New Vision!!
Regulatory Breakthrough in NY!!
Background and Context NY Reforming the Energy Vision (REV)

Objectives – Richard Kauffman, Governor’s Office

- Wring new value out of the system by exposing the utility industry to forces that have already occurred elsewhere. All businesses must evolve to survive in the long run must have a line of sight to when they will be economic.
- Respond to the market, and enable it - not lead it
- System of Systems – Utilities must change but so must regulators
- Initially many programs will not
The Evolving Description of REV


- Help consumers make informed decisions
- Develop new energy products and services
- Protect the environment
- Create new jobs and economic opportunity
- Encompasses broad range of energy initiatives by multiple agencies and authorities (41 as of 10/17)
2030 NY State Energy Policy Goals

- 40% reduction in GHG emissions from 1990 levels, 80% reduction by 2050
- 50% of electricity generation from renewable energy sources (38 US States have same goal)
- 25% reduction in energy consumption in buildings from 2012 levels
- Achieve Paris Climate Accord Goals (15 US States)
Major NY Programmatic Initiatives

- **Clean Energy Fund** – Approved as a 10 year $5.32 Billion commitment to clean energy programs in NYS
  - $234 million must be invested in low to moderate income initiatives over the first 3 years
- **NY Prize** - $40 million in awards to encourage community microgrids
  - 83 feasibility studies
  - 11 projects in Phase 2
- **NY Sun** – Financing 3000 MWs of Solar Projects over next 10 years
- **NY Green Bank** – Partnering with investment community to invest $1 Billion in clean tech projects
- Over 2400 MW of offshore wind by 2030
Distribution System Platform (DSP)

Key Functions of DSP as Originally Envisioned

- Design and operate distribution system that integrates DERs as major means of meeting system and customer needs
- Optimize operations by balancing production and load in real time – at the local level
- Monetize system & social values
  - Create a locational and temporal based distribution system “adder”
- Use market based means where appropriate, leverage outside capital
- Coordinate interactions among customers, the distribution system and energy service companies (DSP markets and NYISO)
DSP Technology: Essential Characteristics

- Improved system/DER/load visibility for real time network monitoring/balancing
- Pervasive use of system intelligence to automate grid operations and dynamic load management
- Improved integration of utility and NYISO planning and operations
- Strategic implementation of Advanced Metering Infrastructure
- Communications and data management infrastructure in place to support overall market and operational requirements
- Cyber secure
Insights: Stages of Distribution System Evolution *

Distribution System Platform (DSP) development needs to proceed in a manageable, logical sequence that considers different levels of DER penetration.

* De Martini, P Kristov L. “Distribution Systems in a High Distributed Energy Resources Future”
REV Status

- Utility Distribution System Implementation Plans submitted in June and September 2016, new plans June 30, 2018
- Organizational changes to accommodate REV/DSP
- Costs addressed in rate proceedings

Further Work Underway
- Planning methods and processes, simulation tools

- Value of Distribution
- Platform Service Revenue incentives (none yet proposed)
- DSP Simulation Studio (ARPA, -E)
- Data availability to customers and DER providers
- AMI
- Demo projects/Non Wires Alternatives/REV Connect
REV Accomplishments

- Significant cultural change underway at the utilities and regulatory commission
  - More flexible and open to innovation, collaboration and partnerships
  - More customer centric, improved customer engagement
  - New staff with new skills
- Consideration of Non Wires Alternatives becoming the norm when major dist. system improvements are needed
- Determining the locational value of distribution is advancing
- Increased development of new technologies and planning tools
- Accelerated implementation of AMI, microgrids, and demo projects
- Inspiring initiatives elsewhere in US and Europe
EPRI Takeaways from 2016 DSIPs
(EPRI Grid Modernization Roadmap for NYSERDA)

- Consistent forecasting methods, but no utility has a strong process for long term DER forecasting
  - Not clear how 2030 NYS goals are integrated
- Hosting Capacity: defined consistently, but no utility has a whole system model to perform full dynamic assessments
- NWA’s: Consistent descriptions across utilities, but variability in planning and design criteria
  - Varying degrees of distribution limited.
  - Generally DERs >1MW
  - Expected to improve significantly with ADMS
- Limited Volt/Var optimization.
- Interconnection: Portals in place, implemented consistently
- Full AMI being installed at most utilities, but variations exist
Learning from REV

▪ Process unwieldy and goals expanded
  – Over 25 separate regulatory initiatives, 41 statewide programs
▪ PSC “Roadmap” needed, and tangible indicators of success
  – Customers supportive, but often unclear about objectives
  – Costs are uncertain, as are benefits
▪ Reliability, resiliency and affordability remain central obligations of the utilities
  – Letting go of “command and control” not easy
▪ May take decades to fully transform utilities
  – Utility and regulatory “fast” not same as private sector “fast”
  – Financial realities
  – Easy to get stuck in Demo project mode
▪ Leadership is paramount
▪ BUT the process has begun!
Contact Information

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