

TERU Focus Report – NYSERDA Funds Biomass & CHP Microgrids

13 of 83 NY Prize Stage 1 Awards Include CHP, Waste, Biomass Energy Recovery

July 13, 2015 - Michael Theroux

Introduction:

On July 8, 2015, New York's (NY) Governor Cuomo [announced](#) eighty-three awards in Stage 1 of the \$40 million NY Prize competition. NY Prize is a three-stage competition to help communities reduce costs, promote clean energy, and build reliability and resiliency into the electric grid. During Stage 1, competitively selected communities receive funding to conduct engineering assessments that evaluate the feasibility of installing and operating a microgrid at a proposed site in their community. NY Prize is a part of a statewide endeavor to modernize New York State's electric grid, spurring innovation and community partnerships with utilities, local governments, and the private sector. The mission is to enable the technological, operational, and business models that will help communities reduce costs, promote clean energy, and build reliability and resiliency into the grid.

[Opportunity Zones](#) are approximate geographic areas that have been identified by the local electric distribution companies in New York where microgrids may reduce utility system constraints, and defer expensive infrastructure investment costs. Microgrids are local energy networks that are able to separate from the larger electrical grid during extreme weather events or emergencies, providing power to individual customers and crucial public services such as hospitals, first responders, and water treatment facilities. Eligible applicants had to be from within areas identified by the regional utilities as susceptible to extreme weather event damage, including areas that were hit by hurricanes Sandy and Irene, and Tropical Storm Lee.

Among the 83 communities receiving awards were 13 that had identified conversion of biomass or organic waste to biogas for combined heat and/or power (CHP), or as a potential source of energy to be built into an integrated microgrid infrastructure. This report identifies the winning communities listing biomass or waste feedstock conversion as part of their proposed feasibility assessment. Descriptions are taken from the [NY Prize Stage 1 Awardee list](#).

Stage 1 Awardees

[Town of Cortlandt](#) (Biomass)

Hurricanes Sandy and Irene and Tropical Storm Lee caused costly damages to Cortlandt, including loss of power to critical services, local businesses, and residents — some for a period of 10 days. The proposed microgrid would include biomass, natural gas, and diesel, and would provide power to the town hall, hospital, fire department, water filtration plant, waste-to-energy plant, gas stations, grocery stores, assisted living centers, and a school.

[Town Of Chateaugay](#) (Biomass)

There are some critical services in Chateaugay that do not have emergency back-up generation. In the event of interruption to grid supplied power, these services will be greatly impaired. The town was hard hit by an ice storm in 1998, which caused the power to be out for two weeks in frigid temperatures, and the town is vulnerable to other major storms. The town will explore a mix of generation sources with an emphasis on renewable energy including hydroelectric, biomass, and wind power. The proposed microgrid would provide power to town hall, fire station, town garage, a school, a gas station, correctional facility, business park, and a local industry.

[Town of Canton](#) (Biomass, CHP)

Located in New York's far north, Canton is prone to electricity spikes and winter outages, such as the January 1998 ice storm, in which 100,000 National Grid customers in St. Lawrence and surrounding counties were without electricity for between one and three weeks. The proposed microgrid would include solar, combined heat and power, energy storage, back-up generators, biomass generation, building load control, and an advanced microgrid controller.

Village of Carthage (Biomass)

Energy service in Carthage is susceptible to prolonged interruption of service, including ice and winter-storm related outages. The village will explore a mix of power generation sources with an emphasis on renewable generation including biomass and hydropower. The proposed microgrid would provide power to five commercial industries, a grocery store, a hospital, police department, three schools, and a gas station.

City of Elmira (Biomass)

The City of Elmira faces service interruptions, including major storm-related outages and intermittent power fluctuations impacting critical service facilities. The city will explore a mix of generation sources with an emphasis on renewable energy sources such as biomass. The proposed microgrid would provide power to three schools, a hospital, two fire departments, two police departments, a wastewater treatment plant, a gas station, a grocery store, a local industry, and an affordable housing complex.

Town of Warwick (Biogas, CHP)

As a result of aging transmission lines and storm risk, the Village of Warwick is exploring development of a “nested” microgrid to maintain energy supplies for numerous vital assets in and around Warwick. The proposed microgrid would combine new and existing solar along with storage batteries, biogas or natural gas power generators, and possibly using combined heat and power technology. The power would go to town hall, a local hospital, assisted living facilities, police, fire, and rescue stations, public shelters, municipal water and wastewater systems, and other vital assets.

Village of Lansing (Biomass, Biogas, CHP)

The project, submitted by Tompkins County, would ensure that the Ithaca-Tompkins Regional Airport and other local vital services would be able to continue operation in the event of a major power outage or other emergency. The proposed microgrid would include up to 3 MW of multiple biomass- or biogas-based combined heat and power units, at least one MW of solar arrays, and 450 kW of multiple energy storage systems. Several electric generators, as well as existing solar systems on three county buildings, would be integrated into the microgrid. The proposed microgrid would power Tompkins County Emergency Response (E-911) Center; Tompkins County Public Safety Building, including the Sheriff's office and County Jail; Tompkins County Health Department; and the Ithaca-Tompkins Regional Airport. Other facilities under consideration include a health care campus, a business and technology park, and the main Ithaca branch of the U. S. Post Office.

City of Ithaca (Biogas, CHP)

The city and nearby communities, which suffered storm damage during Tropical Storm Lee, have already committed to adding a biogas-to-power system at the local wastewater treatment center. The proposed microgrid would combine power from this system with existing back-up diesel power and proposed solar and combined heat and power systems. Users would include local schools, public works facilities, affordable housing, Ithaca College, the wastewater treatment center, possibly Cornell University, and other ratepayers.

Town of Huntington (Biogas, CHP)

Huntington Village has suffered widespread power outages from storms in the last several years, including a power outage for more than eight days following Hurricane Sandy. The feasibility study will evaluate adding methane and natural gas fired generation with waste heat recovery, solar power, and energy storage technologies. This mix of technologies would provide electricity and thermal energy to the town hall, Huntington Hospital, Huntington Wastewater Treatment Plant, Huntington YMCA, and Flanagan Senior Center, among others being evaluated.

Town of New Paltz (Biogas, CHP)

As a result of aging transmission lines and storm risk, the Village of New Paltz is exploring development of a “nested” microgrid to maintain energy supplies for numerous vital assets. The proposed microgrid would combine new and existing solar, along with energy storage and biogas or natural gas power generators, and possibly using combined heat and power technology. Power would go to town hall, a

local hospital, assisted living facilities, police, fire and rescue stations, public shelters, municipal water and wastewater systems, and other vital assets.

Village of East Rockaway (Bay Park) (Biogas, CHP)

The Bay Park Sewage Treatment Plant received significant damage from Hurricane Sandy, requiring the rebuilding of four engines that provided power to the plant through natural gas-powered electric generation. Since the storm, the plant has been powered by rented natural gas generators. The proposed microgrid would combine natural gas generation with a newly-installed biogas-to-power engine, powered by gas created through waste anaerobic digestion, along with combined heat and power technology for greater efficiency. The microgrid would provide power to the treatment plant, East Rockaway Village Hall, two elementary schools, a fire department, a post office, a public library, and a public works facility.

City of Auburn (CHP)

The Cayuga County Public Utility Services Agency (CCPUSA) has been actively working to develop an industrial park on the outskirts of Auburn. Currently, existing Cayuga Milk Ingredients (CMI) is the only facility in the park – soon to be joined by a neighbor manufacturing facility developed by the Grober Group, which will take the waste from CMI to produce an animal feed by-product. Both of these facilities have a large thermal load compared to their electric needs, providing a strong case for combined heat and power generation to meet their energy consumption. The proposed microgrid would augment's Cayuga Milk's existing steam plant with a new combined heat and power system to provide power to the industrial park, a gas station, police barracks, and retirement community.

City of Syracuse (CHP)

The Syracuse area has suffered outages, notably a 1998 Labor Day storm that caused \$5 million in damage to local schools and disrupted power for days. The proposed microgrid would combine on-site combined heat and power with solar and the community's largest distributed generation source, the waste-to-energy facility owned by the Onondaga County Resource Recovery Agency (OCRRA).

Parting Shots

Thirteen out of eighty-three awards doesn't seem like much, but not too many years ago such waste and biomass sourced energy projects would not have even been considered. NYSERDA, the New York State Energy and Research Authority, is clearly and consistently among the most progressive energy policy and implementation agencies in North America. Administration of the three-stage NY Prize program will provide case studies crucial to broader market adoption of renewable energy generated by clean conversion of waste and biomass. This is a program to watch.

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