NY PRIZE AND TRANSIT ORIENTED MICROGRIDS

Microgrid Knowledge

NOVEMBER 2017

WHAT IS NEW YORK REV?

- Governor Cuomo's Reforming the Energy Vision
- NY State's Public Utility Commission is working to approve structural reforms to the regulations governing electric utilities, providing more choice and cost-saving opportunities for New Yorkers by expanding access to clean and renewable power
- The policy change was largely driven as a result of Superstorm Sandy as an effort to decrease system downtime and harden the grid against the high-cost of aging infrastructure overhaul desperately needed in New York but outside the customer's ability to pay
- REV is focused on distribution (not generation or transmission); distribution is a regulated industry in every state > REV strives to turn the distribution utility into a distribution system platform operator
- REV reforms, although slow to materialize through the PSC, are driving changes in rate-setting decisions to encourage more customer engagement and local distributed generation
- Utilities are required to develop tariff filings to identify new forms of revenue, incentivize the development of distributed energy resources and customer market participation, and enhance the offerings of renewable energy, energy efficiency and battery storage

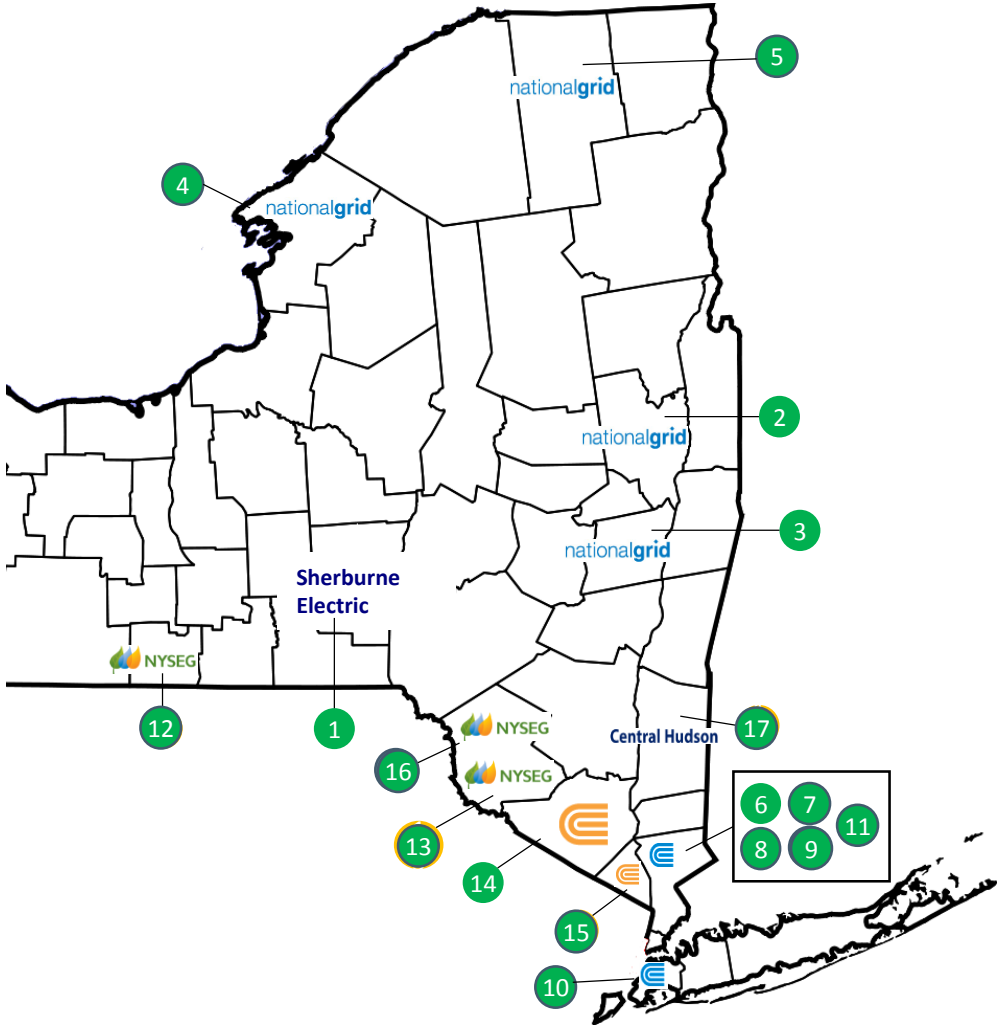
EARLY ON IN REV BOOZ ALLEN WON 17 NY PRIZE PHASE I FEASIBILITY STUDIES IN COMMUNITIES ACROSS NEW YORK

NY Prize is broken into three stages

- Stage I: $100,000 grant for a community microgrid feasibility study requiring system capabilities, system design, business model, business case analysis, and conclusions (awarded 2015)
- Stage II: up to $1M for a detailed engineering design and commercialization, financial and business plan assessment (awarded 2017)
- Stage III: up to $5M for construction and build out (exp. 2019)

Booz Allen completed 17 Feasibility Studies across all six IOUs and one municipal utility

- Stakeholders included community governments, economic development boards, community partnership groups, facility owners, utilities, NYSERDA, NYPA, transportation groups, and subcontractors
- Design challenges included: not all facilities are on the same distribution lines (systems developed over the last century), infrastructure and software are non-revenue generating assets and must be paid for by DERs, difficult to get sufficient scale in small communities who may need it most
- Program challenges included: CEO approval for state work, subcontractors required to gain access to certain projects, subcontractors required for SME, cost share requirements, stakeholders count ~200



WE ARE CURRENTLY EXECUTING A PHASE II NY PRIZE PROJECT WITH AMTRAK

New York Prize Stage II, Amtrak New York City

- Awarded in 2017 with partners Amtrak, Burns Engineering, Siemens, and Pace Climate and Energy Center at Pace Law School
- Currently working through Level II Audits, data collection and initial design efforts for footprint including Penn Station, Sunnyside Yard, and associated fan plants (for moving fresh air through the tunnels)
- Booz Allen is responsible for all project execution, business model development, business case analysis, stakeholder engagement, design review and all deliverables

Project Details

- Equip Amtrak operations at Penn Station and Sunnyside Yard with approximately 17 MW of electric power generation, potentially including up to 6 MW of CHP, and innovative battery storage.
- Successful execution will yield a replicable Transit Oriented Microgrid model that can be propagated across the State and region
- Emergency train traction and fan power to Amtrak in the PS-SSY Corridor
- Support for basic facility operations at Penn Station during outages
- Emergency power supply to community facilities adjacent to Sunnyside Yard
- Project has the potential to provide substantial baseload generation for the constrained NYC distribution grid

THE AMTRAK - NYC MICROGRID PROJECT IS A PIECE OF A LARGER TRANSIT ORIENTED MICROGRID CONCEPT

Transit Oriented Microgrid

- Transit corridors tend to coincide with major power transmission and distribution assets along the east coast
- These corridors could provide valuable real estate assets to site generation
- Many transit depots are in densely populated, urban areas
- These sites could provide key microgrid development locations that would serve large populations
- Microgrids in transit hubs could provide ingress / egress during emergency conditions
- Development can be done in independent phases, allowing for a logical progression of economically feasible projects to be put together over a period of time