



*New Jersey Town Center Microgrids in
Hoboken, Neptune and Trenton*

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Policy Background

New Jersey suffered devastating damage from the impacts of Superstorm Sandy and other major storms and weather events. The NJ EMP 2015 Update contained a new section on hardening and improving utility infrastructure resiliency which supports the establishment of Distributed Energy Resources (DER) such as microgrids to improve the grid's resiliency and reliability in the event of a major emergency.

Process

Jan. 25, 2017 agenda meeting, the NJ Board of Public Utilities authorized the opening of an application period for Town Center microgrid feasibility studies.

The program was developed to provide incentives for local and state government agencies to study the feasibility of TCDER microgrids.

Applicants were limited to local government entities or state agencies which own or manage critical facilities

NJ Town Center Distributed Energy Resources (TCDER) Microgrids

The Board had established a Town Center Distributed Energy Resource Microgrid Feasibility Study program with a budget of \$1 million. However, after receiving and evaluating 13 applications for proposed microgrids and the potential benefits offered, the Board advanced a budget modification to fund all 13 applications.

June 30, 2017 the NJBPU approved \$2 million in funding for 13 applications for Town Center Distributed Energy Resource Microgrid feasibility studies.

Studies were approved for Atlantic City, Camden County, Cape May County MUA, Galloways Township, Highland Park, Hoboken, Hudson County, Middletown Township, Montclair Township, Neptune Township, Paterson, Woodbridge Township, and the State of New Jersey Department of Treasury with the partners Mercer County, Mercer County Improvement Authority and Trenton.

Existing

- Level 1 or single customer microgrid --- 55
- Level 2 or single customer – campus setting – 12

Town Center Distributed Energy Resource

- Level 3 or multiple customers / advanced microgrid.

The TCDER Studies are focusing on Level 3 – multiple customer of advanced microgrids called – Town Center DER microgrids with a focus on connecting public critical facilities at the local level that can provide shelter during and after an emergency.

Current TCDER Status

- As of October 16, 2018 three Studies have been submitted to the BPU
 1. Hoboken City
 2. Neptune
 3. Trenton

Hoboken TC DER Study

Hoboken City TC DER Microgrid

The City of Hoboken filed an application for a Feasibility Study to examine the potential of connecting the critical facilities that include Hoboken Fire Company 3, Police Headquarter, City Hall, the Hoboken Homeless Shelter, St. Matthews Church, as well as St. Peter and Paul Church, Kings Grocery, municipal garages B, D & G, multiple senior housing facilities, the YMCA, two local pharmacies, three Hoboken Housing Authority Properties (Andrew Jackson Gardens, Harrison Gardens, Adams and Monroe Gardens) and pump stations. The applicant will evaluate most commercially-viable technologies, including but not limited to DER, energy storage systems, solar, combined heat and power (“CHP”), thermal loops and biodiesel fueled generators.

Hoboken Background

- The City of Hoboken is located in Hudson County New Jersey, along the Hudson River.
- The city is approximately one square mile with a population of over 55,000 residents.
- A significant portion of the city is positioned within the 1.0% floodplain and is susceptible to both coastal and storm water flooding.
- During heavy rain events the city's combined sewer overflow system becomes overwhelmed resulting in shallow urban ponding and wet weather discharges of sewerage to the Hudson River.
- During Super Storm Sandy the storm produced less than an inch of rain in the city; however, the 13 foot storm surge from the Hudson River resulted in 8 feet of flooding. The storm left 1,700 homes flooded, many residents without power for over a week..

Hoboken Actions to Date

1. Rebuild by Design a \$230 million grant Hoboken applied for and received from the United States Department of Housing and Urban Development allocated to the New Jersey Department of Environmental Protection on behalf of Hoboken as part of its Rebuild by Design initiative. This is a comprehensive flood protection project that addresses coastal storm surge and rainfall.
2. Masterplan in 2017, which articulates the City's resiliency and sustainability approaches, projects and goals.
3. A collaboration with PSE&G to consolidate and elevate all 3 substations into two state of the art substations. PSE&G also replaced all low pressure natural gas lines, with high pressure gas mains.
4. Microgrid design investigation by Sandia National Laboratories supported by the Department of Energy to study the potential for a municipal microgrid.

TCDER Microgrid Project Scope

- In total, 29 locations owned by several different project partners were studied
- The study area falls into two corridors that are defined by the Washington Street Corridor, and the Housing Authority Corridor. Each corridor will serve critical facilities,
- The Washington St. Corridor is predominantly above the existing design flood elevation. Estimated cost \$30.5M
- The Housing Authority Corridor is within the existing design flood elevation. Estimated to cost \$11.5M
- The main control and dispatch for the microgrid are proposed for City Hall, and will be able to control both corridors.

Hoboken City

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Washington Street

- The City of Hoboken has **elected to install** a concrete encased duct bank and manhole system beneath Washington Street as part of a utility replacement project. The Duct bank contains spare conduits reserved for a future microgrid project.
- The microgrid will have new conduit installed to extend the existing conduit to reach the buildings off of Washington Street.
- The corridor will be provided with a new 13.8 kW PSE&G electrical service from the 16th Street Substation. This will be the point of common coupling and a new utility meter will measure electrical usage for the entire corridor.
- New generation resources, such as a new packaged reciprocating engine generator CHP unit, a new simple cycle packaged engine distributed generator unit, Solar PV and battery storage, will support the Washington Street Corridor microgrid.
- Existing and new generation resources will coordinate to provide supplementary power to the microgrid during grid power loss conditions.

Housing Authority

- The City of Hoboken southwest section includes several multifamily, low income housing apartment buildings owned and maintained by the Hoboken Housing Authority. These complexes are too far from Washington Street to justify interconnecting the buildings to Washington Street.
- The Housing Authority Corridor will include Harrison gardens and Andrew Jackson gardens, Each housing complex includes several; separate utility services that will require a redundant microgrid feed. Since the complexes are below the flood plain all electrical equipment will need to be moved from the basement to the first floor.
- This microgrid corridor will be served with a new 13.8 kV PSE&G feeder from the Madison Street Substation. This will be considered the point of common coupling and a new utility meter will measure electrical usage for the entire corridor.
- A new packaged, simple cycle engine generator will provide supplementary power to the microgrid during normal conditions, and during emergency conditions this generator along with current generators will supply the system.

Cost Estimate

Washington Street Corridor:

- Electrical Distribution System \$7,300,366
- Distributed Generation Resources \$11,552,131
- Microgrid Control System \$1,911,000
- Professional Services \$4,686,717
- Project Costs \$5,090,043
- **Total \$30,540,257**

Hoboken Housing Authority Corridor:

- Electrical Distribution System \$5,162,036
- Distributed Generation Resources \$1,843,442
- Microgrid Control System \$819,000
- Professional Services \$1,774,868
- Project Costs \$1,919,869
- **Total \$11,519,216**

Conclusions

1. The proposed microgrid will provide Hoboken with improved electrical resiliency for critical facilities in the event of utility power outages
2. The microgrid will have the potential to generate annual cost savings of approximately \$1.9 million
3. The microgrid will reduce annual emissions by 4,400 metric tons of carbon dioxide.

Neptune TC DER Study

Neptune TC DER Microgrid

Neptune Township submitted an application for a feasibility study for a Neptune Township Advanced Microgrid (NTAM) with partners including the Neptune Township School Board, Neptune Township Housing Authority, Monmouth County and several private sector entities. The NTAM critical facilities include the Jersey Shore University Medical Center (“JSUMC”), Monmouth County Academy of Allied Health & Science, Meridian Dentistry for Children, Pediatric Associates, Neptune Municipal Building (including the Police Department and Library), Neptune Department of Public Works, Gables Elementary School, Neptune Middle School, Brookdale Community College, Monmouth County Vocational School, Neptune High School, Neptune Aquatic Center, County Sheriff Backup Communications Center and Emergency Medical Squad (“EMS”) Training Center, Neptune Senior Citizens Center, Neptune Housing Authority, Employment Services, U.S. Post Office, senior housing, DaVita Neptune Dialysis Center, Excelsior Medical Corporation, Walgreens, Neptune Getty Station, ALDI Supermarket, Neptune Township Sewage Department and Wastewater Treatment Facility, New Jersey American Water Company, Monmouth County Emergency Communications Tower, Shark River Hills Fire Company, Shark River Hills First Aid Squad, and the Neptune Township Housing Authority.

The study will evaluate the proposed project using an existing 3.8 MW combined heat and power (“CHP”) facility at the JSUMC. Also to be evaluated is approximately 15 MW of new power capacity which may include solar and dispatchable generation, such as CHP, and other new electric infrastructure to allow the proposed Project to operate during normal and emergency conditions.

Neptune Background

- Neptune Township was formed in 1879 and is named after the Roman God of the Sea. The Township has a land area of eight (8) square miles and is situated in the central easternmost part of Monmouth County. Neptune is a community with several diverse neighborhoods including Ocean Grove, Shark River Hills, Mid-Town, Bradley Park, the Gables, Seaview Island and West Neptune.
- The area of the TCDER study is predominately suburban with several clusters of critical facilities. This main area is near but not immediately adjacent to the coast. During and after Superstorm Sandy there were significant electrical outages. The Hackensack Meridian University Medical Center (HUMC) hospital was able to maintain power by operation of the existing cogeneration and emergency generators.

Neptune Microgrid Project Scope

The Neptune feasibility study contemplated two (2) main areas of development, Area A and Area B.

The facilities critical to the primary functions of the Neptune microgrid, include

- Municipal Complex
- Hackensack-Meridian University Medical Center (HMUMC)
- Department of Public Works (DPW).

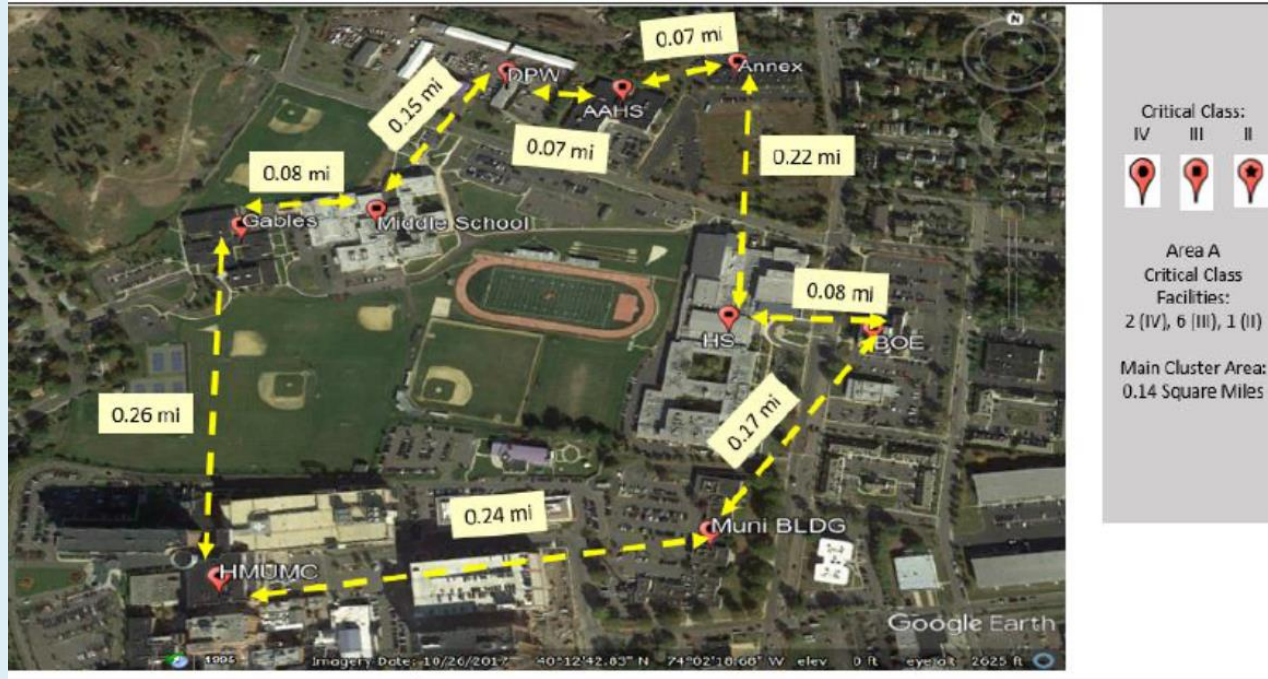
The Microgrid will support the electric baseload of these critical facilities, allowing them to operate during Black-sky conditions.

Area A

Area A

Emergency Sheltering Facilities					
Facility Description	Address	Risk Category	Total Area (Sq. Ft.)	Shelter Area (Sq. Ft)	Potential Emergency Shelter Hours
Neptune Municipal Building (incl. PD & Library)	25 Neptune Blvd, Neptune City, NJ 07753	IV	83,000		
Neptune Department of Public Works	2201 Heck Ave, Neptune City, NJ 07753	II	11,000	2,750	9 AM to 5 PM
Hackensack-Meridian University Medical Center	1945 NJ-33, Neptune City, NJ 07753	IV	815,955		
Neptune High School	55 Neptune Blvd, Neptune City, NJ 07753	III	303,371	151,686	24/7
Monmouth County Academy of Allied Health & Science	2325 Heck Ave, Neptune City, NJ 07753	III	44,299	22,150	24/7
Neptune Middle School	2300 Heck Ave, Neptune City, NJ 07753	III	167,190	83,595	24/7
Gables Elementary School	1 Gables Court, Neptune City, NJ 07753	III	53,332	26,666	24/7
Neptune BOE / Brookdale Community College	60 Neptune Blvd, Neptune City, NJ 07753	III	44,149	22,075	24/7
Monmouth County Vocational School - Annex	105 Neptune Blvd, Neptune City, NJ 07753	III	20,038	10,019	24/7

Neptune TCDER Area A



Area A

Thermal

- To serve the thermal loads at each facility prescribed in Area A, it is envisioned that an underground supply/return network of pre-insulated, direct buried piping would connect the Hospital CUP (heating supply) to an energy transfer station (ETS) residing within each facility's respective mechanical room. Installation and operation of this underground thermal network would require that the systems owner engage the respective land owners, public utilities and any other authorities having jurisdiction within this domain to obtain express consent and/or easement of the subject properties.

Electrical

- To serve the electrical loads at each facility prescribed in Area A, a new underground duct bank will need to be installed to connect JCP&L's 57498 underground 12.47kV feeder, entering at Neptune Boulevard between Corlies and Washington, to HMUMC, as can be seen in Appendix A. This connection and subsequent segregation of JCP&L's circuit would require coordination and express consent from JCP&L in addition to the Public Works Department (for the effected roadways – Davis Ave and Washington Ave) and any other authorities having jurisdiction.

Neptune Area A Cost

A summary of financial parameters for the Area A Microgrid is listed in the Table below. Based on the multiple cost and ownership alternatives the Area A Microgrid is considered financially and technically viable.

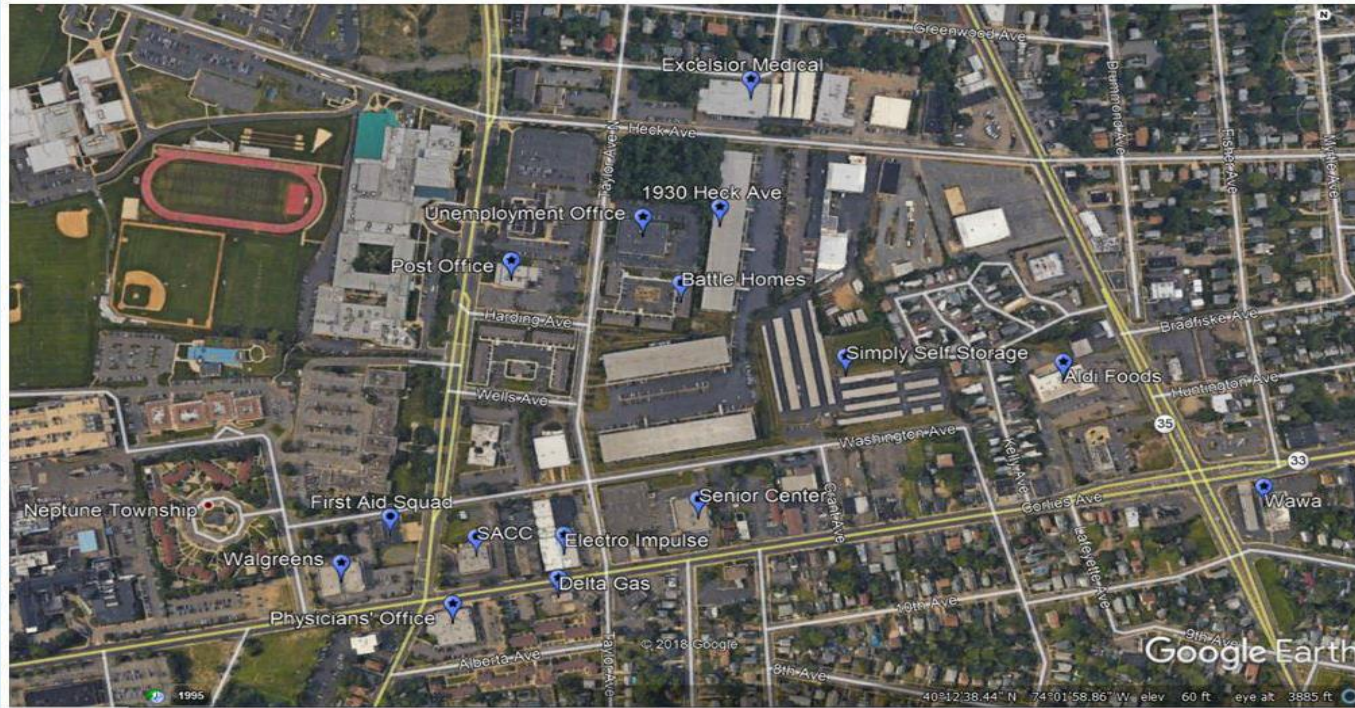
Microgrid Asset	Owner	Est. Capital Cost	Revenue Model
PV System	Non-Utility Microgrid Owner	\$2,300,000	20-year PPA
CHP & Thermal HW Loop	Non-Utility Microgrid Owner	\$26,542,000	ESA with Unit Prices based on Current HMUMC Energy Costs
New conductor between Medical Center and existing 57498 Feeder	JCP&L	\$1,000,000	Traditional Utility Rate Recovery Mechanisms

Area B

Area B was developed to be a potential extended cluster to fortify and potentially expand on the main Area A described above in this report.

Area B - Initial Critical Facility List				
Location	Address	Building Type	Area (Square Footage)	Estimated Electric Consumption (kWh)
10 Neptune Blvd Office Building	10 Neptune Blvd Neptune City, NJ 07753	Office	20,640	328,176
1928 Heck Ave	1928 Heck Ave Neptune City, NJ 07753	Enclosed and Strip Malls	15,000	316,500
1930 Heck Ave	1930 Heck Ave Neptune City, NJ 07753	Office	94,500	1,502,550
Shore Area Communications Center	1825 NJ-33, Neptune City, NJ 07753	Public Order and Safety	17,100	254,790
Aldi Foods	15 NJ Hwy 35, Neptune City, NJ 07753	Food Sales	17,000	827,900
Battle Homes	56 N Taylor Ave, Neptune City, NJ 07753	Outpatient	30,000	561,000
Delta Fuel Station	1800 Corlies Avenue, Neptune City, NJ 07753	Retail (Other than Mall)	2,150	32,680
Electro Impulse	1805 NJ-33, Neptune City, NJ 07753	Other	60,750	1,719,225
Excelsior Medical	1933 Heck Ave, Neptune City, NJ 07753	Retail (Other than Mall)	54,300	825,360
First Aid Squad	5 Neptune Boulevard, Neptune City, NJ 07753	Public Order and Safety	5,460	81,354
Hoop Group	1930 Heck Ave Neptune City, NJ 07753	Service	82,444	684,285
Lager Glass	1913 Heck Ave, Neptune City, NJ 07753	Other	11,620	328,846
Living World Church	81 NJ-35, Neptune City, NJ 07753	Religious Worship	20,769	107,999
Physicians' Offices	1820 NJ-33, Neptune City, NJ 07753	Enclosed and Strip Malls	16,419	346,441
Post Office	50 Neptune Blvd, Neptune City, NJ 07753	Service	9,000	74,700
Senior Center	1607 NJ-33, Neptune City, NJ 07753	Outpatient	12,566	241,960
Shore Industrial Supply	1916 Heck Ave, Neptune City, NJ 07753	Warehouse and Storage	7,800	51,480
Simply Self Storage	1515 Washington Ave, Neptune City, NJ 07753	Warehouse and Storage	45,000	297,000
Trimed Pharmacy	1520 Washington Ave, Neptune City, NJ 07753	Retail (Other than Mall)	8,075	122,740
Unemployment Office	60 Taylor Ave N, Neptune City, NJ 07753	Office	19,800	314,820
Walgreens	1905 NJ-33, Neptune City, NJ 07753	Food Sales	19,631	956,030
Wawa	1344 Corlies Ave, Neptune City, NJ 07753	Food Service	6,500	291,850

Area B



Critical Class:



Area B
Critical Class

Facilities:

2 (IV), 2 (III), 11 (II)

Main Cluster Area:
0.11 Square Miles

Area B

Area B is served by JCP&L's 57497 aboveground 12.47kV feeder, originating at the Neptune Substation.

JCP&L's typical hosting-capacity restrictions for PV system installations would set a maximum of roughly 5 MW for a single 12kV feeder, such as the one serving Area B. The deployment of 1.3MW of new Roof-mounted solar would be within the hosting capacity.

The Microgrid design assumes that during an outage, the Microgrid would take over service for the selected loads by “sectionalizing” JCP&L's existing feeder. Remotely-operated automated switches with SCADA connections would open to cut off the feeder from the Neptune Substation. Additional sectionalizing gear would shed loads from portions of Feeder 57497 that do not serve designated Essential Loads.

Neptune Area B Cost

A summary of financial parameters for the Area B Microgrid is listed in the Table below. Based on the costs, revenues, and IRR, the Area B Microgrid is financially and technically viable. Including this as part of the overall Microgrid would greatly enhance the resiliency capacity of the Microgrid for the Township and add value to the Area B sites during both Blue-sky and Black-sky conditions.

Total PV System capex	\$3,250,000
Total Battery capex	\$1,820,000
Total Project capex	\$5,070,000
Annual Solar O&M	\$15,600
Annual Battery O&M	\$20,000
Total annual O&M expense	\$35,600
Annual Electricity Bill to Area B	\$199,836 (Escalate at 2% per year)
Project IRR for Equity Partner	11.3 %

Trenton TCDER Study

Trenton TCDER Microgrid

The N.J. Department of Treasury, Division of Property Management and Construction, filed an application with core partners include the City of Trenton, Mercer County and the Mercer County Improvement Authority for a feasibility study for the proposed Downtown Trenton Microgrid. Critical facilities include N.J. Justice Complex, N.J. State House, N.J. Treasury Taxation Building, N.J. Department of Labor Building, N.J. Department of Health Building, N.J. Department of Community Affairs – Ashby Building, N.J. Department of Human Services – Capital Plaza One Building, N.J. Department of Environmental Protection Building, N.J. Treasury – Mary Roebling Building, NJ Motor Vehicle Commission Building, NJ Network Building, Old Barracks, Thomas Edison College and the NJ War Memorial. Based on the list of partners and proposed critical facilities the NJ State Capital Complex would be a FEMA category IV designated facilities and there are four FEMA category III facility within 0.5 miles that can provide shelter in an emergency as well as several critical data storage facilities such as the Justice Complex, Labor and Taxation. There are several FEMA category III facilities that have a combined energy usage of greater than 90,000 Btu's per square foot and the Project's estimated overall electrical usage is 63,300 Btu/ square foot. The estimated total annual electricity usage is 86,505,508 kWh and the thermal load is provided by Veolia's Trenton Thermal Energy District Network ("TEDN").

The existing Trenton TEDN would be the hub technology of the Project. The existing combined heat and power ("CHP") – district thermal facility provides 13,000 tons of chill water capacity and 132,352 pounds per hour of steam/hot water to approximately 35 customers in the central business district of Trenton. The additional capacity could be provided through new power which may include solar, dispatchable generation such as CHP and other new electric infrastructure to allow the proposed Project to operate during normal and emergency conditions. The Project will include a fully customized microgrid controller that would include the ability to balance load and generation and include smart grid and advanced metering infrastructure.

TCDER Microgrid Project Scope

- The Trenton opportunity is one of only two district heating and cooling plants in NJ. The extension from a heating and cooling district energy plant makes this uniquely qualified to be configured as a town center microgrid.
- The study reviewed twenty three (23) facilities in downtown Trenton and identified fourteen (14) of which could be feasibly connected into a Microgrid. This was based on a geographical, grid infrastructure, and regulatory examination.
- The buildings are a mix of critical, municipal, and senior/affordable housing.

The implementation can be separated into two, integrated approaches that may be developed in phases to create both a real, and virtual Downtown Trenton Microgrid.

Phase 1 Trenton TCDER Implementation

Phase 1

- Provide primary and standby power to four (4) buildings, utilizing existing Veolia TDEC electrical feeders to the Richard Hughes Justice Complex (Justice), the Labor and Industrial (L&I), and the Health and Agriculture (H&A) municipal buildings (Private wires independently of the PSE&G Network)
- Installation of new, efficient, 5.7 MW Combined Heat and Power (CHP) Gas Turbine, with dual-fuel capability in the Veolia TDEC, with and duct-fired boiler. Existing electrical infrastructure would distribute and provide electrical upgrades within the L&I, H&A, and Justice Complex buildings to connect to the main switchgear with new microgrid controls. Thermal distributed through existing network
- Option 1A, would add a dedicated feeder to supply the New Jersey State Capitol Building.

Phase 2 Trenton TCDER Implementation

Phase 2 would include:

- Installation of an additional 5 MW of high response, dual fuel reciprocating engines
- 2MW of solar and 2 MWh of battery storage to supply and export load to the entire Microgrid of 14 buildings total during blue and black sky events.
- New SCADA, and microgrid controllers to allow for selected buildings in the downtown Trenton grid to be supplied electricity, generated from the Veolia TDEC facility and distributed via the local PSE&G Trenton network in the event of a grid wide outage.

Phase 1 Regulatory

The implementation of Phase 1 could be supported under existing rules and regulations. As a District Energy Supplier, New Jersey regulations would enable the development of self-sustaining microgrid using existing or grandfathered infrastructure that is no more than one Right of Way (ROW) from the electrical generator – a condition met by the existing connections to Justice, H&A, and L&I. This provision would allow Veolia to expand their existing thermal contract with Treasury and sell electricity at comparable retail rates to finance the infrastructure upgrades required.

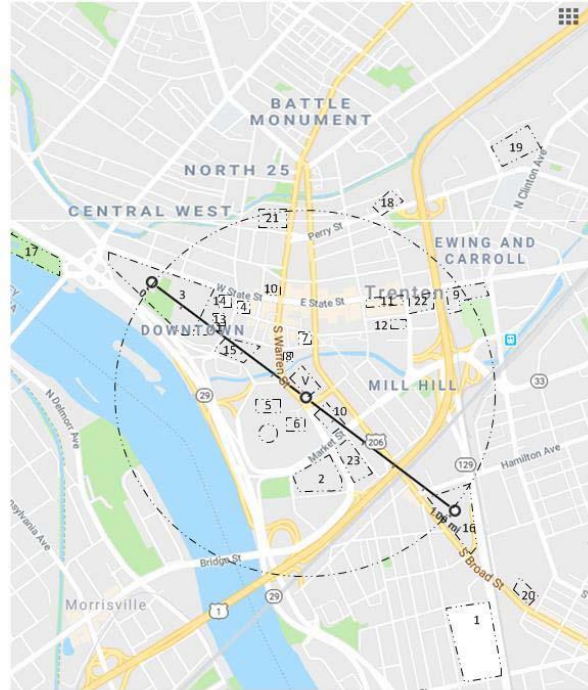
The microgrid would be located “behind” an existing PSE&G-Veolia interconnection which would serve as the Point of Common Coupling (PCC). This would allow Veolia to utilize a blue sky arrangement interconnection, during blue-sky operation as well as an islanded, black sky condition. Phase 1a could also be supported within existing configuration by connecting the State buildings with feeders from L&I, which are only one ROW apart.

Cost Estimate

Description	Phase 1	Phase 1A	Phase 2	Total
Opinion of Capital Costs	\$19,700,000	\$6,600,000	\$23,900,000	\$50,200,000
Renewable Capacity (MW)	0 MW	0 MW	2 MW	2 MW
Annual GHG Savings (Metric Tons)	6,100	2,500	2,600	11,200
Total Energy Efficient Standby Capacity	5.7 MW	5.7 MW	10.7 MW	10.7 MW
Total Energy Efficiency DER Capacity	5.7 MW	5.7 MW	12.7 MW	12.7 MW
Sq. Ft. of Municipal and Critical Buildings with Standby Power	1,100,000	1,500,000	3,200,000	4,700,00
Number Municipal and Critical Buildings Supported	4	1	9	14

Microgrid Area

- V. Veolia Plant
- 1. State Prison
- 2. Justice Complex
- 3. Statehouse
- 4. Tax
- 5. L&I
- 6. H&A
- 7. Ashby
- 8. Capital One Place
- 9. DEP
- 10. Mercer County Criminal Court House
- 11. MVC Building
- 12. New Jersey Network Building
- 13. Old Barracks
- 14. Thomas Edison College
- 15. War Memorial
- 16. Arena
- 17. Wastewater Treatment Plant
- 18. Fire Department
- 19. Police Department
- 20. 640 Broad St. (Mercer County)
- 21. Monument Breaker Station
- 22. City Administration Building
- 23. Kingsbury Housing Corporation



Phase 2 Regulatory

Phase 2 would utilize the existing Veolia TDEC interconnection to export electricity to 27 kV PSE&G feeders, which could “back feed” ten (10) additional buildings that are fed from PSE&G’s downtown Trenton East and West Network in the event of an outage.

Phase 2 could fall under a district energy statute P.L. 1999 C 240 which allows for distribution to thermal customers not adjacent to the on-site generating facility. This would require coordination with PSE&G as the electric distribution utility and development of an appropriate tariff rate for distribution service.

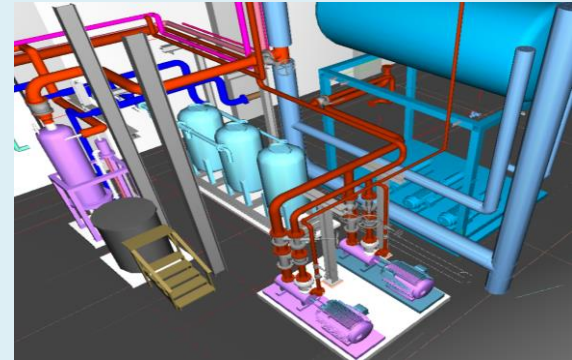
Closing Remarks

Common Issues For Embedded Town Center Microgrids

First, franchise right restrictions in the State of New Jersey limit the ability of nonutility entities to produce and distribute energy to non-contiguous properties. To better understand the limits established by utility law the City of Hoboken engaged with the Environmental Defense Fund. The outcome of this research exercise highlighted uncertainties in municipal authority to operate a microgrid. Any microgrid development will need to be vetted with the electric distribution company (Public Service Electric and Gas, Atlantic City Electric, Jersey Central Power and Light) as well as the Board of Public Utilities.

Second, it became clear that the microgrid must produce income during “blue sky” (usual grid functioning) conditions, and have clear operating parameters during “black sky” (compromised grid functioning) conditions.

Questions



Atlantic City TCDER Microgrid

Atlantic City has proposed a microgrid project that would include the installation of an additional combined heat and power unit at the ACM Energy's Midtown Thermal Control Center (MTCC) to support critical facilities that include Atlanticare Regional Medical Center, Boardwalk Hall, and Caesars/Bally's Hotels and Casino. The MTCC currently provides chilled water and steam to customers for cooling, heating, domestic hot water and kitchen use. A combine heat and power ("CHP") unit currently part of the MTCC system provides thermal energy to several hotel & casinos and public buildings. The proposed microgrid would include an additional CHP unit providing an additional generation of 7.5 MW electric and thermal would be connected to the critical facilities to provide additional thermal generation and electricity to the microgrid participants and other customers. Cost savings would be realized by peak power demand reduction and reduced electric generation.

Camden County TC DER Microgrid

Camden County, along with the Camden County Municipal Utilities Authority (“CCMUA”), proposes to establish a community microgrid in Camden City. The project envisions connecting CCMUA with Covanta to allow the two facilities to exchange electrical and thermal energy during emergency and non-emergency times based on the needs of CCMUA and its connected microgrid community partners. The interconnection of the two facilities will allow Covanta to replace its use of potable water with treated wastewater for its power production operations, as part of a sustainability loop that would be created. This treated wastewater supply is expected to reduce stress on the local aquifer system. Other facilities that will benefit from the microgrid include Camden Housing Authority, Riletta Cream and H.B. Wilson Elementary Schools, New Village Supermarket, Fellowship House, Fortunas, and Citgo Gas.

The microgrid feasibility study will evaluate the technical and financial viability of providing DER to most if not all of the study areas’ electrical needs while using excess heat from the Covanta WTE facility to offset thermal loads of the CCMUA. In turn, water from CCMUA could be used to decrease Covanta’s potable water use. This self-sustainable system would also provide continuity of operations to critical public safety infrastructure (shelters, police, fire and medical) during times of natural or man-made disasters.

Cape May County TCDER Microgrid

Cape May County (CMC) Municipal Utilities Authority (MUA) proposed a microgrid project that would utilize a syngas/biogas/natural gas fueled combined heat and power unit at CMC MUA's Seven Mile Beach / Middle Wastewater Treatment Facility ("WTF"). Syngas / biogas will be generated on site and turned into electrical and thermal energy on site from the supply of wastewater bio-solids. Natural gas will be needed as a supplementary fuel. In addition to supplying electrical and thermal energy to the WTF, this project will also supply energy to several critical facilities in the Crest Haven Complex which includes the CMC Prosecutor's Office, CMC Correctional Center, CMC Sheriff's K9 Unit, Police and Fire Academies, CMC Administration Building, CMC Health Department, CMC Road and Bridge Department, fueling station, Crest Haven Nursing and Rehab Center, Special Services School, Technical High School, NJ Army National Guard Armory and few others.

Galloway Township TCDER Microgrid

Galloway Township's proposal will examine the potential of using a town center microgrid to connect the Galloway Town Hall and police station, AtlantiCare Regional Medical Center, two assisted living facilities, Stockton University, Reeds Elementary School, Roland Elementary schools, Galloway Middle School and Absegami High School and a ShopRite. The preliminary estimate of energy production represents approximately 47,000,000 kWh and 1,400,000 therms. The applicant will evaluate most commercially-viable technologies, such as fuel cells, energy storage systems, solar, combined heat and power ("CHP"), thermal loops and water exchange systems.

Highland Park TC DER Microgrid

The Borough of Highland Park submitted an application entitled Being Resilient In Temporary Emergencies (“BRITE”) Highland Park TC DER Feasibility Study to examine the potential of connecting the borough hall, police and fire stations, two senior centers, the Housing Authority, the Bartle School and Board of Education Offices. The preliminary estimate of energy production represents approximately 1,349 MWh and 52,248 therms. Additional sites may be evaluated for potential inclusion in the TC DER Microgrid. The applicant will evaluate most commercially-viable technologies, including but not limited to fuel cells, energy storage systems, solar, and combined heat and power (“CHP”).

Hudson County TC DER Microgrid

Hudson County submitted an application for the proposed Hudson County Advance Microgrid (HCAM) to be located in Secaucus Township. The HCAM project core partners include Hudson County, the Township of Secaucus, the Secaucus School District, Secaucus Housing Authority, Meadowview Hospital and Alaris Health at the Fountains. The Project's critical facilities are centered around the Meadowview Complex, which contains multiple critical facilities including the Meadowview Psychiatric Hospital and Hudson County's Juvenile Detention Center, Hudson County's 911 Call Center, multiple Hudson County office buildings, Alaris Health at the Fountains, Secaucus Housing Authority, and the Secaucus Town Hall and Police Department. The Feasibility Study will evaluate the most commercially-viable technologies, including but not limited fuel cells, solar and dispatchable generation such as combined heat and power ("CHP") and other new electric infrastructure to allow the proposed Project to operate during normal and emergency conditions.

Middletown TC DER Microgrid

The Township of Middletown submitted a feasibility study application with the core partners of Middletown School District, Middletown Sewage Authority, Monmouth County, NY Waterway and Earle Waterfront. The proposed project would include the critical facilities of NWS Earle Waterfront Administrative Area, Township of Middletown Sewage Authority (TOMSA), NY Waterways Ferry Terminal, Middletown Public Works and CNG Fueling Facilities, Middletown Municipal Complex, Public Schools, Bayshore Middle School, Leonardo Elementary School, Bayview Elementary School, Monmouth County Highway Department, Middletown Fire Stations 3, 4 and 7, and Monmouth County Bayshore Outfall Authority. The study will evaluate the new power generation capacity needed; estimated to be between 30 to 50 MW.

Montclair TC DER Microgrid

The Township of Montclair submitted an application for the Montclair Town Center Microgrid with core partners including the Montclair School District, United Methodist Communities, New Jersey Transit and Hackensack UMC – Mountainside Hospital. The project's critical facilities include the Montclair fire department headquarters ("HQ"), Glenfield Middle School, Pine Ridge Senior Living housing, Mountainside Hospital and New Jersey Transit Bay Street Station and Garage. Several other public building and private sector businesses were identified as potential sites.

The study will evaluate approximately 2.3 MW of new power capacity which may include solar and dispatchable generation such as combined heat and power ("CHP"), battery storage and other new electric infrastructure to allow the proposed project to operate during normal and emergency conditions. Additionally, the will evaluate both Siemens SICAM and Johnson Controls Grid Connect microgrid control/communications systems.

Paterson TC DER Microgrid

The City of Paterson submitted an application for the Great Falls Eco-Energy Resiliency Project along with core partners including Passaic County and the City of Paterson School Board. Potential partners include the US Government Service Administration (GSA), Saint Joseph's Medical Center and the Children's Hospital. The critical facilities to be served include Paterson City Hall, Health and Human Services – Community Development Office, Paterson Recreational Offices, Paterson Fire Department Headquarters, Paterson Police Department, Paterson International High School, JFK High School, Passaic County Jail, Passaic County Courthouses, Passaic County Administration Buildings and Passaic County Social Services. Other potential critical facilities include Hinchliffe Stadium, the US GSA Federal Building, Saint Joseph's Medical Center and Children's Hospital.

The existing generation technology for the proposed project is the Great Falls Hydro-Electric Generation Plant ("Great Falls"). The Great Falls can generate between 3.5 to 7.0 MW of power depending on water flow. The additional capacity could be provided through new power which may include solar, dispatchable generation such as combined heat and power ("CHP"), new distribution assets, storage, and other new electric infrastructure to allow the proposed microgrid to operate during normal and emergency conditions.

Woodbridge TCDER Microgrid

The Township of Woodbridge submitted an application for a feasibility study for a proposed Woodbridge Town Center Advanced Microgrid (WAM) with core partners including the Woodbridge School District, Woodbridge Housing Authority and a number of private sector companies. The critical facilities would include the Woodbridge Town Hall/Police building, fire department building, Stern Tower Senior Living, Adams Tower Senior Living, Finn Tower Senior Living, Pump Station, Ross Street Elementary School, Mawbey Street Elementary School, Woodbridge Middle School and several private sector businesses.

The study will evaluate new power capacity which may include fuel cells, solar and dispatchable generation such as combined heat and power (“CHP”) and other new electric infrastructure to allow the proposed microgrid to operate during normal and emergency conditions.