Agenda Date: 6/30/17
Agenda Item: 9L

STATE OF NEW JERSEY

Board of Public Utilities
44 South Clinton Avenue, 3rd Floor, Suite 314
Post Office Box 350
Trenton, New Jersey 08625-0350
www.nj.gov/bpu/

MISCELLANEOUS

IN THE MATTER OF THE TOWN CENTER DER MICROGRID INCENTIVE PROGRAM AUTHORIZATION OF INCENTIVE FUNDING TO STATE OF NEW JERSEY DEPARTMENT OF TREASURY – CITY OF TRENTON MERCER COUNTY FOR PHASE I FEASIBILITY STUDY	)))))	ORDER DOCKET NO. QO17060640

Parties of Record:

William Golubinski, Manager Energy Initiatives Unit, The State of New Jersey Department of Treasury

BY THE BOARD:

The 2015 New Jersey Energy Master Plan Update (EMP Update) established a new overarching goal to "Improve Energy Infrastructure Resiliency & Emergency Preparedness and Response" in response to several extreme weather events that left many people and businesses without power for extended periods of time. These new policy recommendations included the following:

1. Increase the use of microgrid technologies and applications for Distributed Energy Resources ("DER") to improve the grid's resiliency and reliability in the event of a major storm; and

2. The State should continue its work with the USDOE, the utilities, local and state governments and other strategic partners to identify, design and implement Town Center DER ("TC DER") microgrids to power critical facilities and services across the State.

At its November 30, 2016 agenda meeting Docket number QO16100967, the Board authorized the release of staff's Microgrid Report ("Report"). The following recommendations in the Report specifically address the development of a TC DER microgrid feasibility study incentive program and pilot:

1. Develop and implement a TC DER microgrid feasibility study incentive program as part of the current New Jersey Clean Energy Program ('NJCEP") budget. This TC DER microgrid feasibility

study incentive program should provide funding for the upfront feasibility and engineering evaluation project development costs of a Town Center TC DER microgrid at the local level. This incentive should be a phased approach beginning with an initial feasibility study, followed by detailed engineering design phase. Staff should implement a stakeholder process to determine the terms and conditions of the TC DER microgrid feasibility study incentive program. This incentive should be provided through an MOU structure.

2. Initiate a TC DER microgrid pilot within each electric distribution company ("EDC") service territory. This should initially be limited to the municipalities within the 9 Federal Emergency Management Agency ("FEMA") designated counties or municipalities that meet the same criteria identified in the New Jersey Institute of Technology ("NJIT") report. These pilots should include, at a minimum, an initial feasibility study of the TC DER microgrid. This process should assist in the development of a TC DER microgrid tariff.

On August 5, Board staff issued a TC DER microgrid feasibility study draft application for public comment. On August 23, 2016, a public meeting was held to discuss the draft application and written comments were received and considered in the final application. Board staff's responses to the comments were published as part of the release of final application.

At its January 25, 2017 agenda meeting Docket number QO16100967 the Board authorized the release of TC DER microgrid feasibility study application. Incentive funding was capped at $200,000 per feasibility study. The Board directed staff to release the application and to open a 60-day application submission window. Applications submitted during that period would be reviewed by Staff and selected on a competitive basis. Any application submitted after this time period would be accepted on a first-come-first-served basis subject to available fund. The 60 day period ended on March 27, 2017

Prior to March 27, 2017, the New Jersey ('NJ") Department of Treasury submitted an application to the Board.

The Downtown Trenton Microgrid (Project) was submitted by the NJ Department of Treasury, Division of Property Management and Construction. The Project core partners include the City of Trenton, Mercer County and the Mercer County Improvement Authority. The Project critical facilities include NJ State Prison, NJ Justice Complex, NJ State House, NJ Treasury Taxation Building, NJ Department of Labor Building, NJ Department of Health Building, NJ Department of Community Affairs – Ashby Building, NJ Department of Human Services – Capital Plaza One Building, NJ Department of Environmental Protection Building, NJ 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. The Project proposes to use their own proprietary software to model the Project design. The Project will work with PSE&G on the microgrid controller and SCADA systems. The estimated timeframe to complete the feasibility study is four months. PSE&G is the electric and natural gas utility for the State of New Jersey Department of Treasury in the City of Trenton. PSE&G provided a letter of support (LOS) to participate in the feasibility study.

After review of the application Board Staff recommends that the Board approve the above-referenced application.

The Board **HEREBY ORDERS** the approval of the aforementioned application for the total incentive amount of $175,000 for the New Jersey Department of Treasury and **AUTHORIZES** the President of the Board to sign and execute the MOU attached hereto which sets forth the terms and conditions of the commitment of these funds.

This effective date of this order is July 10, 2017.

DATED: 6/30/17

BOARD OF PUBLIC UTILITIES
BY:

RICHARD S. MROZ
PRESIDENT

JOSEPH L. FIORDALISO
COMMISSIONER

MARY-ANNA HOLDEN
COMMISSIONER

DIANNE SOLOMON
COMMISSIONER

UPENDRA J. CHIVUKULA
COMMISSIONER

ATTEST:

IRENE KIM ASBURY
SECRETARY

I HEREBY CERTIFY that the within document is a true copy of the original in the files of the Board of Public Utilities

IN THE MATTER OF THE TOWN CENTER DER MICROGRID INCENTIVE PROGRAM
AUTHORIZATION OF INCENTIVE FUNDING TO THE STATE OF NEW JERSEY –
DEPARTMENT OF TREASURY FOR PHASE I FEASIBILITY STUDY

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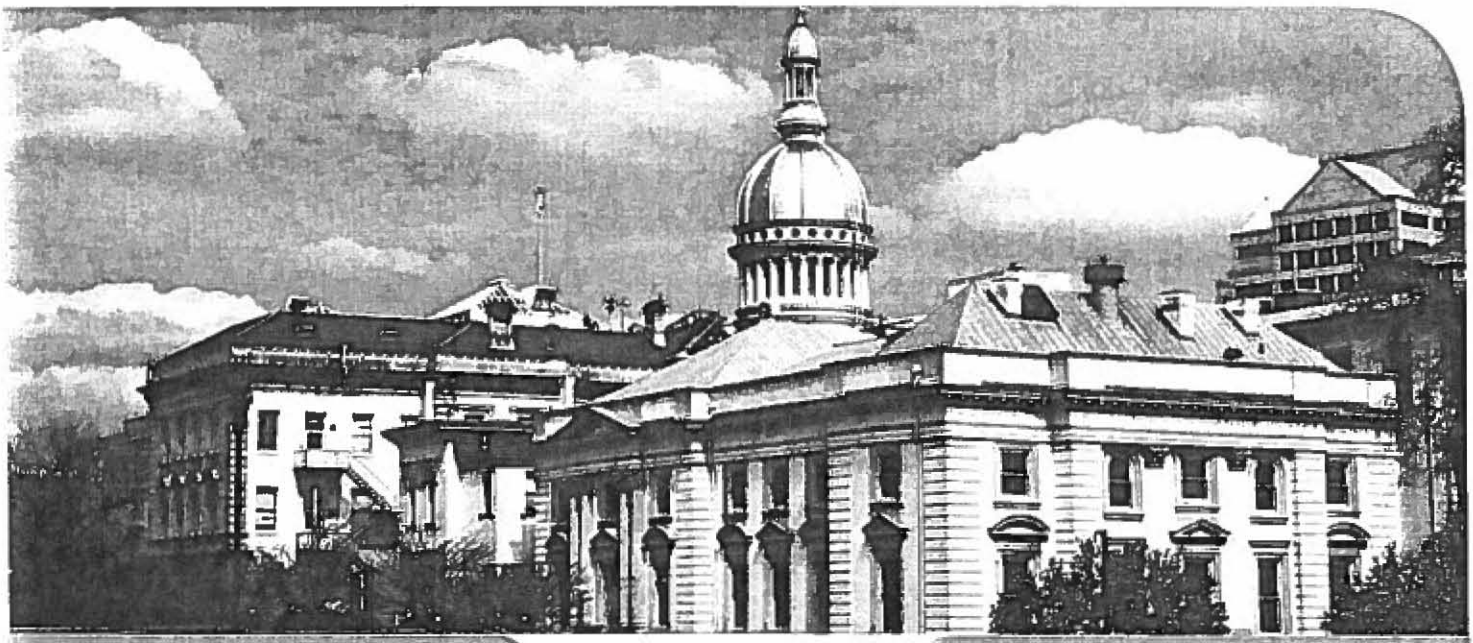

VEOLIA

Application for

Town Center Distributed Resource Microgrid Feasibility Study Program Phase 1 - Trenton Microgrid

For The Office of Clean Energy NJ BPU

Submitted on March 24, 2017

MARCH 24, 2017

MICHAEL WINKA
Director Office of Clean Energy NJBPU
PO Box 350-44 south Clinton Avenue
Trenton, New Jersey 08625-0350
Subject: *Application for DC TER Trenton Microgrid Feasibility Study*

Dear Mr. Winka,

In response to the Town Center Distributed Energy Resource Microgrid Feasibility Incentive Program, the State of New Jersey under the Department of Treasury is pleased to partner with the Veolia Corporation, the City of Trenton, the County of Mercer and Rutgers University to evaluate the feasibility of the Downtown Trenton Microgrid. These documents serves as a draft of the application and includes a detailed description of the assembled project team performing the study, the proposed microgrid, and the technical approach that will be used in the evaluation.

Downtown Trenton houses a cluster of critical facilies for the state, city, and county, that are vulnerable to grid outages during catastrophic emergencies. These facilities provide essential services during emergencies, can serve as shelter and assembly locations, and house critical data and records integral to the state's operations. Loss of utilities to these facilities could be disastrous during an extreme weather event.

These facilities are currently tied into Veolia's Thermal Energy District Network in downtown Trenton. This network provides chilled water, hot water, and steam under one contract with Department of Treasury. Using the existing Veolia infrastructure and energy contracts between the state and Veolia as the backbone of the microgrid, the project team would determine the feasibility of:

- Installing additional Distributed Energy Resources DER within the central plant including Combined Heat and Power to meet all or a portion of the microgrid load.
- Installing additional DER in the form of solar PhotoVoltaics and Steam Turbines in and around the critical facilities.
- Installing additional electrical switching and communication infrastructure to both distribute electrical energy in parallel with the PSE&G grid during "blue-sky" conditions and isolated from the grid during outages.
- The regulatory and financial arrangements of the proposed microgrid, considering the cost and benefits of each stakeholder.

A Downtown Trenton Microgrid would provide benefits to the state buildings of Trenton by leveraging existing energy assets, enhancing the reliability of the critical facilities during a catastrophic grid outage, and providing low-carbon, energy efficient solutions to Trenton's downtown business district. We look forward to expanding our strong relationship to provide a clean and reliable energy future for the State of New Jersey.

Sincerely,

William Golubinski
Manager-Energy Initiatives Unit
State of New Jersey
Department of Treasury- Department of Property Management and Costruction
20 West State Street
Trenton, New Jersey 08625-0235

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1 Project Name & Team Introduction

Veolia, NA, in collaboration with the State of New Jersey, Department of Treasury is pleased to present the following application to evaluate the feasibility of a "Downtown Trenton Microgrid", hereafter "The Project", for the Town Center Distributed Energy Resource (TC DER) Microgrid Feasbility Incentive Program.

1.1 – Downtown Trenton Microgrid

Problem and Opportunity

The City of Trenton is vulnerable to grid-wide outages caused by extreme weather events, climate catastrophies, and other emergencies. As the seat of government for the state of New Jersey, downtown Trenton contains numerous critical facilities and infrastructure that provide essential services during an emergency. These facilities require a reliable electrical and thermal utilities to avoid the loss of critical government processes and to respond adequately to an event.

To address vulnerabilities statwide, the Board of Public Utilities (BPU) worked with the New Jersey Institute of Technology (NJIT) to identify potential TC DER Microgrids in nine Sandy-designated counties. While Trenton is not located in one of these counties, it meets the intent defined in TC DER Microgrid program to harden the City against the weather emergencies, gain a more reliable and sustainable energy infrastructure, and allow the municipal buildings to expand their capabilities in an emergency event.

A microgrid presents a unique opportunity to expand the City's services during times of emergency grid outages. By coupling low cost, low carbon sources of generation with modifications to the existing electric distribution system, 100% emergency energy requirements can be delivered to facilities that can be used as assembly areas or shelters. These facilities include the War Memorial, Old Barracks Museum, Thomas Edison College, to name a few. These buildings are well positioned to be fully functional during an emergency, offering heating, cooling, and power throughout an event. Furthermore, key financial, legal, and industrial data and records will remain secure in the Taxation, Justice, and Labor Buildings. The State Capitol House would also be included in the microgrid so that key emergency services continue to function.

Proposed Solution

The project will provide a reliable thermal and electrical utility service to a collection of critical municipal facilities during and after emergency events. The grid would also function during normal operating or "blue sky" conditions to provide the users of the microgrid with low carbon, efficient power produced from a variety of Distributed Energy Resources (DERs).

The project will involve expanding the capacities of an existing thermal grid that is owned and operated by Veolia. The expansion will include the integration of distributed energy resources in Trenton municipal buildings. Energy Efficiency Measures (EEMs) will also be implemented to minimize the demand of grid connected facilities. These EEMs will keep capital costs down by limiting the need for additional generating capacity. New switching infrastructure will be installed on the existing grid to both isolate and work in parallel the new microgrid. By leveraging existing Public Service, Eletricity, & Gas (PSE&G) and Veolia distribution infrastructure, the project will expand the City energy district as well as provide electric power to critical facilities while maintaining heating and cooling capability.

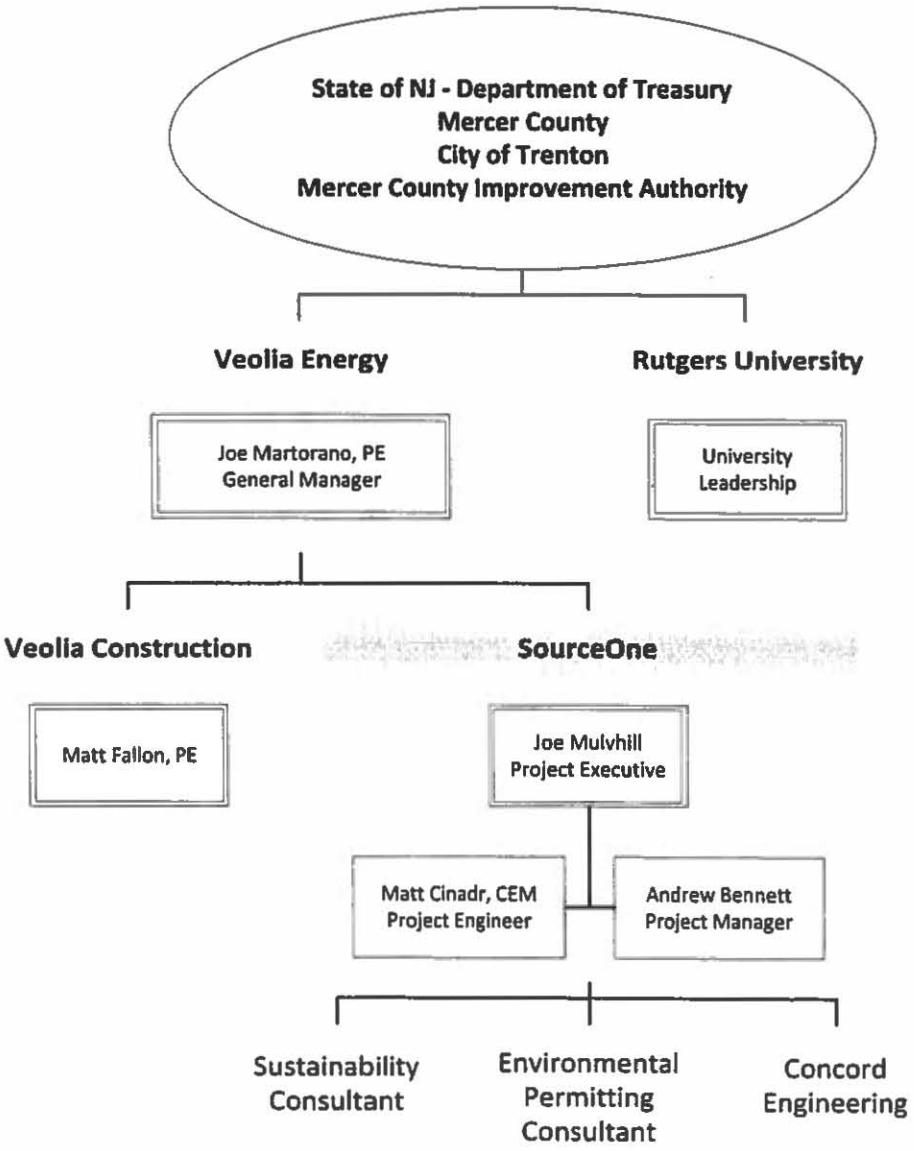
Utilizing standard, industry-proven equipment and existing utility operating procedures, the proposed project will modify PSE&G infrastructure with new load-break switches to isolate certain sections of the distribution system to supply power to all critical and non-critical facilities in the microgrid. The proposed microgrid will consider traditional power systems with natural gas powered turbines and/or reciprocating engines in a highly efficient combined heat and power (CHP) arrangement, as well as dual fuel options. Solar photovoltaic (PV) arrays will also be used during normal operating conditions and provide microgrid members the

opportunity to utilize renewable energy to supply a portion of their load. Recovered thermal energy from the CHP plant will be distributed to end users through Veolia's existing district energy system, providing efficient energy.

1.2 – Project Team

The applicant has assembled an experienced and talented team of both public and private entities, herein referred to as the Project Team, to evaluate the feasibility of the Downtown Trenton Microgrid. The team has a wealth of experience in energy master planning, design, and construction in the utility space, as well as experience owning and operating energy generation and distribution assets. The Project team assembled is resourced to perform the feasibility study as well as continued project development from concept to commercial operation.

Figure 1: Project Team Organization Chart



Please find the complete consultant and subcontractors qualifications package listed in the Appendix Section 13.

Department of Treasury

The Department of Treasury oversees the financial and business matters pertaining to the state of New Jersey. Within the department, the Division of Property Management & Construction oversees the operation and maintenance of State-owned facilities in the Capitol Complex in downtown Trenton, among other responsibilities. This division manages all the energy initiatives for all municipal buildings in the state government.

Mercer County

Mercer County contains the City of Trenton and operates bulidings within the downtown Trenton district that would be included in the Microgrid. Mercer County was not one of the counties included in the NJIT report highlighting 9 Sandy Regions but this application still meets the intent of the TC DER Microgrid Report.

City of Trenton

The City of Trenton holds the seat of government for the state and has additional municipal buildings within the Downtown Trenton District. These buildings also are served from Veolia and provide crucial municipal services.

Mercer County Improvement Authority

Mercer County Improvement Authority (MCIA) was created under the County Improvement Authorities Law to undertake certain projects for the benefit of the residents of Mercer County. The mission of the MCIA is to serve the needs of Mercer County improving the quality of life for the residents by providing programs and services for the County, Municipalities, school and fire districts, and not-for-profits in the areas of financing, project management, redevelopment, solid waste and recycling. Grid resiliency and energy initiatives pertaining to the county are of concern for MCIA.

Rutgers University

Rutgers, The State University of New Jersey, is a leading national research university and the state of New Jersey's preeminent, comprehensive public institution of higher education. Established in 1766, the university is the eighth oldest higher education institution in the United States. Nearly 69,000 students and 22,000 full- and part-time faculty and staff learn, work, and serve the public at Rutgers locations across New Jersey and around the world. The University has developed an advanced modeling tool that utilizes data on existing electrical grid networks to analyze and evaluate various microgrid scenarios.

Veolia

Veolia is a global leader in district energy systems and central utility plants and is the owner/operator of the largest portfolio of district energy systems in the U.S. Veolia has focused on creating integrated energy, infrastructure, and environmental solutions for more than 160 years, and today it ranks as the only global company to offer the entire range of environmental services in the water management, waste management and energy management sectors.

VEOLIA DESIGNS AND DEPLOYS WATER, WASTE AND MANAGEMENT SOLUTIONS TO IMPROVE EFFICIENCY FOR CITIES, INDUSTRY AND CITIZENS.

WATER WASTE

174,000 employees on 5 continents

$27.2 billion 2015 revenue

53M MWh produced

3.4M collective housing units managed

2,027 industrial sites managed

779 heating and cooling networks managed

Veolia offers these complementary solutions to municipal and commercial customers to maintain and improve their infrastructure. Veolia designs and implements customized solutions, with safety as the top priority, to help customers control costs and minimize operating risks by reducing their energy and fossil fuel consumption, as well as their carbon footprint.

Veolia's primary categories of energy efficient solutions are as follows:

- **District Energy** – Veolia companies operate and maintain more than 750 district and local heating or cooling systems around the globe. In the U.S., Veolia owns and operates the largest portfolio of heating, cooling and cogeneration networks in North America, with systems at sites across the country, including those in:
  - Atlanta, GA
  - Baltimore, MD
  - Boston-Cambridge, MA
  - Grand Rapids, MI
  - Kansas City, MO
  - Las Vegas, NV
  - Los Angeles, CA
  - Montreal, QC
  - Oklahoma City, OK
  - Philadelphia, PA
  - Portland, OR
  - St. Louis, MO
  - Trenton, NJ
  - Tulsa, OK
- **Cogeneration/Combined Heat and Power (CHP)** – Veolia designs/builds, owns and/or operates and maintains plants that produce electricity and then recycles the waste heat created by the electricity generation to produce useful thermal energy.

  In the U.S., Veolia operates and maintains more than 510 MW of efficient CHP capacity for communities that include:
  - Boston, MA
  - Philadelphia, PA

- Cambridge, MA
- Kansas City, MO
- Minneapolis, MN
- New York, NY
- St. Louis, MO
- Trenton, NJ
- Tulsa, OK

> **Facility Operations and Management** – Veolia operates and maintains complex equipment at customer sites in a manner that enhances the economic, technical and environmental performance of the equipment under our care. Veolia believes that the optimal strategy for enhancing the economic and technical performance of complex equipment is a life-cycle approach – a systematic program of diagnostic testing, inspections, overhauls, repairs and upgrades ensuring the efficiency and longevity of the equipment under our care. When equipment is maintained with a life-cycle analysis perspective, energy usage is optimized, and both operating and capital costs are ultimately minimized. Veolia's diligent approach to on-site operations and maintenance is designed to maximize peak efficiency, minimize the risk of equipment failure and ensure operation within a tight control range.

Research and Development

Veolia also has a strong commitment to research and development (R&D), investing more than $150 million a year on new products and processes that serve the company's business lines and customers.

At Veolia's Center for Research on the environment, energy and waste, R&D teams from throughout our company conduct a number of research programs related to renewable energies, with the aim of optimizing their integration into currently available solutions.

Some of Veolia's core research activities focus on:

> Optimizing and enhancing the reliability of biomass combustion systems by testing different biomass mixes, including wood chips and forest residues, and by exploring biomass gasification for power generation.

> Improving the performance of solar heating systems through laboratory tests of concentrators and hybrid photovoltaic/thermal collectors.

> Producing energy from oxygen and hydrogen with fuel cell technologies.

SourceOne

Veolia's subsidiary company, SourceOne, is a nationally recognized energy consulting firm that provides a wide spectrum of energy related services to ensure customers have the requisite tools to monitor and manage their energy needs efficiently. SourceOne provides engineering support throughout the lifecycle of energy projects, ranging from initial feasibility studies to construction support through retro/re-commissioning. SourceOne crafts integrated solutions for energy management, improved power quality, reliability and sustainability initiatives by using a vendor and technology-neutral approach.

SourceOne's energy specialists and engineering teams offer extensive experience in the energy industry and hold some of the most significant certifications in energy engineering. As Professional Engineers, LEED APs and Certified Energy Managers (CEM), SourceOne provides experts that can help customers develop customized solutions for their unique energy needs. The solutions range for helping customers resolve short-term problems to developing comprehensive energy master plans for campuses, companies and communities. These professionals are familiar with the energy market, energy standards, as well as with implementing energy solutions by recommending a strategic approach to meet all stakeholder goals.

SourceOne's clients include industrial plants, higher-education campuses, biotech firms, government agencies, and more. By collaborating with clients, they assist them in selecting services that best match their

needs – whether the goal is to save money, develop renewable or alternative energy supplies or simply develop an energy purchasing strategy.

Concord Engineering

Concord Engineering is a full-service engineering, energy consulting, construction management and commissioning firm. Concord was established in 1989 by Michael Fischette and other investors. As a former employee of a large architect-engineering firm specializing in the design of nuclear and coal-fired electric power plants, Mr. Fischette was experienced in the execution of large, multimillion-dollar projects. This knowledge provided the framework for the development of a new company that could deliver turnkey services while maintaining the personal attention required by savvy clients. Headquartered in Voorhees, NJ with other offices in Philadelphia, Atlantic City, New York City, and Wilmington, Concord employs over 100 engineers and designers.

2 Project Description - Microgrid

2.1 – Downtown Trenton Microgrid

The Downtown Trenton Microgrid will include, at a minimum, a portfolio of municipal buildings in the downtown Trenton that are operated and managed by the New Jersey Department of Treasury and connected to the Veolia district energy network. These municipal buildings are clustered within the Central Business District in downtown Trenton and provide critical services to the state of New Jersey. These buildings are all located within downtown Trenton, all approximately within a mile of each other. Note, this list of buildings is preliminary in nature. All of the critical facilities will remain in the microgrid, however others may be included or excluded pending the findings of the feasibility study. Veolia currently provides thermal (heating and cooling) energy for the buildings listed below, and additional infrastructure needed to maintain that service for the network and the end-user will be evaluated as part of the study. Annual electric consumption is listed in the table, however the study will evaluate both peak loads, or "blue sky" conditions, and emergency grid outages.

Table 1: Trenton Microgrid End Users

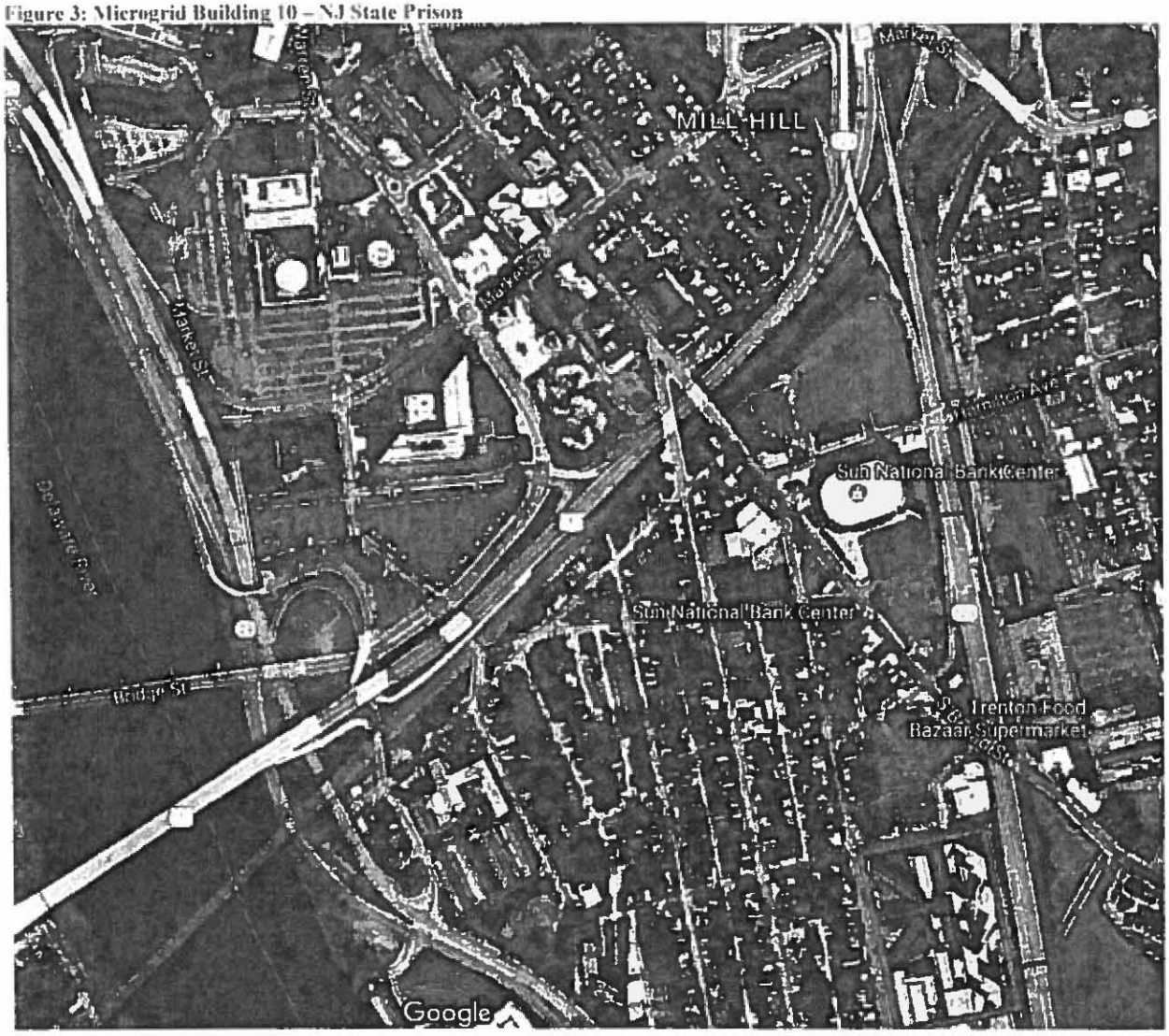
Item	Facility Name/ Building Name	FEMA Classification	Annual Electric Consumption (kWh/Yr)	Square Footage	BTU/SQFT (Electrical Consumption)
1	NJ St Prison	3	13,010,582	726,271	61.14
2	Justice	3	14,522,845	1,098,258	45.13
3	State House	4	13,718,633	389,724	120.14
4	Taxation Building	3	5,201,971	223,370	79.48
5	Labor	3	9,644,898	439,750	74.86
6	Health Building	3	3,587,313	163,108	75.06
7	Ashby Building GOB	3	4,871,018	185,000	89.86
8	Capitol Place One	3	3,020,265	146,708	70.26
9	DEP HQ	3	5,837,375	385,000	51.75
10	M Roebling Building	3	2,672,142	300,000	30.40
11	MVC 225 E State		5,427,740	382,000	48.49
12	NJ Network		2,776,840	105,000	90.26
13	Old Barracks	3	113,604	15,080	25.71
14	Thomas Edison College	3	946,243	35,635	90.63
15	War Memorial	3	1,154,039	72,000	54.70
Total			86,505,508	4,666,904	63.26

These buildings are shown on the below map of the downtown Trenton area. The map also includes the Veolia Plant, labeled with a "V".

Figure 2: Microgrid Buildings (1-9, 11-15)

Building 10, the NJ State Prison, is shown in the below map as it is located further south but still within the downtown Trenton area.

Figure 3: Microgrid Building 10 – NJ State Prison



Please refer to the Veolia District Thermal Energy Network in Appendix 15 for a list of all of the buildings served by the network.

3 Critical Facilities Description

3.1 – FEMA Classifications

The municipal government buildings included in the proposed feasibility study consist of critical facilities based on the definitions of Critical Facilities and Risk Categories defined by the FEMA Mitgation Team Assessment Report for Hurricane Sandy in New Jersey and New York. Critical Facilites include both Category III and Category IV facilities.

According to the definitions, *"Risk Category IV, the highest risk category, includes buildings and structures that, if severely damaged, would reduce the availability of essential community services necessary to cope with an emergency. Risk Category IV buildings and structures include hospitals, police stations, fire stations, emergency communication centers, and similar emergency facilities…"*

Additionally, *"Risk Category III includes such structures as theaters, lecture halls, and elementary schools, prisons, and small healthcare facilities."*

3.2 – Critical Facilities

The cluster of state buildings in downtown Trenton provide the New Jersey government with the numerous critical facilities that are essential to the conducting normal operation of the New Jersey State government. The below lists describe the basic function and purpose of many of the buildings to be included in the microgrid.

Category IV Facilities

Critical services provided by the state of New Jersey to manage and cope with emergencies are housed in the below facilities.

The State Capitol Complex – This complex houses the seat of government for leaders, assemblymen, elected officials, that manage the business of the state. This building is critical to providing essential services during an emergency. The complex also houses a library, museum, and an auditorium which could serve as emergency assembly locations and shelters.

Category III Facilities

Included in the cluster are facilities that can house or shelter large numbers of people in the event of an emergency. These facilities are designed for mass assembly and require thermal and electric utilities to both house existing inhabitants, in the case of the prison, or to serve as an assembly and shelter location for displaced people in the case of an emergency.

The War Memorial consists of ballrooms, event spaces, and an auditorium which seats 1,807. This space is designed to serve large numbers of people under normal operation.

The Old Barracks Museum – this museum has a unique history dating back to 1758. On the site of restored military quarters this building has a fascinating history. The space can also be booked for events and meetings spaces and could expand it's capabilities as an emergency shelter through this project.

New Jersey State Prison – State men's prison operated by the New Jersey Department of Corrections, the only one of which is a completely maximum security prison. Loss of utilities to this facility during an emergency would only hamper state's efforts to manage a potential crisis.

Thomas Edison College - Thomas Edison State University provides flexible, high-quality, collegiate learning opportunities for self-directed adults. The University was founded in 1972 for the purpose of providing diverse and alternative methods of achieving a collegiate education of the highest quality for mature adults. The campus as numerous classroom, lecture halls, and assembly areas that could be utilized during an emergency.

Critical Data Storage Facilities

The State of New Jersey also houses servers and storage facilities to handle the critical data and records for all of the states activities. Loss of these records would be detrimental to the function of the state and should be preserved by reliable infrastructure.

The Taxation Building – houses the Department of of the Treasury – Division of Taxation. This facility houses personnel for the processing and administration of the state's taxation responsibilities.

The Justice Building – The Richard J. Hughes Justice Complex has been home to the Department since it was completed in 1982. The building is shared with the New Jersey Judiciary, Office of the Public Defender, and the Attorney General's office, including some agencies in the Department of Law and Public Safety.

The Labor Complex - consists of agencies and departments for all divisions pertaining to labor and industry in the State of New Jersey.

4 Partners - Stakeholders

4.1 – Program Partners

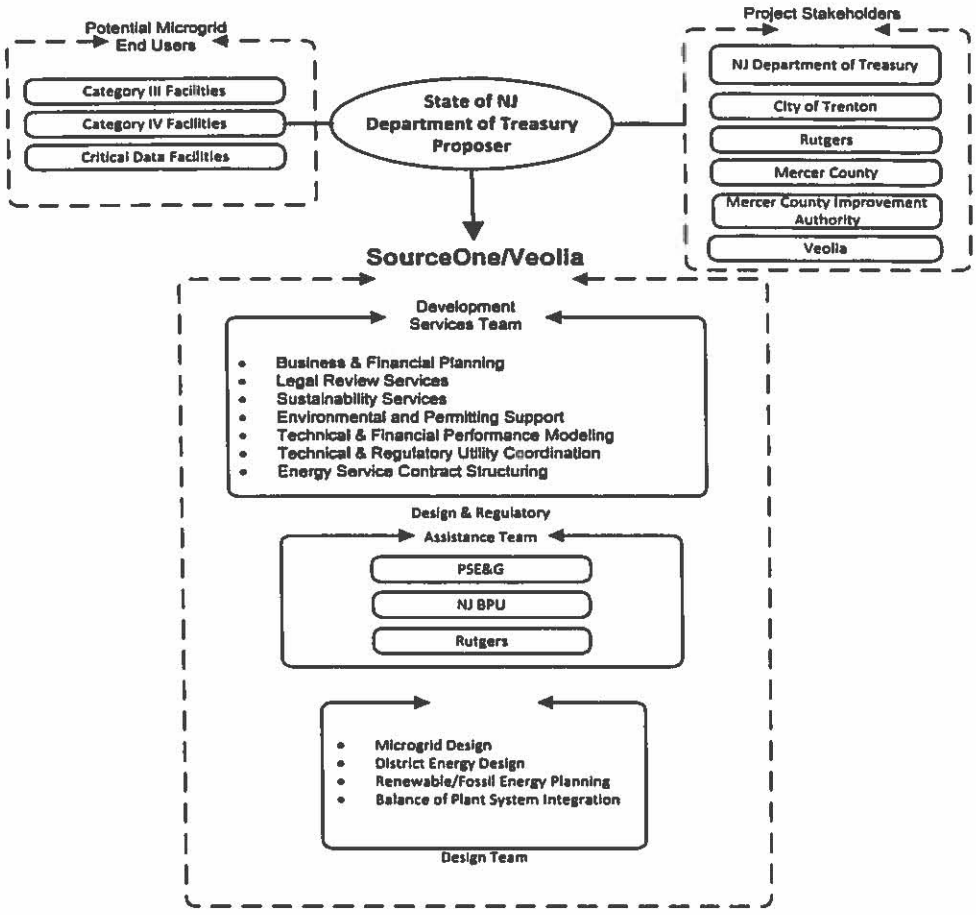
The State of NJ Treasury Department will be the formal proposer for this submission. However, this project represents the coordinated effort of numerous stakeholders. The following organizational chart depicts the programmatic approach to developing and implementing the Project. It displays not only the Design and Development Team responsible for delivering the feasibility study, but the broad-ranging community stakeholders and project sponsors already committed to support the project team along the way. Indications of stakeholder participation in the TC DER Microgrid study have been included in this proposal, including Memorandum's of Understanding (MOU) from various participants (see Section 16) as well as Letters of Support (LOS) from PSE&G (see Section 14), the local electric and gas utility.

The Microgrid partnership will consist of the following partners:

- **State of New Jersey – Department of Treasury**
- **Mercer County**
- **City of Trenton**
- **Mercer County Improvement Authority**
- **Veolia**
- **Rutgers**

The below stakeholder chart shows how the Municipal Entities will work in concert with Veolia and their team of consultants and subcontractors.

Figure 4: Microgrid Stakeholder Diagram



The following sections provide additional description of key project stakeholders.

4.2 – Microgrid Users

A combination of Class III, IV and other critical facilities will be included in the microgrid. In addition to these facilities, others within feasible reach of the existing thermal distribution network may be evaluated. Upon receipt and review of PSE&G's distribution feeder infrastructure, some addtrional facilities may be added or removed depending on the possibility of utilizing existing electrical distribution infrastructure. A final list of facilities will be provided to PSE&G and NJ BPU for review and comment during the development of the feasibility study.

4.3 - Energy Supplier

The thermal and electrical energy supplied to the microgrid would come from a combination of existing distributed energy resources as well as new assets to meet the end-user load in the microgrid.

4.4 - Microgrid Owner / Operator

At this point the NJ Department of Treasury is serving as the lead applicant for the feasibility stage of the project. The State of NJ and its facilities located within the microgrid will be the largest beneficiary of the services provided by the Project. At this stage in the development the final owner and operator is yet to be determined.

4.4 – Host Utility

PSE&G currently supplies electricity and natural gas to the facilities within the microgrid. It is assumed, at this point in the project that PSE&G will contine to provide these services to the Project post commercial operation. Additional services, yet to be defined may be provided by PSE&G. By way of example these may include microgirid monitoring and control, event specific operation and DER dispatch, to name a few.

4.5 - Note on Procurement

Upon discussion with the State of NJ all study and design services related to the microgrid are "professional services" and do no have to be bid. It is assumed at this point in the project development that there will be a public bid for the construction portion.

5 Technical Development

The existing thermal plant that serves the district will be the hub of the microgrid and is anchored by the existing district energy system. It is anticipated that several DERs will be interconnected by way of electric and/or thermal distribution sytems. Currently, the Veolia owned and operated energy infrastrucure includes:

The production and distribution capacity in the Trenton network is as follows:

- 132,352 pounds per hour of steam/hot water capacity
- 13,000 tons of chilled water capacity
- 3.0 miles of hot water distribution pipe systems
- 2.9 miles of chilled water distribution pipe systems
- 5.5 MW of electric generating capacity from CHP technology

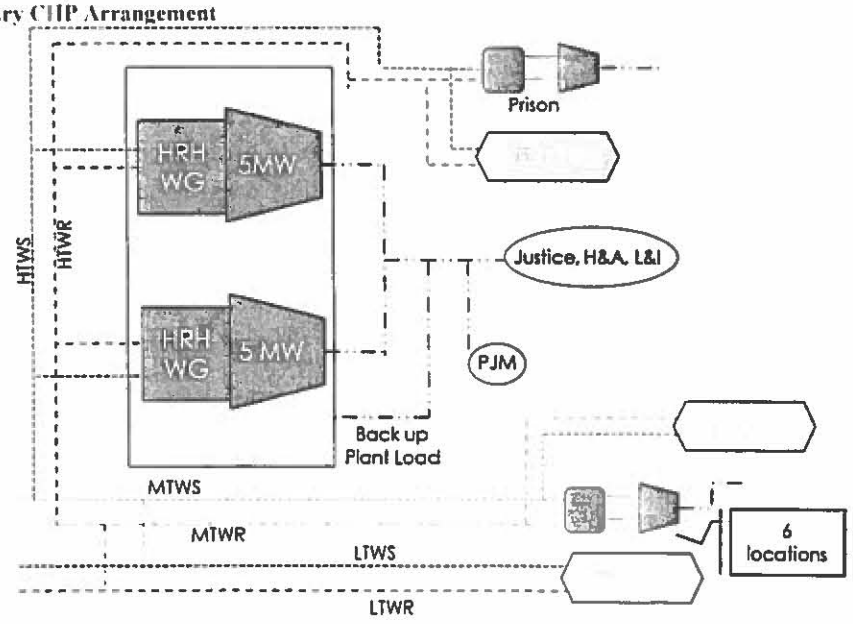
Additional features:

- 2.5 million-gallon concrete chilled water storage facility integrated into Veolia's production
- Existing electrical feeders radiating from Veolia's plant to multiple end-users downtown
- New 6,000 ton expansion of ultra-efficient chilled water capacity completed and commissioned in spring 2016.

To supply the energy usage for the microgrid, the existing DER and thermal network of the Veolia District Energy Network would be utilized and enhanced. Additional utilization of the PSE&G electric distribution infrasture may be included as part of the microgrid, at the direction and guidance of PSE&G. The district energy network produces and distributes steam, hot water, and chilled water to approximately 35 customers in the central business district of Trenton, including state, county and city government facilities, hospitals, sports and cultural arenas, office towers, a community college, and hotels. Energy production is done from the facility at 320 S. Warren Street in the Central Business District of Downtown Trenton.

This existing facility would be expanded to include addition DERs including CHP and Solar PVs. At this point in the project development the following configuration has been initially evaluated as a potential solution for the electrical and thermal generation for the microgrid. PV will be included, where appropriate, in or around the critical facilities.

Figure 5: Preliminary CHP Arrangement



The following sections provide a preliminary overview of the systems that will be added to the existing operation thereby collectively defining the microgrid.

5.1 – Existing Distribution Infrastructure

A key component of this project will be the utilization of existing distribution infrastructure. PSE&G existing infrastructure, including electrical feeders, switching, and other assets, as well as the existing gas distribution, will be integral to the microgrid. Coordination with PSE&G to determine the location, capacity, and potential tie-in points will be critical to assessing the feasibility of the microgrid to operate under emergency conditions as well as normal, "blue-sky" operating conditions.

Veolia's existing thermal distribution network will also be an integral part of the microgrid. Existing electrical feeders that connect the central CHP plant with certain buildings on the distribution network will allow for flexibility in the microgrid arrangement. All distribution assets, both electrical and thermal will be evaluated as part of this study.

5.2 – Central Combined Heat and Power (CHP)

A bulk of the thermal and electrical loads supplied with DERs will be generated by a CHP system. A CHP system produces both thermal and electrical energy from a single fuel source. This has a higher efficiency than traditional energy generation which uses one process to produce thermal energy and a separate to produce electricity.

In an effort to add reliability and resiliency to the proposed microgird, dual-fuel capabilities will be evaluated and incorporated into the feasibility study. The feasibility study will include technical and financial evaluation of the systems required to make the microgrid island mode and black start capable.

5.3 – Distributed Generation

Additonal distributed generators may be deployed at each critical facility. These additional distributed generators may take the form of renewable solar generation, waste heat powered steam turbines, or others that may be better suited to serve the electrical and thermal loads during both blue and black sky modes of operation.

5.4 – Renewable Generation Solar Photovoltaic

The Project will have a reneweable energy component. At this time it is not determined whether the renewable generation will be centrally located, distributed throughout the critical facilities connected to the microgrid, or both.

5.5 – End User Building Efficiency

An initial review of existing, planned, and potential energy efficiency and demand side measures will be performed at the start of the study. The key to this critical step is to make certain that any new generation is right-sized for the operations during both blue and black sky events.

5.6 – Bio-fuel

The existing Veolia plant has decommissioned #2 fuel oil tanks that could be reused to store biofuel for use with the combustion equipment in the plant. The use of biofuel would expand the portfolio of Class 1 Renewables Sources included in the microgrid. Using an additional fuel sources would mitigate the dependency of the plant on traditional fossil fuels, including natural gas an #2 fuel oil. Expanding the service beyond dual fuel capabilities would also increase system reliability.

5.7 – Thermal and Electrical Interconnection

Veolia will work with PSE&G to determine optimal point of common coupling for electrical generation and distribution. Veolia will evaluate both single and multiple distributed points of electrical interconnect, all of which will need to be approved by PSE&G.

6 Economic Analysis

6.1 – Commercial Model

The Team will conduct a comprehensive economic evaluation of the proposed DER and microgrid arrangement. This evaluation includes an analysis of existing utility and operating costs, as well as capital costs to implement the project, and the project utility and operating costs under the new DER and microgrid arrangement.

The Team shall utilize these costs to evaluate cashflow for the project to understand the financial scenario of the project. Not all utility rates and tariffs can be established definitively but industry standards and existing utility rates can be used to establish a general financial understanding. The commercial and financial analysis will include the necessary tasks of defining, measuring, analyzing, and confirming the spectrum of ownership and operation aspects of the microgrid.

The Team shall clearly define, reasonable, and comprehensive evaluations that consider all participants, types of assets involved, relevant value streams, risks to operation and financial viability. The Team shall present a clear and compelling case that the benefits to the municipal users outweigh the associated costs and risk. This cost-benefit assessment will be conducted in coordination with Rutgers University.

6.2 – Available Funding

Once the capital and operating expenses are identified, the Team shall identify, describe and evaluate the a variety of project finance delivery methods. Both public and private resources will be investigated to determine the most appropriate capitalization method. The team shall utilize relationships with 3rd party financiers to understand potential interest, availability, and cost to execute the project through private sector partnerships. Federal and state incentives and grants will be reviewed to determine applicability for The Project, in addition to incentive money from PJM or the BPU. The effects of the funding source will be considered when presenting the final financial analysis.

7 Microgrid Benefits

7.1 – Microgrid Benefits

The establishment of the microgrid would add significant benefits for both the city of Trenton, the state of New Jersey, and the various stakeholders included in the microgrid. The benefits include the reliability and resiliency for critical facilities, low carbon, efficient energy supply, leverage existing infrastructure, additional revenue potential, and societal benefits.

Reliability and Resiliency for Critical Facilities

The implementation of the microgrid in downtown Trenton for the state municipal buildings will provide more reliability to critical facilities. These facilities will be able to provide existing services to manage emergencies but also expand their capabilities by providing additional shelter and assembly locations.

Energy Efficiency

The inclusion of new DERs would have the added benefit of supplying electricity from low carbon, renewable assets as well as modern, energy efficient technologies. Increasing the efficiency of energy generation will ultimately save money, reduce greenhouse gas emissions, and reduce dependency on legacy generating assets.

Leveraging Existing Energy Structures

A primary advantage of this project is that it utilizes existing structures, both contractual and physical to realize the microgrid arrangement. Department of Treasury manages the energy contracts for fifteen (15) buildings, include thermal energy with Veolia, and electrical energy with PSE&G, and 3rd party suppliers. Any microgrid arrangement would amend the existing contracts, simplifying a potentially burdensome contract negotiations. Regarding actual infrastructure assets, the Veolia district energy grid and plant are well-suited to provide added capacity for the microgrid. Electrical distribution in the microgrid can be realized through the PSE&G grid, existing feeder cables radiating from the Veolia plant to state buildings, and distributed generating assets located in the municipal buildings powered from the thermal grid. Having multiple potential distribution elements adds flexibility to the design and operation of the grid.

Revenue

Current and future revenue benefits from the microgrid will be considered as part of the evaluation. The team will optimize system design and operations to maximize participation in current and future energy markets, including ancillary services, passive (energy efficiency) and active demand response, capacity, and energy markets. We understand that current regulation and markets may change as a result of the adoption of microgrids, and the arrangement and design analyzed will be flexible to participate in these future markets.

Societal Benefit

Under guidelines set forth by the N.J.S.A. 48:3-60(a)(3), this project is consistent with the use of the Societal Benefit Charge. The social benefits charge supports investment in energy efficiency and "Class 1" renewable energy, which is consistent with the additional DER and energy efficiency initiatives included the microgrid feasibility study. Class 1 assets include the solar photovoltaics panels installed as part of the effort as well as the distributed generation (steam powered turbine generators) at the individual end user locations. Energy efficiency measures at the Veolia plant will include the installation of new, energy efficient CHP, and the utilization of the chilled water storage facility as well as the 6,000 ton, ultra-efficient chilled water plant expansion completed by Veolia in 2016.

7.2 – Cost-Benefit Analysis

In addition to the various benefits of the microgrid system, there will also be costs associated with these and the feasibility study will evaluate and assess these with regard to each stakeholder's position in the microgrid. The evaluation will consider the proposed system, the existing grid, the customers included in the microgrid, and the overall societal cost-benefits. A consistent and clear framework addressing costs, reliability, distribution and bulk power impacts, and environmental concerns will be used in the evaluation. The cost-benefit analysis will utilize the Rutgers DER Cost-Benefit Analysis Model as well as Veolia/SourceOne proprietary modeling tools.

8 PSE&G Communications

8.1 – PSE&G Technical Coordination

From the onset of this study, coordination with PSE&G will be critical to the evaluating the most effective microgrid configuration. The Team will work with the PSE&G to review the existing electrical distribution circuits and substations in and around the designated Microgrid Area in downtown Trenton. The review will determine feeder hosting capacity, existing network configuration, potential interconnection locations, and/or existing network infrastructure that can be replaced or repurposed.

Once potential interconnection points have been located, the team will work with PSE&G to identify the appropriate switching and paralleling infrastructure to be installed to maximize both normal blue sky operation as well as emergy, grid outage events. For blue sky operation, the team will evaluate options to supply electrical energy into the grid either through a net metering agreement, a procurement agreement to buy and sell electricity directly ("wheel") into the grid, or the use of distributed steam pressure turbine generators and PV panels installed at each end-user location powered from the thermal grid . For black sky emergency grid outage events, the team will identify locations to install switching infrastructure to isolate the microgrid from PSE&G's grid.

Double-ended switching equipment will be supplied which allows both the microgrid user and PSE&G to isolate or disconnect from the grid. The team will identify and document preliminary operating procedures during blue and black sky conditions by taking into account the following stakeholders:

a. PSE&G
b. Microgrid owner(s)
c. Facility operators
d. State and local emergency management staff

8.2 – EDC and Microgrid Communications Systems

It will be critical to have PSE&G involved in evaluating the feasibility preliminaryily and in particular provide guidance on required operational, control, automation and communication protocols.

The Team shall intends to propose a fully-customized microgrid controller that shall include the ability to balance load and generation, maintain grid stability (e.g. voltage, frequency, power factor, etc.), and manage the transition to and from an islanded operation. As part of the design process a detailed sequence of operations shall be developed describing all operating modes, the transition between these modes, and the interlocks required to maintain safety and reliability. The microgrid controller shall consist of a combination of utility-grade relays and PLC manufactured by PSE&G-preferred vendors (e.g. Schweitzer Laboratories, Beckwith, etc.). There are several commercially-marketed all-in-one microgrid controllers that bundle all necessary capabilities into a single hardware/software solution. While these solutions may be appropriate for completely off-grid or non-critical facilities, they do not meet the industry standard of "utility grade". As such, the proposed microgrid shall use a combination of hardware and software that is already recognized by PSE&G as approved for utility grade installation.

Controller functionality shall monitor, control and store operational data in accordance with the Project BOD. The Design Team shall work in harmony with PSE&G to determine the extent the project may benefit from various program elements planned by PSE&G, including a phased deployment of Advanced Metering Infrastructure (AMI), Smart Grid and increased Distribution Automation (DA).

The communications established between the various stakeholders—including the distributed energy supplier, microgrid partners, and the utility—will be paramount to the successful arrangement of the physical microgrid. The microgrid controller and associated SCADA systems will be defined by working with PSE&G and in accordance with final system ownership and operation. It is assumed that PSE&G will have some level of control over the generation resources during and after a black sky event, and procedures will have to be established to identify how and when the microgrid is both isolated an reintegrated into the grid.

8.3 – Regulatory and Legal Work

The team will work with PSE&G to review applicable tariffs, regulatory and legal areas that need to be addressed in accordance with the agreed upon ownership and operating agreements for the microgrid. The team acknowledges the feasibility study may reveal certain conditions for which existing regulatory or legal statutes fall into question. We are committed to working with PSE&G and the NJ BPU to implement a successful microgrid.

9 Timeframe and Project Approach

9.1 - Introduction

The primary goal of this stage is to secure funding to evalute the feasibility of a microgrid centered around the Trenton district energy sytem. Our experiences proves that it is important to executue the feasibility study in such a manner that, regardless of subsequent award funding, will allow the project to continue down a proven development path. This will ensure the best and highest use of existing and planned energy infrastructure and resources. Our team is nimble and effective in identifying alternative funding sources should The Project stakeholders decide to pursue other avenues during the development process which do not involve the microgrid component of the project. Simply put, we will ensure the development resources expended on this scope serve the ultimate project development goals for the State of NJ.

9.2 - Defining Microgrid Capacilities

The Team shall initiate the design by conducting an integrated design charrette which shall use NJ BPU's microgrid capabilities guidance for design constraints and criteria. The charrette shall include all design disciplines, representatives from the critical facilities in the microgrid, and key PSE&G and NJ BPU technical and regulatory staff. The purpose and goals of the charrette are as follows: 1) kickoff the design process; 2) provide a common platform for project planning among decision makers to avoid miscommunication; 3) provide an opportunity to reflect on for lessons learned from previous or similar projects and structure the planning process accordingly; and 4) save time and money by collaborating on ideas, issues, and concerns early in the design process to avoid later iterative redesign.

Key actions under this task include preliminary energy efficiency review of the facilities within the microgrid. This review will provide energy load and infrastructure data necessary to support the Project's preliminary basis of design (BOD). We expect the audit process to allow the Design Team the necessary time to fully understand each facility being served by the microgrid and to determine how best to integrate electrical, mechanical and control connections. Facility operation and energy load information shall reveal demand side opportunities for permanent (i.e. energy efficiency) and curtailable (i.e. demand response) opportunities. Demand side measures shall support the right-sizing of cost effective generation.

In collaboration with NJ BPU, the Design Team shall review existing metering infrastructure and if required, implement a temporary metering plan (by a 3rd party) so accurate electric and thermal load profiles can be established to support The Project. Project energy load profiles will be memorialized into a formal Project load letter which shall be distributed and approved by Project stakeholders. The approved load letter shall support generation sizing, dispatch and control methodology which shall inform subsequent design efforts.

9.3 - Defining Microgrid Configuration and Design

Using takeaways from the design charrette, the preliminary BOD shall be finalized and issued to PSE&G for review. The preliminary BOD, shall at a minimum include: site characterization, fuel specifications, water and other utilities, description of systems and sub-systems, as well as descriptions of how these components work jointly to achieve the microgrid's capabilities.

It will be critical to have PSE&G involved in formulating the preliminary BOD and in particular provide guidance on required operational, control, automation, and communication protocols. It will also be critical to determine how the project addresses islanded operation on utility distribution systems. This and other regulatory and legal issues need to be addressed early on so proper technical, business, and financial planning functions can be identified and resources can be assigned.

9.4 - List of Deliverables

The team suggests the following documents as deliverables under the feability scope of work:

- Summary Report
- Concept Drawings
- Opinion of Cost
- Commercial Block Diagrams
- Cost Benefit Results (per Rutgers University)

9.5 - Milestone Schedule

The team suggests the following milestone schedule for the fesiblity study

Notice to Proceed: June 2017

Preliminary Findings Review with PSE&G and NJ BPU: Aug 2017

Final Submittal: Sept 2017

10 Microgrid Modeling

The microgrid modeling for this feasibility study will be a joint effort between Veolia and Rutgers. Veolia will utilized Veolia/SourceOne propriety modeling tools to develop the 8760 load to be utilized with the Rutgers DER Model in the initial assessment. The Rutgers DER model provides analysis at the annual level and will be supplement with a more detailed hourly model from Veolia.

10.1 – Veolia/SourceOne Proprietary Modeling

Our proprietary model is based on years of real-world experience—from concept to commercial operation, not just paper power plants—conducting feasibility studies, developing financial pro-forma, and operating distributed generation (DG) resources. SourceOne is constantly improving our model to ensure that we deliver *sophisticated, integrated, and flexible* analysis grounded in real world applications for our customers.

SourceOne modeling utilizes multiple electrical and thermal interval data provided from the utility to develop the best DER resources to meet that load. Based on current utility rates and future cost projections, the model shows performance efficiencies, operating costs, and costs over the life of the project.

Veolia/SourceOne will also use Thermoflow as needed to model internal plant and thermal distribution flow if required by the microgrid design. Thermoflow is a thermal engineering software for the power and cogeneration industries.

10.2 – Rutgers Microgrid Cost-Benefit Model

The project team will utilize Rutgers microgrid modeling to provide a cost-benefit analysis for the various stakeholders related to the project. The Team will work closely with Rutgers, along with input and direction from PSE&G to determine operational criteria and constraints of the microgrid. This cost benefit modeling will be developed in conjunction with guidance and direction from the NJ BPU with respect to program requirements.

11 Funding Request

11.1 – Funding Requests

To complete the feasibility study he team anticipates that the funding required for this effort will be $197,000.

12 Cost Sharing

12.1 – Cost Sharing & In-Kind Funding

This cost for this efforts will be distributed among the project team to adequately resource the effort required for this study. The feasibility study will also rely on in-kind service and coordination effort from both the Department of Treasury, City of Trenton, Mercer County, and The Mercer County Improvement Authority as well as the BPU and the PSE&G. These services while not quantified in this proposal are critical to the overall success of the project.

13 Consultants and Project Team

The project team will utilize a highly experienced and qualified collection of energy industry leaders to evaluate the feasibility of the Microgrid. Included in the consultants list are SourceOne, a energy consultancy subsidiary of Veolia, and Concord Engineering, a leading energy engineering firm. Additionally, numerous Veolia resources will be utilized to lead the team and facilitate coordination with the Municipal Stakeholders. The qualifiications and resumes for SourceOne and Concord are listed below in this section..

13.1 – SourceOne Qualifications Summary

Company Overview and Corporate Structure

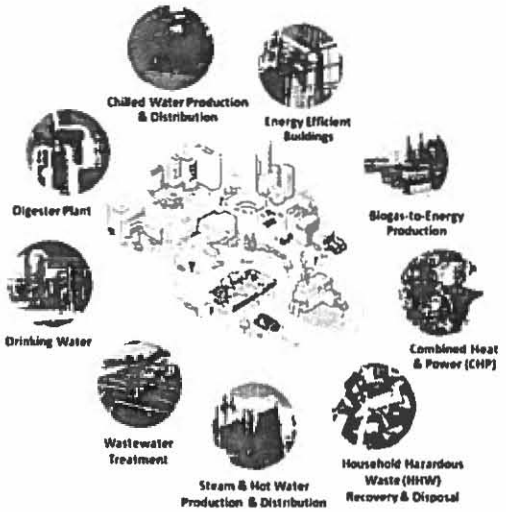
SourceOne, Inc. is a nationally recognized energy consulting firm, providing highly specialized energy management, energy master planning, and engineering/owner's representative services. Our company was established in 1997 with the expectation that large entities would require expert support and guidance as they navigate the emerging energy marketplace and face on-going issues in regard to maintaining sustainable, reliable, and economically beneficial energy infrastructures that support growth and keep operations running.

"Reliable, cost-effective and sustainable energy solutions are critical to the successful operation of any institution."

Today we operate (4) main offices based in New York City, Boston, Philadelphia and Los Angeles with a staff of over 100+ highly qualified and cross-trained energy professionals. We are proud to serve some of the most energy conscious public and private entities in the Northeast; some of which include the Durst Organization, Vornado Realty Trust, New York University, NYU-Langone Medical Center, Grand Central Terminal/Metro-North, Biogen IDEC, Novartis, and BioMed Realty Trust.

In 2007, SourceOne was acquired by Veolia Energy North America, a division of Veolia Environnment (NYSE: VE and Paris Euronext: VIE) – the world leader and benchmark provider of sustainable energy, environmental, and water/wastewater solutions with over 335,000 employees in 74 countries, creating global and integrated solutions for more than 150 years. It is one of the largest independent single-source providers of comprehensive energy related solutions in the world, providing energy and O&M services at over 96,000 facilities. Veolia's expertise and operational practices in critical environments contribute to the optimization of efficiencies and dramatic reduction in greenhouse gases for customers worldwide.

The integration of SourceOne with Veolia's Energy Solution's division has further enhanced Veolia's ability to help customers meet their financial, operational, environmental, and institutional goals through the efficient management of their energy needs. We are one of the few energy services companies self-sufficient in all energy technology, engineering, and design categories, possessing a thorough understanding of building HVAC systems and equipment, building envelope, control strategies, lighting, water conservation, co-generation, operations and maintenance, utility rate structures, and codes and regulations



SourceOne Business Information

Company Name	SourceOne, Inc.
Company Mission	The development and deployment of reliable and cost-effective energy solutions that support growth, and encourage sustainable and reliable operations.
Founded	1997, Incorporated in Delaware, USA (20 years in business)
Size of Firm	130+ Personnel; Approx. $20M annual revenue.
Federal ID#	04-3558868
Head Office Location	7 Penn Plaza 370 7th Ave, Suite 401 New York, NY 10001
Telephone Number	(212)-612-7600

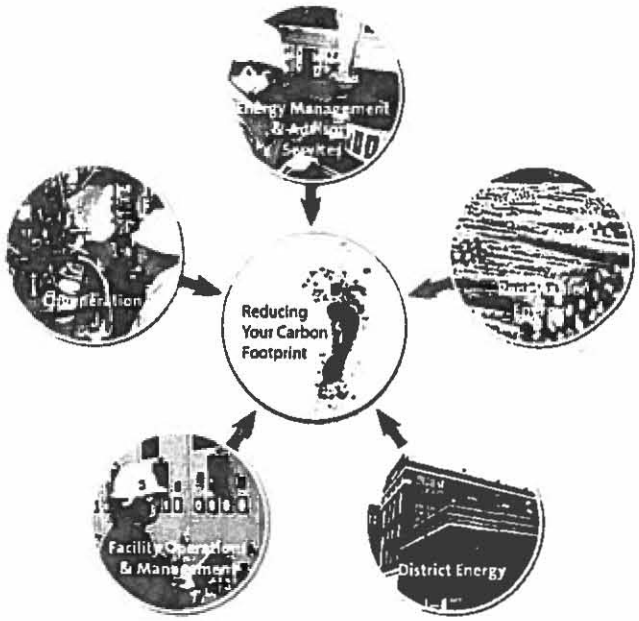
Website	http://www.sourceone-energy.com
Other Locations	Boston, Philadelphia, & Los Angeles
Award Winning Projects	- New York University – 13.4 MW Expansion – EPA EnergyStar CHP Award - Medical Area Total Energy Plant (MATEP) 46 MW CHP – EPA Energy Star CHP Awars - Durst – One Bryant Park – 4.5 MW CHP – One of world's greenest skyscrapers
Key Company Metrics	- S1 performed Site-Assessments for over 300 Million sqft. of building space in NA. - S1 managed the implementation of over $750 million of energy infrastructure capital improvements; some of the most high profile and visible CHP projects in NYC. - Veolia manages nearly 900 district and local heating or cooling systems worldwide; owns and operates the largest portfolio of district energy in U.S. - Veolia Provides energy and O&M services at over 96,000 facilities worldwide
Parent Company	Veolia Environnement: The world leader and benchmark provider in environmental, energy, and water/waste services. S1 was acquired in 2007 by Veolia Energy.

DER and Microgrid Overview

Due to an evolving regulatory environment and increasingly demanding reliability needs for critical infrastructure, traditional utililty arrangements are rapidly changing. The creation of microgrids adds an additional layer of reliability, allowing for a network of buildings and campuses to benefit from DER and stay connected to the existing grid. DER technologies include solar and Combined Heat and Power, or CHP (often synonymous with cogeneration) plants, which simultaneous generate electricity and thermal energy by capturing the wasted heat produced during the production of electricity. CHP plants recycle that captured heat as useful thermal energy converting up to 85 percent of fuel into useful energy. DER technology is more efficient and consumes substantially less fossil fuel than traditional technologies, decreasing greenhouse gas emissions and waste. By delivering a localized, uninterrupted energy supply, DER and microgrid reduces fuel requirements, saves money, and reduces exposure to market fluctuations and severe weather.

Holistic DER and Microgrid Expertise

Analysis and development of Microgrid and DER technology is one of SourceOne's core business focuses. It is an area where we excel. We approach each project from the owner's perspective. Our holistic understanding of distributed energy technology allows us to offer advice based upon technical expertise and a thorough understanding of project economics. Our engagement ensures economic viability and ultimately successful operation.



SourceOne Project Development

SourceOne has served as an independent owner's representative, leading clients through the complete CHP plant development process. This process starts with the feasibility study, goes through the schematic design development, construction, and the acquisition of utility incentives, and ends with the testing and commissioning of the new plant.

SourceOne Analysis

A *feasibility study* for the implementation of a Microgrid and CHP technology establishes the *technical, economic* and *regulatory* requirements for the potential development. It is an essential component in a successful Microgrid deployment. SourceOne has conducted hundreds of comprehensive CHP feasibility

studies for a wide variety of clients. These include hospitals, universities, industrial plants, commercial buildings and hotels.

Technical - From a technical standpoint, a fully developed understanding of all facilities, customers, and campus energy load profile is necessary. This includes consumption history, operations, equipment and utility interconnection.

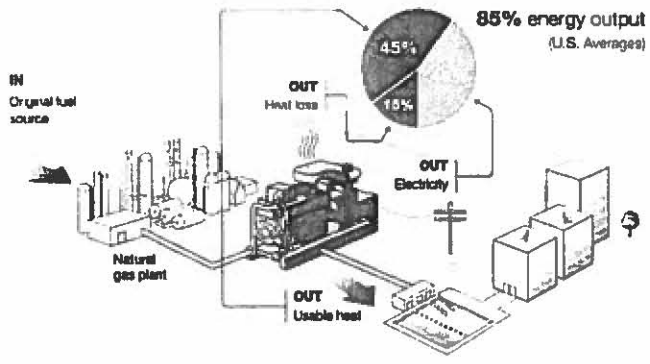
Economic - Establishing the economics of a potential project means understanding the overall cost of a Microgrid development. This includes calculating a variety of options, as well as potential hidden costs. It also means understanding what economic incentives are available on the federal, state and local levels, as well as those available with the local utility provider.

Part of SourceOne's economic analysis involves running our financial proforma. Our proforma was developed over the last decade of successful CHP and Microgrid projects. It calculates annual cost savings, as well as return on investment. One of the benefits of our model is our sophisticated sensitivity analysis. It allows us to analyze a variety of different scenarios based upon changing circumstances or goals and to weigh them against each other. Examples are comparative analysis of sustainability, reliability and budgetary concerns. Optimizing these often-conflicting factors against the project's goals is integral.

Regulatory - Establishing the project's regulatory specifics means understanding all federal, state and local requirements. Understanding these requirements is necessary to making sure that a project is viable and helps avoid potential cost-killing fines and delays.

SourceOne CHP Plant Design and Optimization
Successful design of a CHP system requires a combination of engineering, construction, and load analysis skills. The design of a CHP plant must account for every aspect of the facilities the plant will service. The plant's design needs to optimize performance. SourceOne equipment recommendations are based on our expertise. Our staff analyzes and projects anticipated loads. We recommend equipment to meet the requirements and outline the differences between options. We make sure our recommendations meet the project's overall goals, both technical and economical. Additionally, we outline potential tradeoffs between electric generation and thermal heat recovery. Optimizing these parameters requires a thorough understanding of the owner's objectives and the facility energy load profile(s).

Proper sizing and selection of equipment, namely prime movers, heat recovery equipment, and plant auxiliaries, are all essential to successful CHP implementation. The prime mover size and type needs to be modeled against the facility load profiles. Correctly sizing the prime mover is a key component of successful design.



SourceOne Commissioning
SourceOne has over ten years of experience commissioning world class facilities, including CHP and central utility plants. One of the keys to our success as a commissioning agent is our early engagement. Engaging early in projects ensures that any potential errors are resolved before they result in costly de

13.2 – Resumes

Joseph Martorano, P.E.

General Manager

28 Years of Experience

BS, Mechanical Engineering, Penn St. University, University Park, PA

MS, Organization Dynamics (in progress)

PE, Registered Professional Engineer,

Summary of Experience
Mr. Martorano is an energy industry professional with vast experience in executive and business development capacities in energy procurement, sustainable panning and design, and project development. As General Regional Manager for Veolia's New Jersey operations, he is responsible for $45 million operation budget, capex, manpower, and customer issues. Mr. Martorano is also responsible for sales, customer services, account payable and receivable and overall operations of facility.

Project Experience
Executive Vice President – Greener By Design
Prior to Veolia, Mr. Martorano spent three years as the Executive Vice President of a sustainable energy and environmental consulting firm, serving the needs of Fortune 500 clients.

President - eco.nomiks
Additionally Mr. Martorano served in business development and lead team roles planning and structuring sustainability plans for high profile entities.

COO – SOSH Architects
Mr. Martorano oversaw the daily operations of all aspects of an archictecture firms offices and oversaw $40 million dollar book of business.

CEO – Enerco
Assisted commercial and government clients in procuring, utilizing, or producing energy. Enerco's portfolio of clients includes over $400 Million in energy purchases and 500 Megawatts of load.

Vice President Supply Management – Exelon
As part of the executive team at Exelon, Mr. Martorano's responsibilities included the selection of staff, development of organizational structure and business plan, as well as strategic planning of the group's mission.

35 Years of Experience

BME, Mechanical Engineering, Villanova University, Villanova PA

MBA, Masters Business Administration, Northeastern University, Boston, MA

PE, Registered Professional Engineer, Commonwealth of MA

CEM, Certified Energy Manager, Association of Energy Engineers

Matthew G. Fallon, P.E., C.E.M.

Director, Construction

Summary of Experience

Mr. Fallon is an energy industry professional with comprehensive experience in the design development, engineering, preconstruction, construction, start-up, commissioning and turnover of energy facilities designed to serve district energy systems. As Director for Veolia, SourceOne's parent company, he has a record of on time on budget project delivery using a host of project delivery methods. In this capacity, Mr. Fallon manages distinct project delivery teams from the project inception, including permitting and design development through construction, project startup, commissioning and turnover.

Project Experience

Independent Contractor, Prior to Veolia, Mr. Fallon spent eight years as an independent contractor developing and implementing energy as well as other projects for firms located in the northeast, including Source-One. As a contract consultant, Mr. Fallon performed and implemented construction projects for such institutional clients as Harvard University, Holy Cross, Simmons College and the Massachusetts Institute of Technology. Mr. fallon oversaw construction and facility assessment projects with budgets ranging from $5M to $200M. Mr. Fallon's duties ranged from preconstruction services designed to assist the client in determining the best path forward to construction strategy, scope definition and value engineering, all designed to provide the best client value. Mr. Fallon provided construction services and management of oversight from inception to turnover including project scheduling, budget management, dispute management and risk management.

Mr. Fallon possesses a Masters in Business Administration from Northeastern University, is a Registered Professional Engineer (PE-Mechanical) in the Commonwealth of Massachusetts and is a Certified Energy Manager (CEM) per the Association of Energy Engineers

Joseph A. Mulvihill

Senior Vice President of Project Development

27 Years of Experience

BS, Engineering, Columbia University, New York, NY, 1979

MS, Engineering, Manhattan College, Riverdale, NY, 1983

Summary of Experience

As Senior Vice President of Project Development for SourceOne in New York, Mr. Mulvihill is responsible for all aspects of facility analysis, project planning, engineering oversight and construction consulting for the firm's clients. Mr. Mulvihill is a graduate engineer with over 25 years experience in facility, project, and construction management. He has developed and managed over $2 billion in diverse projects: new commercial office buildings, base building renovations, tenant improvements, data centers, electrical substations, generator plants, and healthcare facilities. Prior to joining SourceOne, Mr. Mulvihill held a similar position with an international construction manager; was Director of Construction for a Real Estate Investment Trust (REIT), and the Director of Facilities at a major NYC hospital.

Project Experience

Hudson Yards, New York, NY - Acting as Owner's Representative for the design, construction, and commissioning of the central energy plant/microgrid for the largest commercial development in NYC since Rockefeller Center.

Vineland, NJ – Acted as Owner's Representative for the design and construction of two (2) 64 MW Gas Turbine Peaker Plants.

New York Power Authority (NYPA) – Acted as Implementation Contractor for $100M energy infrastructure projects.

New York University, New York, NY - Acted as Owner's Representative of NYU's new combined heat and power plant, which connected 30 buildings thermally and 20 buildings electrically.

Cooper Union, Foundation Building, New York, NY -Owner's Representative on this major infrastructure project at the "Foundation Building." The project included the replacement of the chiller plant and the air handling units. It also included the construction of a new boiler plant and cogeneration plant.

Hospital for Special Surgery, NYC - Hospital Modernization Project -Oversaw ongoing upgrade of existing hospital facilities; construction of laboratories, offices, MRI suite, ambulatory surgery center, and pediatric solarium; and major HVAC replacement.

Harborside Plaza 10, Jersey City, NJ -Oversaw design and construction of a 3 MW standby generation plant in a commercial office tower.

712 Fifth Avenue, Office Building, NYC -Constructed approximately 200,000 SF of tenant improvements.

EXODUS Data Center, Waltham, MA -Construct 60,000 SF data center which included all new raised floor, HVAC, power distribution, emergency power, UPS, security and fire protection. Also constructed 20,000 SF enclosed generator and tank farm.

EXODUS Data Center, Weehawken, NJ - Constructed 180,000 SF data center which required extensive collaboration with local planning board on zoning issues.

25 Years of Experience

MBA, Business Administration, University of Massachusetts, 1993

BSME, Marine Engineering and Marine Transportation, U.S. Merchant Marine Academy, 1986

Certified Internal Auditor

Certified Project Management Professional

Jack Griffin

Vice President and General Manager, Boston

Summary of Experience

Mr. Griffin is a highly experienced engineer and an expert in all aspects of utility systems development and application. He serves as the Vice President and General Manager of Veolia's consulting arm. He has played a pivotal role in growing the SourceOne business. Mr. Griffin has over 15 years of broad-based experience in both electric and gas utilities, particularly in natural gas system operations, utility operations optimization and improvement, electric and gas revenue metering, metering data management, utility rate design and analysis, energy master planning, and energy engineering. His focus on energy strategic plans, energy efficiency programs, and energy systems development strengthens his ability to make strategic business decisions, while keeping the impact and benefits on operations in mind.

AMR/AMI Specific Project Experience

Focus on the Accounts that Drive Revenue – Time of Use Metering becomes Real-Time

NSTAR Electric & Gas is a 1.3 million customer utility where 3,000 accounts represent more than 60% of the utility's revenue. As the Meter Data Management Department Head, Mr. Griffin was responsible for the management of the Meter-To-Cash Cycle of 1.3 Million meters. Key accomplishments during Mr. Griffin's tenure include increasing utility revenue, decreasing staff head-count, and improving financial control. The deployment of Time of Use AMR enabled NSTAR to see in real-time the information of about customer loads and consumption. Drawing from this increased availability and in-depth review of approved rate tariffs, Mr. Griffin was able to demonstrate that NSTAR could implement a change in how demand was calculated that resulted in an increase of 1.2% of Total Demand Revenue without adding a single new customer and concurrently reducing labor costs.

Changing the Map to Achieve Goals – NSTAR revamps Meter Reading and Billing Schedules.

The ability to read demand meters via Mobile AMR provided NSTAR the opportunity to eliminate the costly manual method but also a significant challenge posed by the technology at hand and the geographic constraints of the Company's service territory. NSTAR was a traditional 21-cycle billing utility. Demand meters, however, need to reset on one day each month to capture the previous months consumption and peak demand. Mr. Griffin led a team of analysts, customer care and field personnel in a complete re-cycling of 1.3 million customer accounts across 76 cities and towns.

10 Years of Experience

B.S. Mechanical and Aerospace Engineering, Cornell University, Ithaca, NY, 2005

Key Expertise

Combined Heat & Power (CHP)
Master Utility Planning
Project Management
Mechanical Power System Design
Boiler and Heating Systems
Procurement Management
Chiller Plants
Energy Conservation Measures (ECMs)

Andrew M. Bennett, P.E.

Sr. Project Engineer

Summary of Experience

Mr. Bennett has over ten years of engineering and project management experience in the energy and utility business, demonstrating strong technical ability, effective management skills, and building relationships with clients. His strengths include mechanical power system design, CHP, chiller plants, master utility planning, steam and hot water systems, energy conservation measures, energy retrofit projects, utility rate analysis, and system performance modelling. Prior to joining SourceOne, Mr. Bennett worked as a Mechanical Engineer for two different firms leading multi-disciplinary engineering projects for utility and energy industry clients, ranging from design concepts and estimates to fully developed engineered construction packages, construction administration and close out.

Project Experience

The Related Companies – Time Warner Center - Master Utility Plan – Audited the existing 7,000 Ton and 3,000 Ton chiller plants, cooling towers, utility steam heating system, and 8 MW back-up generator assemblies to develop ECMs and system optimization initiatives. Modeled projected energy savings and provided capital estimates to generate simple payback estimates. Proposed integration of two existing chiller plants to take advantage of existing VFDs.

Google/Taconic – 111 8th Ave. Organics to Energy – Serving as Owner's Representative, SourceOne provides feasibility studies, schedule and budget management, procurement, and design oversight/review for a 5,000lbs/day anaerobic digestion facility to process kitchen and food waste. The biogas generated from digestion was used to fuel a 150 kW, CHP engine. The heat recovered from the CHP was used for the domestic hot water as well as space heating.

CHP Plant – Calvary Hospital – Bronx, NY - Led feasibility study and schematic design for 500 kW cogeneration installation at Calvary Hospital in the Bronx, NY. Created a construction budget, conceptual design, and energy model to determine payback of the proposed installation. Solicited 3rd party financing for capital costs and developed the design for NYSERDA PON 2568 funding eligibility.

Grant Review – NYSERDA – New York, NY - Performed technical review for NYSERDA applications, reviewed energy projects for program conformance, technical quality, and doing measurement & verification (M&V) of actual savings.

16 Years of Experience

BS, Mechanical Engineering (Minor in Power Systems and Technological Entrepreneurship), Rensselaer Polytechnic Institute, 1999

Certified Energy Manager

Matthew Cinadr, CEM

Project Manager

Summary of Experience

Mr. Cinadr is an experienced engineering professional in assessing and analyzing all forms of energy utilization and resources, including supply and demand energy industry issues and energy policy and regulations for the electric industry. He has hands on design and field experience, from developing design concepts, performing financial analysis to commissioning of various energy plants, systems and equipment. Mr. Cinadr has firsthand experience with the analysis, development, application and operations of various energy systems including both conventional, renewable and hybrid power technologies. He has been involved with the design, assessment and performance modifications of central chilled water and boiler plants, combined heating power and cooling systems, utility scale combined cycle plants, and energy efficiency measures in commercial and industrial applications.

Project Experience

As a Senior Project Engineer and Energy Consultant, Mr. Cinadr has presented numerous energy efficiency and generation projects to a variety of technical and financial audiences. He has also been involved in developing and implementing Energy Master Plans to help various clients assess, monitor and control energy costs. As a Design Engineer he has prepared Combined Heat and Power (CHP) drawing packages, specified equipment, created scopes of work, evaluated bid packages, prepared existing plant CHP system design modifications, and tracked heat rate improvements.

In addition, Mr. Cinadr has assisted numerous clients in understanding the energy market and navigating specific state and federal regulations pertaining to energy project permitting, project incentives, and financing support. His deep understanding of state utility incentive program design and operation has helped several clients obtain and leverage maximum utility program support and incentives to meet energy management goals.

Mr. Cinadr has led investment grade assessments for data center CHP applications. He has also served as the lead mechanical commissioning engineer at a number of data center sites, in particular the Equinix MI3 and CH3-PHC2A IBX's. In addition he has evaluated and presented several energy system applications for clients in the healthcare, manufacturing, software, food processing and educational industries.

Prior to joining SourceOne Mr. Cinadr was responsible for a team of Energy Engineers charged with identifying, analyzing and implementing energy efficiency projects in support of statewide performance contracts. Mr. Cinadr successfully

graduated from General Electric Field Engineering program where he travelled the globe installing, commissioning and performance tuning combined cycle gas turbine power plants. In prior roles, Mr. Cinadr was a Lead Mechanical Engineer for Distributed Energy Systems (EPC Firm) focused on designing, installing and commissioning efficient and hybrid power systems for mission critical applications and environments.

13.3 – Case Studies

New York University, New York City, NY
Cogeneration Plant Expansion
Owner's Representative

Project Metrics

13.4 MW peak cogen plant size

$5 million annual energy cost reduction

43,400 estimated tons per year CO_2 emissions reduction

$125 million project capital

120,000 lbs/hr peak thermal

10,000 tons peak cooling

22 buildings with cogenerated electric

37 buildings with thermal service

Awards

2013 U.S. Environmental Protection Agency (EPA), Energy Star Combined Heat and Power (CHP) Award

Business Challenge

In order to meet the increasing demands for electricity, New York University (NYU) decided to expand its existing cogeneration plant on the Greenwich Village campus from 7000 kW to 13,400kW. The expansion would allow for the University to generate its own electricity to accommodate additional buildings on campus. The expansion also supports the University's Climate Action Plan to reduce the University's GHG emissions and enhance its overall sustainability.

SourceOne Solution

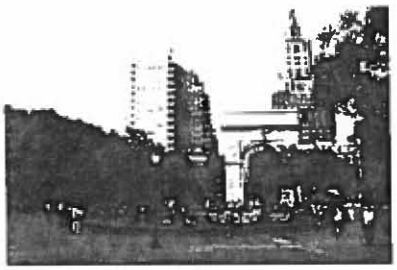
SourceOne served as the Owners Representative for the re-development of NYU's existing 7000 kW cogeneration plant to support the additional electrical, steam and hot water needs for the campus. The NYU site consists of over 50 buildings. As Owner's Representative, SourceOne provided technical review, financial evaluation, contract development, assembly of development team, and utility liaison. SourceOne's technical and economic evaluation of the project concept plan entailed review and analysis of equipment selection, space allocation, preparation of a financial pro-formas, and development of facility load profiles. In addition, SourceOne assisted NYU in utility budgeting for the campus and commodity procurement, including electricity, natural gas, and oil.

With two combustion turbines, two heat recovery steam generators, and a steam turbine, the expanded CHP system generates up to 90,000 pounds of steam per hour and 13.4 MW of electricity. The system serves the electrical needs for 22 campus buildings and steam and hot water for 37 campus buildings.

Results

The expanded cogeneration plant was built on time and on budget to support NYU's increased electrical demand, resulting in a $5 Million annual reduction of the University's energy costs.

By producing its own energy, the cogeneration plant generates an operating efficiency of nearly 75 percent and prevents an estimated 43,400 tons per year of CO2 emissions. By reducing demands on existing transmission and distribution infrastructure, the CHP system also helps support Electric Grid stability. Finally, NYU is also able to sell excess electricity to Con Edison when campus demand is low, resulting in additional savings. The new CHP system provides localized, reliable, electrical capacity allowing NYU to generate its own electricity, remain independent from the



Electric Grid, reduce emissions, and save money.

Following the successful completion of the expansion in 2010, this project represented the largest renewable energy purchase of any college or university, as determined by the United States Environmental Protection Agency. By engaging SourceOne to act as Owner's Representative, NYU was able to rely on true energy and engineering experts to guide them through planning and implementation.

NYU's decision to generate its own power proved to be an extremely important advantage following 2012's Hurricane Sandy. In the fall of 2012, Hurricane Sandy, left millions without heat and power and caused $50 billion in damages. While the majority of Manhattan was without power, most of NYU's Greenwich Village campus had electricity, heat, and hot water. NYU was able to generate electricity and heat on its own from their cogeneration plant, highlighting district energy and CHP as a sustainable energy model.

In 2013, the U.S. Environmental Protection Agency (EPA) awarded NYU with the Energy Star Combined Heat and Power (CHP) Award. As one of five award recipients, the EPA selected NYU for its efforts in reducing emissions and increasing energy reliability and efficiency for its cogeneration plant. "Our Energy Star CHP award winners are better serving their students and patients while safeguarding the environment," said Gina McCarthy, Assistant Administrator for EPA's Office of Air and Radiation. "These institutions are protecting their critical operations from power outages and our climate from harmful carbon pollution with more reliable and more efficient CHP systems."

RELATED

Hudson Yards, New York, NY

Combined Heat and Power Design, Construction Administration, Startup, and Commissioning

Project Metrics

13MW CHP plant

5 buildings supplied thermal energy, 3 supplied electrical energy

7 million sf of mixed-use space

Island mode capable

5,260 tons cooling capacity

30 MMbTU/hr hot water

50%, 100% Design Development

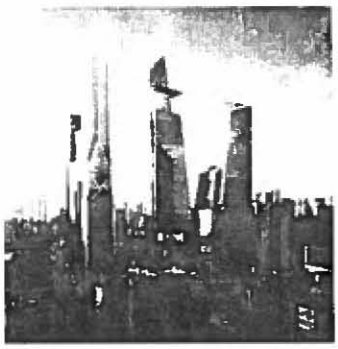
100% Construction Document Package

SourceOne Project Lead

Mr. Bruce Schadler, PE

Reference

Mr. Nicholas Lanzillotto
VP MEP Development
212.492.5244



Business Challenge

SourceOne has provided engineering services to Related Management in its efforts to establish an effective long term strategy to secure a cost effective and sustainable energy source for the Hudson Yards Eastern Rail Yard Development in Manhattan – the largest real estate development in New York City. Related requested SourceOne's services to develop their combined heat and power (CHP) plant in the most economical manner while maintaining a high level of service to the Hudson Yards development team.

SourceOne Solution & Results

As the energy consultant, SourceOne developed the design for a 13MW reciprocating gas engine CHP plant will be installed on the 10th floor of the Retail Podium and provide electricity to three buildings and thermal energy (hot and chilled water) to five buildings. With (4) 3,300 kW reciprocating natural gas engines, (4) 650-ton absorption heater-chillers and (2) 1,250-ton electric centrifugal chillers, the plant will distribute electricity, hot and chilled water to 7 million square feet of mixed-use space. The plant will be capable of operating both in parallel with the local utility or in island mode as a viable independent energy source in the event of a grid outage.

Through SourceOne's CHP expertise, the plant was designed to maximize the sustainability of energy services, reduce overall utility expenses and allow increased budget control and predictability.

As the project manager and owner's engineer, SourceOne is supporting this project from initial conception through startup and commissioning. SourceOne's responsibilities include:

- Project Management and Construction Oversight of Central Utility Plant
- Economic Cash-Flow Projections and Sustainability Evaluation
- Project Schedule Development and Management
- Utility and Regulatory Coordination
- Major Equipment and Trade Contractor Procurement Support
- Central Utility Plant Startup and Commissioning

The result will be a sustainable, long-term energy supply solution for the Hudson Yards, the largest real estate development in New York City.

City of Ithaca, New York

New York Prize: Microgrid Feasibility Study

Business Challenge

The New York State Energy Research and Development Authority (NYSERDA) awarded the City of Ithaca funding for the first of the three-staged NY Prize microgrid program. The NY Prize is a first-in-the nation $40 million competition to help communities create microgrids. Stage 1 of the program offers support for feasibility studies. In 2015, the City retained SourceOne as its lead contractor for the project. The proposed microgrid will be located at the Ithaca Area Waste Water Treatment Facility (IAWWTF).

Project Metrics

1.5 MW Peak Load

9 Facilities Services

Microgrid Incorporating anaerobic digestion, solar PV, and Combined Heat & Power

SourceOne Solution

SourceOne was selected to conduct a microgrid feasibility study in the City of Ithaca's North Energy District. The proposed microgrid will serve the electrical and thermal load of nine (9) facilities including four (4) critical facilities with a coincident peak load of 1,453 kW. Several deployment configurations were analyzed to determine the optimal scenario for the City. SourceOne evaluated existing New York State Electric and Gas (NYSEG) regulations, interconnect requirements, and tariff structures, as well as energy load profile applicability, critical operational needs, existing electrical distribution infrastructure, electric distribution system constraints, geographical constraints for district heating, and overall compliance with the goals and objectives of the New York Prize.

SourceOne performed detailed analysis on five options including both electric-only generation and combined heat and power (CHP) deployments. We furnished a report and presented on our findings.

Results

The proposed project will isolate certain sections of the North Energy District to supply 100% of the power requirements to all critical and non-critical facilities in the microgrid. The microgrid will combine traditional emergency generator power systems with several unique low-carbon generating assets including microturbines and reciprocating engines powered by anaerobic digester gas (ADG) in a CHP arrangement. Solar photovoltaic (PV) arrays will be used during normal operation but would not be used during an isolated microgrid event as they do not provide firm power. Recovered thermal energy from the CHP plant will be delivered to end users through a district energy system offsetting NYSEG natural gas from the Marcellus shale.

The proposed system is scalable and can be developed in phases to serve existing loads as well as new loads which are developing in and around the Cayuga Lake waterfront. The project also creates an opportunity for a "community carbon cycle" whereby food-scraps from locally grown produce could be collected to provide raw material for production of additional anaerobic digester gas fuel – reducing landfill waste and handling costs and impacts.

Vineland Municipal Electric Utility, Vineland, NJ

Simple Cycle Power Plant (SCPP) Design, Engineering and Permitting

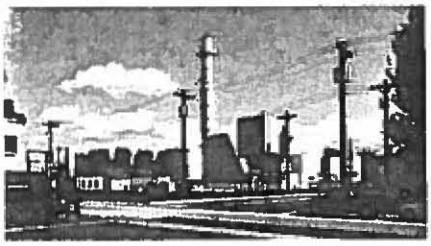
Project Metrics

64 MW peaking generating plant

$60 million project capital

"SourceOne was an excellent partner in helping move this project forward, which was a significant undertaking. Once construction is complete, the new generation capacity of the power plant will be critical in meeting the growing demand for electricity for the citizens of Vineland."

-Joseph Isabella, Director of Vineland Municipal Electric Utility.



Business Challenge

Because the Vineland Municipal Electric Utility (VMEU) could not cost effectively provide the needed capacity, Vineland residents have had to pay for energy provided by the ISO (independent system operator), as well as retail market price for electricity to receive power to their homes.

To better serve their residents, VMEU sought to invest in significant energy infrastructure and develop a 64 MW peaking generating plant to help provide efficient and cost-effective power to residents.

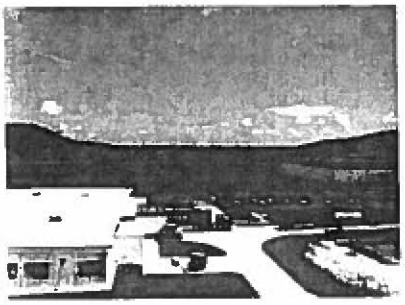
SourceOne Solution

SourceOne has been involved in several aspects of the Vineland project. SourceOne professionals began by providing consulting and guidance around plant design and drawings, and later overseeing engineering and successful permitting of the Simple Cycle Power Plant (SCPP). After the design phase was complete, SourceOne provide technical support during the plant's construction.

Results

By putting in the peaker Vineland residents no longer have to pay the system operator for the capacity charge. In addition, when electricity prices are high in the wholesale market, Vineland's new plant will be able to generate energy at a lower cost, saving the residents money.

Additionally, Southern New Jersey has implemented a lot of Solar PV capacity over that past few years; Vineland's new plant will act as a hedge, or buffer for those times when the sun-derived energy dissipates due to climate changes. The new plant has the ability to be online within just a few minutes, adding robustness to the transmission network.



Medical Device Company, Puerto Rico

Manufacturing Facility Alternative Energy Assessment

Project Metrics

40% reduction in electric costs

10 unique onsite power options

renewable, conventional and hybrid systems

increased system reliability and product output

Business Challenge

With offices and manufacturing plants all around the globe, a leading medical device company sought reliable and cost-effective electric power options for their manufacturing facility in Puerto Rico. When faced with the risky combination of unreliable, high cost electricity along with increased manufacturing demands, this company engaged the assistance of SourceOne to conduct an Alternative Energy Assessment.

SourceOne Solution

The goals for the study included reducing electric operating costs while increasing system reliability through an assessment of alternative sources of electricity. SourceOne worked with the customer to identify key energy needs and to quantify regulatory, reliability, and operational impacts in addition to environmental concerns for potential on-site power solutions. SourceOne conducted an in-depth site visit, coupled with operational interviews and data collection to develop a total energy requirements model. The team then analyzed the energy and financial performance of various technologies, including gas turbines, reciprocating engines, fuel cells, solar power, and wind turbines. Additional constraints related to fuel availability prompted a complex assessment of local and regional market conditions and fuel price sensitivity forecasts. While partnering with key client stakeholders, SourceOne established a multiple criteria analysis, resulting in a ranking system incorporating capital cost, generation capacity, financial performance and system reliability. Based on this analysis, SourceOne proposed the integration of Reciprocating Engines with Hot Water Absorption Chillers. A full solution matrix was presented, incorporating cash flow analysis for each solution, project descriptions, electrical interconnect drawings, heat and mass balances, general arrangements, representative project schedules and cost estimates.

Results

SourceOne proposed a customized strategy to increase operational reliability while decreasing operational costs. This strategy meets the customer's energy requirements, utilizes existing sources, and incorporates power generation from new alternative energy systems. By taking a proactive approach to managing energy related costs and infrastructure, this customer will achieve an estimated annual savings of 40% in energy costs, while significantly increasing operational efficiencies and reducing carbon emissions.

Dartmouth College, Hanover, NH

Energy Master Planning, Onsite Generation & Distributed Energy Assessment, Regional Fuels Evaluation, Front End Engineering Development

Project Metrics

89,000 MWh Annual Electric

5.3 Million Gallons Fuel Oil

Business Challenge

Dartmouth College needed to evaluate heat and electricity generation for its campus. As part of the process the College and Dartmouth Hitchcock Medical Center requested an evaluation of a new energy facility to serve the total energy requirements of both facilities. The college and hospital had individually undertaken numerous studies, and they needed a utility expert to evaluate all prior work. They required all options on the table to support long term planning efforts. The evaluation offered solutions for the college and hospital as a joint entity as well as specific solutions for the college.

SourceOne Solution

Starting with detailed analysis of all energy profiles, existing utility infrastructure and assets, SourceOne modeled dozens of energy plants. In conjunction with the modeling SourceOne performed a detailed local and regional fuels assessment which included short, mid and long term environmental and economic evaluation of the following fuels: Natural gas (pipeline, compressed and liquid), renewables, biogas/landfill gas, fuel oils, propane, coal and biomass. Combining the technology and plant configuration with the fuel assessment our team of energy experts determined optimum plant configurations. Working alongside Dartmouth's Energy Team, SourceOne developed a multi-decision criteria analysis and framework to evaluate, rank and score each option with respect to capital requirements, net present value, reliability, environmental impact, land use impact, community impact and operations and maintenance. In addition SourceOne provided a review of utility regulations pertaining to various ownership and operating structures and a regulatory and legal review for distributing fuel, electric and thermal energy.

Results

SourceOne delivered a robust analysis including front end engineering development for multiple energy plant deployments, a comprehensive fuels assessment, legal and regulatory review and strategy to mitigate the risk for energy price volatility.

The Durst Organization, New York, New York

Cogeneration Plant Development for One Bryant Park

Project Metrics

2,000,000 square feet

5MW cogen plant size

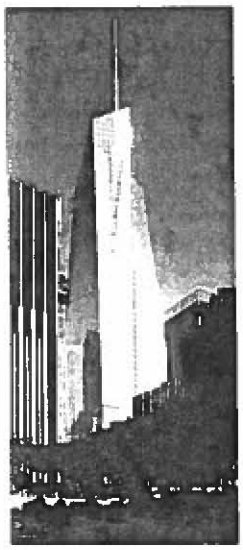
15 MW peak electric

12,000 lbs/hr peak thermal

$1 billion project capital

Business Challenge

In developing the One Bryant Park Building, the Durst Organization made a commitment to achieving the lowest environmental footprint. The Building, located one block off of Times Square on Sixth Avenue, is a 2 million square foot, 52 story structure, predominately leased by Bank of America. The Durst Organization is one of New York City's largest and most successful developer/owners of commercial office buildings. They have been recognized nationally for the creativity of their building designs and have been the recipient of numerous energy efficiency/energy innovation awards and accolades from Federal and State Energy entities, including the EPA/DOE Energy Star and multiple New York State Energy Research and Development Authority (NYSERDA) awards. SourceOne was retained as the strategic energy and power advisor to the Durst Organization for this unique project.



SourceOne Solution

As part the $1 billion One Bryant Park Development, SourceOne was engaged to provide comprehensive technical, economic and environmental support to The Durst Organization development team. SourceOne's design analysis included equipment sizing/selection, reliability standards, electrical interconnection equipment, and steam supply. SourceOne also evaluated alternative energy sources for the combined electric and steam supply to the building.

SourceOne managed all aspects of the negotiation with Con Edison for securing capacity, reliability and steam for the building. In addition, SourceOne also developed terms for negotiation with the building's primary tenants, including Bank of America.

Results

The final design for One Bryant Park incorporates a gas turbine based Combined Heat and Power (CHP) facility located on the 7th floor podium. The complete plant is designed around the Solar Mercury 50 gas turbine that exhausts into a fired heat recovery steam generator (HRSG). The HRSG is sized to serve the complete thermal needs of the building. SourceOne managed all aspects of the negotiation with Con Edison, the Local Distribution Company, for securing capacity, reliability and steam for the building. SourceOne was also engaged in the development of terms negotiated with primary tenants of the building.

THECOOPERUNION

Cooper Union, New York City, NY

Comprehensive Infrastructure Re-development, Retro-commissioning and Cogeneration Plant Upgrades

Business Challenge

As part of Cooper Union's philosophy of providing admission solely based on merit and providing each student with a full-tuition scholarship, the school's Board of Trustees wanted to ensure optimal energy use across their facilities. SourceOne was engaged on many initiatives to provide services regarding the most effective use of the schools' energy systems to promote cost savings.

Project Metrics

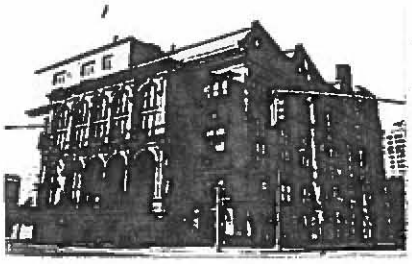
170,000 SF building square footage

$550,000 estimated annual savings

$14.1 M total project costs

SourceOne Solution

SourceOne provided retro-commissioning services to evaluate existing systems and equipment, testing and balancing of the systems to enhance operability, and recommendations for system improvements and optimization. SourceOne determined that the existing infrastructure, installed in the early 70's, was antiquated and extremely energy inefficient. SourceOne developed an infrastructure master plan as part of the retro-commissioning exercise to develop a replacement and upgrade strategy for the institution.



Results

The Cooper Union completed a full infrastructure renovation of their central plant and two floors of air distribution. The central plant was converted from Con Ed steam for heating to an onsite high efficiency condensing type boiler. The existing single stage absorption chillers were replaced with High Efficiency Centrifugal chillers. The project also incorporated a 150 kW packaged cogeneration plant with heat recovery. Two floors of old style dual duct Air Handlers were replaced with Variable Air Volume (VAV) Handlers. A comprehensive Direct Digital Control based system was installed to control and monitor all systems and equipment. Based on the work completed, the Cooper Union is estimated to achieve $500,000 in estimated energy savings.

New York University – Langone Medical Center

CHP Microgrid Design, Construction Administration, Commissioning, Operation and Maintenance

Project Metrics

8 MW Electrical Output

165,000 lbs/hr Heat Output

Island Mode Capable

Uninterruptible Energy
Serving Mission Critical Spaces

50% Campus GHG Emission Reduction

Business Challenge

In the aftermath of Superstorm Sandy, the benefits of a well-designed CHP system were on stark display. There is no more illustrative case than New York University. While nearly eight-million residents across the Mid-Atlantic lost power, NYU's Washington Square Campus – armed with an island mode capable CHP plant – maintained electricity, heat, and hot water during the height of the storm and was able to serve as a place of refuge.

Without a similar CHP system, NYU's Langone Medical Center (LMC) lost power, knocking out its communications systems and leading to a dangerous and expensive forced evacuation of critical care patients. In response, NYU LMC selected SourceOne to support the development a new CHP microgrid, and our parent company, Veolia, to operate and maintain the plant.

SourceOne Solution

SourceOne led the design, construction administration, and commissioning effort for the LMC campus which is comprised of three hospitals with over 1000 beds and a dedicated R&D space. All of the facilities require reliable, uninterrupted energy to support critical medical and research functions.

The CHP plant is housed in the campus's new energy building. The plant has 8 MW of electric generating capacity and 165,000 pounds per hour of steam serving the entire campus with electricity, heat, hot water, sterilization, and humidification. As a microgrid with multiple back-up systems – including emergency standby electric power generator systems and auxiliary plant support and control infrastructure – the plant is completely self-sufficient, capable of islanding in the event of a utility service outage or interruption.

Results

In addition to its resiliency benefits, the plant also gives LMC greater operational control over its steam production, insulating the campus against relatively expensive utility-provided steam. This will yield substantial operational savings. Furthermore, the plant reduces campus emissions by approximately 50% - the equivalent of taking more than 4,600 cars off the road every year.

The plant is operated and maintained by our parent company, Veolia Energy under a 5-year contract. Veolia offers LMC industry leading performance guarantees.

13.4 – Concord Engineering Qualifications

COMBINED HEAT & POWER PROJECTS

UNIVERSITY MEDICAL CENTER OF PRINCETON – *Plainsboro, NJ*
Combined, Heat & Power Plant for NRG Thermal
Concord developed, designed, procured, constructed, commissioned, and started up a combined heat and power plant utilizing a 4.6 MW Solar Mercury 50 gas turbine.

COOPER UNIVERSITY HOSPITAL – *Camden, NJ*
Combined Heat & Power Plant Feasibility Study
Concord evaluated the removal of Cooper's existing aging steam generation assets and recommended replacement with a 4.6 MW combined heat and power plant.

UNIVERSITY OF MEDICINE & DENTISTRY OF NJ – *Newark, NJ*
Combined Heat & Power Plant Conceptual Design
As part of the PSE&G Carbon Abatement Hospital Efficiency Program, Concord prepared conceptual design for a new 7.5 MW CHP plant that would be housed within the existing CHP building.

HARRISBURG HOSPITAL – *Harrisburg, PA*
CHP Feasibility Study/Preliminary Design
Concord performed a CHP feasibility study for the PinnacleHealth System Harrisburg Hospital that included anaylsis of a 3.3 MW reciprocating engine generator and 6.3 MW combustion turbine generator plant.

ROBERT WOOD JOHNSON UNIVERSITY HOSPITAL – *New Brunswick, NJ*
Combined Heat & Power Plant Design
Concord provided the economic analysis and 65% design for the installation of a 4.5 MW Solar Mercury 50 gas turbine gas turbine.

JOHNS HOPKINS HOSPITAL – *Baltimore, MD*
Startup/Commissioning for (2) Cogeneration Plants
Concord provided commissioning at two (2) new cogeneration plants which included the installation of a 7.5 MW Solar Taurus 70 Combustion Turbine Generator in their North and South Energy Plants.

LANCASTER GENERAL HOSPITAL – *Lancaster, PA*
Energy Center Commissioning
Concord Engineering is providing third party commissioning services for the Energy Center that will provide 3.5 MW of combined heat and power as well as 4 MW of emergency diesel generation/black start capabilities to provide the hospital with reduced energy costs as well as the ability to maintain 100% operation during utility power outages.

UNIVERSITY OF FLORIDA – *Gainesville, FL*
Utilities/Infrastructure Master Plan
Concord evaluated the existing third party energy service provider's 45 MW combined cycle power plant for end of contract fair market value and options for continued service.

Design of Onsite Power Plant
Concord provided preliminary design drawings for several options for a new on-site 15 MW to 62 MW combined heat and power plant.

ABDERDEEN PROVING GROUND – *Edgewood, MD*

Combined Heat & Power Plant Engineering Design
Concord developed the 100% design for the installation of a dual fuel 7.9 MW combustion turbine generator, duct fired heat recovery steam generator, selective catalectic reduction system and a fuel gas compressor.

HAGERSTOWN CORRECTIONAL FACILITY – *Hagerstown, MD*
Combined Heat & Power Plant Engineering Design
Concord developed 50% design documents for one (1) 4,500 kW combustion turbine generator with a duct fired heat recovery steam generator and a fuel gas compressor to be installed adjacent to the existing correctional facility's boiler plant.

NAVAL STATION – *Norfolk, VA*
Cogeneration Plant Design at Largest Navy Base in the World
Concord was contracted to develop 50% design documents for the installation of a nominal 15 MW combined heat and power plant and 10 MW demand response plant.

NATIONAL INSTITUTE OF STANDARDS & TECHNOLOGY – *Gaithersburg, MD*
CHP Addition/Chilled Water Upgrades – *Gaithersburg, MD*
Concord developed 100% design documents for one 7,900 kW combustion turbine generator, duct-fired heat recovery steam generator and a fuel gas compressor.

CONFIDENTIAL CLIENT - *Midwest, United States,*
Concord is providing 100% engineering design for (2) separate CHP units each CHP unit equipped with a 7.6 MW Taurus 70 Combustion gas turbines.

MARINA THERMAL FACILITY– *Atlantic City, NJ*
Combined Cooling, Heating & Power Plant
Concord provided mechanical, electrical, I&C, civil and structural engineering for the 7.5 MW a state of the art CCHP project at the Marina Thermal Facility. The Marina Thermal Facility provides heating, cooling and electric services to the Borgata and Water Club Hotels/Casinos in Atlantic City.

REVEL INLET DISTRICT ENERGY CENTER– *Atlantic City, NJ*
Combined Cooling, Heating & Power Plant
Concord Engineering providde the detailed design for a 7.5 MW cogeneration plant to be integrated into the Revel Inlet District Energy Center. The 75,000 square foot cogeneration plant will provide cooling, heating, and normal and emergency electric power to the Revel Hotel/Casino complex across the street.

MONTCLAIR STATE UNIVERSITY– *Montclair, NJ*
Combined, Heat & Power Plant
MSU selected Concord Engineering to design a new cogeneration plant and distribution system sized to meet the growing energy needs of the University. This plant will consist of a dual fuel 5.6 MW Solar Taurus 60 combustion gas turbine, with a supplementary fired natural gas heat recovery steam generator (HSRG), plus a dual fuel boiler

MERCK PHOENIX PROJECT – *Las Piedras, Puerto Rico*
Combined Heat & Power Plant Feasibility Study
Concord performed a combined heat and power feasibility study for a reciprocating engine generator or combustion turbine generator-based configuration in the 2 MW to 4 MW size range.

ELI LILLY PROJECT - *Carolina, Puerto Rico*
Combined Heat & Power Feasibility Study

Concord performed a combined heat and power feasibility study for a reciprocating engine generator or combustion turbine generator-based configuration in the 10 MW size range.

BRISTOL-MYERS SQUIBB CO. - *New Brunswick, NJ*
Steam Turbine Generator Installation
Concord provided complete engineering services for the installation of a 1350 kW backpressure steam turbine for installation in an existing 10 MW cogeneration plant.

WYETH-AYERST/LEDERLE - *Pearl River, NY*
Back Pressure Steam Turbine Generator
Concord provided engineering services for the installation of a new 2.5 MW back pressure steam turbine generator operating at inlet conditions of 75,000 lb/hr at 600 psi and 7500 F

NJ MANUFACTURING FACILITY – *NJ Confidential Client*
Engineering Design
Concord developed the NJ Combined Heat and Power grant application for a 4.6 MW natural gas fired turbine.

ROWAN UNIVERSITY – *Glassboro, NJ*
Central Utility Plant/Combined Heat & Power Plant
Concord was retained to perform Utility/Energy Infrastructure Master Planning services and detailed engineering for a new central utilities plant using CHP. The hybrid plant utilizes electric and steam turbine driven chillers, gas compressor, HRSG and two (2) Solar gas turbines at 1.2 MW and 3.5 MW respectively.

PEI POWER CORPORATION – *Archbald, PA*
Landfill Gas Recovery
Concord prepared the engineering and design for this 9.2 MW landfill gas to energy facility. The project will include (2) 4.6 MW Solar Mercury 50 gas turbines. Also included is the gas treatment/compression system.

BERGEN COUNTY UTILITIES AUTHORITY – *Little Ferry, NJ*
Combined Heat & Power Plant/Digester Gas Recovery
Concord Engineering provided the detailed engineering and design services for this cogeneration facility that utilizes a mixture of natural gas and biogas from the aerobic digesters at the BCUA wastewater treatment complex. The cogeneration plant includes (3) 1400 kW GE Jenbacher reciprocating engines with full heat recovery, generating high temperature hot water for the sludge drying process, and heating in the complex.

APEX LANDFILL – *Las Vegas, NV*
Power Plant Island Design
Concord Engineering provided engineering and design services for the power plant island equipment at Apex. This included (2) 5.6 MW Solar Taurus 60 Combustion Turbine Generators with Selective Catalytic Reduction and inlet air chilling.

CES LANDFILL – *Hegins, PA*
Landfill Gas Recovery
Concord provided the complete engineering services for this 11 MW landfill gas to energy project. The project utilizes (2) Solar Taurus 70 combustion turbine generator mobile packages, rated at 5.6 MW each, to burn the landfill gas.

MARCAL/SOUNDVIEW PAPER COMPANY – *Elmwood, NJ*

Combined Heat & Power Plant
Concord prepared concepts/plant configurations, detailed design and construction management for a Combined Heat & Power plant that will provide 20 MW of electric onsite generation utilizing gas turbines and HRSGs for steam generation.

NESTLE USA – *Florham Park, NJ*
Combined Heat & Power Plant
Concord performed engineering for their food processing facility that included a 7.9 MW Solar Taurus 70 gas turbine and HRSG to produce 200psi steam, with SCR

USFDA WHITE OAK FEDERAL RESEARCH CENTER – *Silver Spring, MD*
CCHP Peer Review
Concord conducted a peer review of the project including code, constructability and O&M reviews for a new central plant that included (2) 7.5 MW dual-fuel turbine generators, a 4.5 MW natural gas turbine generator, (2) 2.25 MW diesel standby generators and a 5 MW steam turbine generator.

THE PHILADELPHIA MUSEUM OF ART – *Philadelphia, PA*
Combined Heat & Power Feasibility Study
Concord investigated the opportunity of installing a CHP plant that included (2) 1,000 kW microturbine packages with heat recovery steam generators and three backup and peaking steam boilers.

JOHNSON & JOHNSON – *Spring House, PA*
Combined Heat & Power Plant
Concord provided engineering and construction administration for the new combined heat and power (CHP). The CHP plant features an MWM engine generator that will supply nominally 4.0 MW to the J & J campus.

RARITAN VALLEY COMMUNITY COLLEGE – *Somerville, NJ*
Combined Heat & Power Plant
Concord provided the engineering for the installation of a natural gas fired GE Jenbacher reciprocating engine that generates 1.4 MW of electricity..

OCEAN COUNTY COLLEGE – *Toms River, NJ*
Combined Heat & Power Plant
Concord performed the engineering, CM and commissioning for OCC's 1.5 MW CHP.

SEPTA – *Philadelphia, PA*
Combined Heat & Power/Owner's Engineer
Concord completed a detailed study and a preliminary design for a system that includes (2) 4.2 MW natural gas reciprocating engine generators, 8.4 MW total.

BERGEN COUNTY PRISON – *Hackensack, NJ*
Combined Heat & Power Plant
Concord prepared the complete scope of engineering and design for this 1300kW CHP facility. The plant includes a single 1300 kW reciprocating engine, with heat recovery to supply building heating and domestic hot water for the prison.

ESSEX COUNTY CORRECTIONAL FACILITY – *Newark, NJ*
Combined Heat & Power Plant
Concord provided engineering and design services for a state-of-the-art energy production plant and delivery system for the Essex County Correctional Facility. The Plant includes two 3000 kW natural gas-fired reciprocating

engines with heat recovery, natural gas compressors, and SCR equipment, as well as three 800 hp hot water generators.

SENECA NIAGARA CASINO – *Niagara Falls, NY*
Combined Heat & Power Plant
This cogeneration facility was incorporated into the design of a new facility for the Seneca Niagara Casino in Niagara Falls. The space available within the building was extremely limited, and as a result Concord applied innovative concepts in packaging and arranging the equipment for this 6,000 kW CHP plant.

OMNOVA SOLUTIONS – *Auburn, PA*
Combined Heat & Power Plant
Concord engineered conceptual electrical engineering for a 1.5 MW gas engine generator package..

US ARMY GARRISON ADELPHI LABORATORY CENTER – *Adelphi, MD*
Combined Heat & Power Plant
Concord provided engineering and design services for a CHP plant that includes two 1100 kW natural gas fired reciprocating engines.

BURLINGTON COUNTY – Columbus, NJ
Landfill Gas Recovery
Concord Engineering provided all mechanical and electrical design for the Burlington County Resource Recovery Complex Site. The system is comprised of (5) Jenbacher 1.2 MW reciprocating engines to provide 6 MW of renewable energy to the county

ATLANTIC COUNTY UTILITIES AUTHORITY – *Egg Harbor Township, NJ*
Landfill Gas Recovery
Concord provided all engineering and design services for this landfill gas to energy plant. The project includes a 1.6 MW reciprocating engine, a gas treatment and compression skid, a step-up transformer, and electrical switchgear

WARREN COUNTY DISTRICT LANDFILL – *White Township, NJ*
Landfill Gas Recovery/Greenfield Development Project
This energy project conforms to the requirements of the New Jersey Board of Public Utilities Renewable Energy Advanced Program. The 3.8 MW plant consisting of (2) 1.9 MW GE Jenbacher reciprocating engines produces approximately 28,000,000 kWh of electric energy.

SECCRA LANDFILL – *West Grove, PA*
Landfill Gas Recovery
Concord provided the design for this landfill gas to energy project, which is designed to generate 5 MW of power to be exported to the PJM grid at a voltage of 4.16 kV. The plant includes (5) 1 MW engines, a gas treatment system, and electrical controls, protective relaying, and switchgear, and is housed in a pre-engineered building.

- **Energy and Utilities Infrastructure Master Planning**

Master planning is a powerful tool that can be used to evaluate generation, renewables and demand side assets, current and future utility requirements, and overall system optimization. Concord has helped many clients better understand their energy assets and requirements in order to improve operations and properly plan for future developemnt.

Concord has developed energy and utilities infrastructure master plans for Cape May County, Montclair State, Rowan and Princeton Universities. Concord's background in executing boiler, chiller, renewable energy, combined heat and power and distribution infrastructure projects highlights our depth in recognizing key components/options for energy centers.

Concord will use its experience and master planning procedure to produce a roadmap for clients for the development of the next generation energy delivery system. In doing so, we will take into account the condition and age of the county's current systems, campus building expansion, energy conservation plan, existing and possible-future generation technologies, renewable energy technologies, greenhouse gas emissions, fuel availability, fuel cost, real time and future electric purchasing, operational costs, capital costs, life cycle costing, and governmental regulations. All of these factors were analyzed when developing energy master plans for the following select clients:

Cape May County

Energy Master Plan

Cape May County embarked on creating a county-wide energy master plan in an effort to reduce greenhouse gas emissions and improve the County's 800,0000 square-feet of facilities through energy efficiency and the use of renewable fuels and bio-fuels. Concord Engineering was selected by the County to develop the Energy Master Plan. The plan provided the County with a framework which identified its large energy users, provided guidelines for new construction and renovations, current facility energy efficiency upgrades, opportunities for combined heat and power, and potential for wind and solar power generation.

The County used this framework to commission further study of its ability to harness wind power for use within its water treatment facilities and alternatively for other facilities. The County also embraced stricter construction standards by pursuing LEED on its planned new library projects in Sea Isle and Stone Harbor. The County then used the master plan as a stepping stone when entering the Local Government Energy Audit Program. Already armed with a list of recommendations, the County and its energy auditor, Concord Engineering, was able to further refine these recommendations as well as generate new additional suggestions. Overall, the master plan and LGEA audit were able to identity over $4 million in energy conservation upgrades.

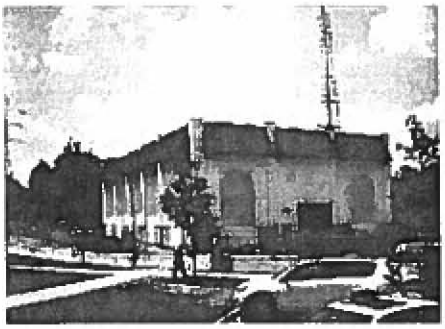
The County combined the efforts of the Energy Master Plan and LGEA to pursue an in-house implementation of energy conservation measures and utilized New Jersey's Direct Install Program for its smaller facilities. This allowed the County to take advantage reduced labor costs, and a 80%

project cost incentive with the Direct Install Projects. As Cape May County embarks on expanding and upgrading its facilities and infrastructure, the basic framework provided in the Energy Master Plan created a "Living Document" that will enable them to curb greenhouse gas emissions and mitigate energy risks through becoming more efficient.

Montclair State University

Utility/Energy Infrastructure Master Plan

Concord performed an energy evaluation of all buildings' heating, air conditioning and lighting systems on campus. This included detailed energy audits for over 1.4 million sf. The study provided a comprehensive assessment of all deficiencies, upgrade and recommendations. Economic evaluations were analyzed to provide over $20 million dollars in upgrades and $2 million dollars in annual savings.



In order to properly manage its growth, improve energy efficiency, and increase reliability, the University decided to replace its aging Solar Centaur based combined heat and power (CHP) plant and steam distribution system. MSU selected Concord Engineering to design a new cogeneration plant and distribution system sized to meet the growing energy needs of the University. This plant will consist of a dual fuel 5.6 MW Solar Taurus 60 combustion gas turbine, with a supplementary fired natural gas heat recovery steam generator (HSRG), plus a dual fuel boiler. The new turbine will have over 30% more capacity and will produce less than 50% of the emissions than the existing unit. In addition, the new unit will be 20% more efficient and increase the combined heat and power system efficiency by over 40%.

For the cooling needs of the University, the new central plant includes a central cooling plant. The Plant also includes a hybrid system comprising a 2000 ton steam turbine driven chiller and a 2000 ton electric centrifugal chiller. The plant is designed for an additional 2500 tons of capacity to be added when the campus cooling demand increases as more buildings are added to the central chilled water loop. Not only is this new central chilled water technology over 25% more efficient than the current local building chillers, the system also is able to help fully utilize the waste heat from the combined heat and power system. In conjunction with the CCHP Plant project, there is a new chilled water distribution system which connects the major buildings of the central campus core to the new chilled water distribution system. The new steam system design is a 100% replacement of the existing steam system.

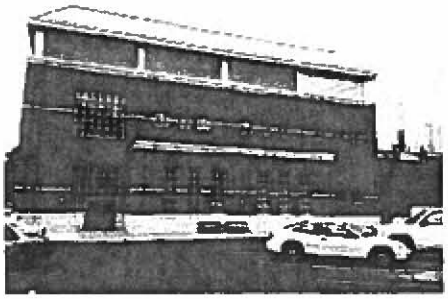
Concord provided Owner's Engineer and Representation services for the project to facilitate the bidding process and negotiations for a Third Party Private Owner and Developer. The project was performed by a third party private developer under a Long Term Energy Services Agreement where the Third Party Developer leases the land and undertakes the finance, construction, maintenance, and operation of the CCHP Plant as prescribed by the New Jersey Economic Stimulus Act. This methodology with grant funding assistance will provide MSU with "state of the art" technology combined with higher efficiency and much lower greenhouse gas emissions than the existing campus systems. These improvements significantly improve the campus energy and cost savings, as well as provide a system which can be economically expanded to meet the planned

campus growth. This project is a model of utilizing public/private partnerships to turn the opportunity for energy efficiency and environmental stewardship into reality.

Rowan University

Utility/Energy Infrastructure Master Plan New Jersey Clean Energy Award-Winner

Concord prepared an Energy/Utility Infrastructure Master Plan and detailed engineering for the university, identifying current and future electric, steam and chilled water loads. The load summaries were utilized to determine the need for upgrades to the campus infrastructure. These upgrades were implemented with Concord preparing detailed designs for the new electric substations, underground duct banks, underground steam and chilled water distribution lines and a stream crossing.



Concord also provided the engineering design and construction administration for a centralized chilled water system to complement the existing central steam distribution system. A phased approach to distribution piping installation, plant and facility construction, and electric distribution (including a 69 kV substation) was utilized to integrate the new systems into the rapidly expanding campus. As a result, economic and electric reliability benefits of the expanded CHP plant were delineated. Concord then performed a feasibility study and conceptual design for the CHP plant, as well as the purchase specifications for the gas turbine, heat recovery boiler and gas compressor.

The plant provides Rowan with a state-of-the-art physical plant that provides fuel flexibility to optimize the cost of heating and cooling energy generated at the plant. Concord developed a design that seamlessly blended with the historic setting. Rooftop screens for piping as well as cooling towers were designed to conceal equipment and provide the appearance of an academic building that blends into the surrounding academic campus.

Successes of the project include:

- **Cogeneration plant will decrease dependence on grid-supplied electricity by 35,317 mWh/yr.**
- **Decrease of grid-supply equates to an annual reduction of CO2 emissions by roughly 42 million lbs. and 307,964 lbs of sulfur dioxide emissions**
- **Phased electrical distribution ensures reliable power to support the rapid growth of the campus.**

Princeton University

Geothermal Master Plan

Concord Engineering prepared a campus-wide geothermal master plan for Princeton University to investigate the feasibility of implementing geothermal heat pumps across the campus from both an engineering and economical perspective. The driving factor for this study lied in the University's increasing desire for environmental stewardship and energy efficiency as it grows in the coming years. Striving to reduce CO_2 emissions to 1990 levels, Princeton University is implementing geothermal and applied heat pump technologies to assist in achieving this goal.

ENERGY MASTER PLANNING QUALIFICATIONS

In addition to geothermal heat pumps, the application of water to water heat pumps to produce low temperature hot water for building reheat loads was investigated in this study. In lieu of the central plant steam providing the heat needed for the reheat loads, the water to water heat pumps will extract heat from the chilled water return and utilize it to satisfy the building reheat loads. This configuration will unload the central plant steam system by eliminating the steam load for hot water reheat and reduce the load on the central chilled water plant by extracting heat from the chilled water return mains.

A well-designed geothermal heat pump system can offer higher efficiency and lower CO_2 emissions compared to traditional HVAC systems. This study also estimated the impact that implementation of geothermal heat pumped and water to water heat pumps can have on the University's CO_2 footprint. The impact of carbon trading was considered and projected based on the CO_2 reductions that could be realized.

Projected annual savings from identified ECMs:

- **Geothermal Potential:**

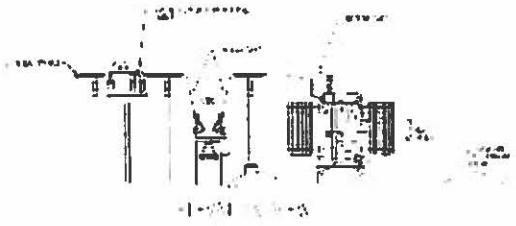
$996,147, CO2 reduction 4657 metric tons
8,104 tons peak cooling

- **Chilled Water Reheat Potential:**

$782,870 CO2 reduction 4452 metric tons
1,554,834 ton-hours CHW reduction
4,000,642 lbs. steam reduction

Electrical Master Plan

This project includes an update and detailed review and analysis of the existing electrical loading for the entire campus at Princeton University. Concord is using the ETAP electrical analysis program to help Princeton identify the present and future electrical load impacts on their existing two main campus 26.4 kV substations, Elm and Charlton Substations.



The study includes seven different possible system configurations along with ETAP circuit analysis and load flow calculations. Concord has also provided a complete update of their ETAP campus model and single line diagrams.

The study also includes preliminary design and layout for a new 69-26kV campus substation that will provide secure power for the University for the next 30 years of expected growth. The 69kV substation will be located near the PSE&G Penns-Neck power station and receive two sources of 69 kV. The new AIS substation will be designed to provide continuous power to the University through a five breaker ring-bus design with capacity for a future 69kV line or a future transformer in anticipation for future campus growth. Two new underground 26 kV duct lines are planned for extension of the 26kV power to the existing Elm and Charlton substations including a directional drilled duct line beneath Lake Carnegie adjacent to the campus. Additionally, Concord is working with the University to include renovations to the Charlton substation to increase the power capacity via new transformers and a 4.16kV switchgear upgrade.

14 PSE&G LOS

14.1 – Letter of Support

For the City of Trenton, PSE&G is both the Electrical and Gas Distribution Company. Their Letter of Support (LOS) is included as an attachment to this document.

Public Service Electric and Gas Company
80 Park Plaza – T8, Newark, NJ 07102

PSEG

March 9, 2017

William Golubinski
Manager of Energy Initiatives
Division of Property Management and Construction
20 West State Street, 3rd Floor
PO Box 235
Trenton, NJ 08625

Dear Mr. Golubinski,

This correspondence serves to demonstrate PSE&G's support of the State of New Jersey's application to the Town Center Distributed Energy Resource Microgrid Feasibility Study Incentive program. PSE&G will work with you, other state officials and your consultant to develop and submit your feasibility study, if selected for funding.

PSE&G will support your study in the following ways:

- PSE&G will provide building load data for all buildings included in your microgrid feasibility study, contingent on receiving approval from the owners of each of the buildings to release its electric and gas load data to the State or its consultant.
- PSE&G will provide technical support to you and your technical consultant in the development of your feasibility study. Release of any confidential or proprietary technical information will require the execution of a Non-Disclosure Agreement between all parties.

Mr. Robert Foster will continue to be the primary point of contact for PSE&G to coordinate our efforts with your team. Please feel free to reach out to me at 856-778-6705 if you have any technical questions.

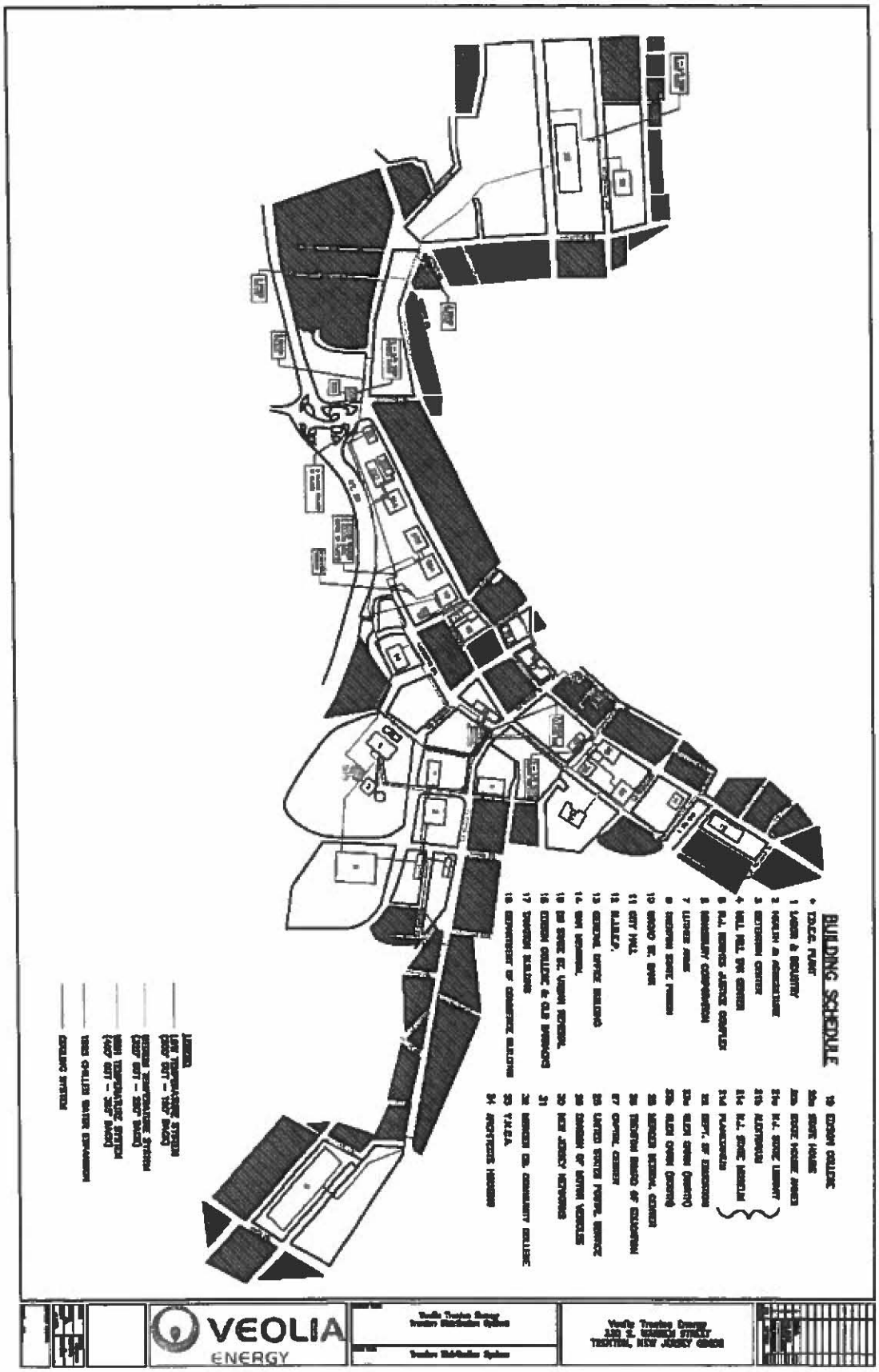
Sincerely,

Michael Henry
Distribution Business Team Leader

15 Thermal Distribution

15.1 – Thermal Network Arrangement

The below figure shows the configuration of Veolia's existing thermal distribution network.


BUILDING SCHEDULE
VEOLIA
ENERGY

16 MOUs

16.1 – Partnerships

Attached as part of this application is a Memorandum of Understanding (MOU) signed by the following participants:

- **State of New Jersey – Department of Treasury**
- **Mercer County**
- **City of Trenton**
- **Mercer County Improvement Authority**
- **Veolia**
- **Rutgers**

MEMORANDUM OF UNDERSTANDING
Between and Among
The State of New Jersey, City of Trenton,
Mercer County Improvement Authority,
Mercer County, Rutgers, The State
University of New Jersey and Veolia
Corporation

SUBJECT: Town Center Micro Grid Resiliency Design.

Parties

The Parties to this Memorandum of Understanding (MOU) are The State of New Jersey, City of Trenton, Mercer County Improvement Authority, Mercer County, Rutgers, The State University of New Jersey and Veolia Energy Trenton, L.P. ("Veolia"). The Parties will work with PSE&G, the New Jersey Board of Public Utilities, and outside engineering support to be directed by Veolia.

Background

Our nation faces significant risk from prolonged electrical outages, which, largely because of extreme weather events, have been steadily increasing in frequency since 1995. What our nation needs is a resilient grid that can adapt to large-scale disruptive events, and remain operational in the face of adversity, thus minimizing the catastrophic consequences that affect quality of life, economic activity, national security and critical-infrastructure operations. To address these challenges, the New Jersey Board of Public Utilities (NJBPU) has introduced the Town Center Micro Grid Incentive Program. A Town Center microgrid, for the purpose of this incentive program, is a cluster of critical facilities within a municipal boundary that may also operate as shelter for the public during and after an emergency event or provide services that are essential to function during and after an emergency situation. The Town Center microgrid could include, but not be limited to, multifamily buildings, hospitals, and local or state government critical operations in a relatively small radius. These critical facilities are connected to a single or series of Distributed Energy Resources (DER) technologies that can operate while isolated and islanded from the main grid due to a power outage. In some cases these are termed an advanced microgrid since they connect multiple customers across multiple rights of ways within a municipality.

Purpose

This MOU establishes a relationship with the Parties to facilitate the exploration of a Town Center DER Micro Grid for facilities of the City, State and County located within the City of Trenton, New Jersey. Parties shall (i) collaborate in the sharing of data and the associated analysis modeling and (ii) design tools to assess the potential benefits and costs associated with implementing smart-grid technologies to improve energy reliability and resiliency in the PSE&G service area within the City of Trenton. Under this MOU, Parties may

work cooperatively with designated city, county and state officials and utility coordinators from The City of Trenton, County of Mercer, the State of New Jersey, Veolia and its engineers including third party vendors and PSE&G representatives and utility engineers, to jointly identify, model, and evaluate potential advanced and cost-effective solutions

Financial Obligations

This MOU does not itself authorize the expenditure or reimbursement of any funds. Nothing in this MOU obligates the Parties to expend appropriations or enter into any contract, implementing agreement, or other obligations. Signature of this MOU does not constitute a financial obligation on the signature Parties. To the extent any expenditures are incurred by a Party they are to be borne by such Party. The purpose of this MOU is to create the joint team effort needed to obtain funding from the NJBPU under its Town Center DER Micro grid program.

Reservation of Rights

Nothing in this Agreement shall be interpreted as limiting, superseding, or otherwise affecting a Party's normal operations or decisions in carrying out its statutory or regulatory duties. This MOU does not limit or restrict the Parties from participating in similar activities or arrangement with other entities.

Legal Effect

This MOU is strictly for internal management purposes for each of the Parties. It is not legally enforceable and shall not be construed to create any legal obligation on the Parties or any Party. This MOU shall not be construed to provide a private right or cause of action for or by any person or entity. No damages of any kind can result as a consequence of this MOU.

Term

This MOU shall take effect upon the signature of all the Parties, and shall remain in full force and effect for a period of 1 year from the date of the MOU. This MOU may be amended by written agreement of the Parties. Any Party may withdraw from this MOU in its sole discretion upon thirty (30) days written notice to the other Parties.

Confidentiality

(a) All data, information, documents, evaluations, designs and other materials concerning the MOU which is provided by a party to the other shall be regarded as confidential and/or proprietary ("Confidential Information"). The parties shall hold confidential Information in strict confidence, and take all reasonable steps to minimize the risk of disclosure of Confidential Information, including ensuring that access to Confidential information is restricted to officers, directors, employees, consultants or agents who have a need to know it in connection with the Project, and requiring all such officers, directors, employees, consultants or agents to treat Confidential Information in strict confidence in accordance with the provisions herein. The obligations of restricted use and strict confidentiality set forth herein shall not extend to any

information which (a) is legally in possession of the receiving party prior to receipt thereof from the other party or is independently developed by the receiving party or its employees, consultants or agents; (b) enters the public domain through no fault of the receiving party; (c) is disclosed to the receiving party, without restriction or breach of the confidentiality obligations herein or any other obligation of confidentiality, by a third party who has the right to make such disclosure; or (d) is legally required to be disclosed; provided that the receiving party uses its reasonable best efforts to notify the other party of any request or subpoena for the production of any Confidential Information. The provisions of this Section will survive the termination of this MOU for a period of two (2) years.

(b) Upon any termination of this MOU, at the written request of the other party, each party shall return all Confidential Information received from the other, or destroy the same and provide certification of compliance with this obligation, except for one copy of such Confidential Information which may be retained by each parties' legal counsel.

(c) The parties shall not use the Confidential Information for any purpose other than the Project.

Signatures

State Of New Jersey

Name:_____

Title:_____

Signature:_____

Date:_____

County of Mercer

Name:_____

Title:_____

Signature:_____

Date:_____

City of Trenton

Name:_____

Title:_____

Signature:_____

Date:_____

Mercer County Improvement Authority

Name:_____

Title:_____

Signature:_____

Date:_____

T.Z.

Rutgers, The State University of New Jersey

Name: Melissa L. Matsil, JD

Title: Director, Office of Corporate Contracts

Signature: _____

Date: 3/16/17

Veolia Energy Trenton, L.P.

Name: _____

Title: _____

Signature: _____

Date: _____

or agents; (b) enters the public domain through no fault of the receiving party; (c) is disclosed to the receiving party, without restriction or breach of the confidentiality obligations herein or any other obligation of confidentiality, by a third party who has the right to make such disclosure; or (d) is legally required to be disclosed, including, without limitation, disclosure of public records of the State of New Jersey under the New Jersey Open Public Records Act, N.J.S.A. 47:1A-1, *et seq.*; provided that the receiving party uses its reasonable best efforts to notify the other party of any request or subpoena for the production of any Confidential Information. The provisions of this Section will survive the termination of this MOU for a period of two (2) years.

(b) Upon any termination of this MOU, at the written request of the other party, each party shall return all Confidential Information received from the other, or destroy the same and provide certification of compliance with this obligation, except for one copy of such Confidential Information which may be retained by each parties' legal counsel.

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Signatures

State Of New Jersey

Name: Richard S Flodmand

Title: Deputy Director

Signature: Richard S. Flodmand

Date: 3/22/17

City of Trenton

Name:_____

Title:_____

Signature:_____

Date:_____

County of Mercer

Name:_____

Title:_____

Signature:_____

Date:_____

Mercer County Improvement Authority

Name:_____

Title:_____

Signature:_____

Date:_____

Veolia Energy Trenton, L.P.

Name:_____

Title:_____

Signature:_____

Date:_____

or agents; (b) enters the public domain through no fault of the receiving party; (c) is disclosed to the receiving party, without restriction or breach of the confidentiality obligations herein or any other obligation of confidentiality, by a third party who has the right to make such disclosure; or (d) is legally required to be disclosed; provided that the receiving party uses its reasonable best efforts to notify the other party of any request or subpoena for the production of any Confidential Information. The provisions of this Section will survive the termination of this MOU for a period of two (2) years.

(b) Upon any termination of this MOU, at the written request of the other party, each party shall return all Confidential Information received from the other, or destroy the same and provide certification of compliance with this obligation, except for one copy of such Confidential Information which may be retained by each parties' legal counsel.

(c) The parties shall not use the Confidential Information for any purpose other than the Project.

Signatures

State Of New Jersey

Name: _____

Title: _____

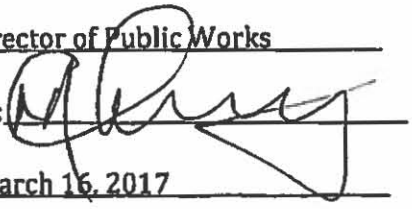
Signature: _____

Date: _____

City of Trenton

Name: Merkle Cherry

Title: Director of Public Works

Signature: 

Date: March 16, 2017

County of Mercer

Name: _____

Title: _____

Signature: _____

Date: _____

Mercer County Improvement Authority

Name: _____

Title: _____

Signature: _____

Date: _____

Veolia Energy Trenton, L.P.

Name: _____

Title: _____

Signature: _____

Date: _____

the other party or is independently developed by the receiving party or its employees, consultants or agents; (b) enters the public domain through no fault of the receiving party; (c) is disclosed to the receiving party, without restriction or breach of the confidentiality obligations herein or any other obligation of confidentiality, by a third party who has the right to make such disclosure; or (d) is legally required to be disclosed; provided that the receiving party uses its reasonable best efforts to notify the other party of any request or subpoena for the production of any Confidential Information. The provisions of this Section will survive the termination of this MOU for a period of two (2) years.

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Signatures

State Of New Jersey

Name:_____

Title:_____

Signature:_____

Date:_____

City of Trenton

Name:_____

Title:_____

Signature:_____

Date:_____

County of Mercer

Name:_____

Title:_____

Signature:_____

Date:_____

Mercer County Improvement Authority

Name: Phillip S. Miller

Title: Executive Director

Signature:

Date: March 15, 2017

Veolia Energy Trenton, L.P.

Name:_____

Title:_____

or agents; (b) enters the public domain through no fault of the receiving party; (c) is disclosed to the receiving party, without restriction or breach of the confidentiality obligations herein or any other obligation of confidentiality, by a third party who has the right to make such disclosure; or (d) is legally required to be disclosed; provided that the receiving party uses its reasonable best efforts to notify the other party of any request or subpoena for the production of any Confidential Information. The provisions of this Section will survive the termination of this MOU for a period of two (2) years.

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Signatures

State Of New Jersey

Name:_____

Title:_____

Signature:_____

Date:_____

City of Trenton

Name:_____

Title:_____

Signature:_____

Date:_____

County of Mercer

Name:_____

Title:_____

Signature:_____

Date:_____

Mercer County Improvement Authority

Name:_____

Title:_____

Signature:_____

Date:_____

Veolia Energy Trenton, L.P.

Name: Michael J. Smedley

Title: VP, Mid-Atlantic Region

Signature: _____

3/20/17

State of New Jersey
BOARD OF PUBLIC UTILITIES
44 SO. CLINTON AVENUE
THIRD FLOOR, SUITE 314 – P.O. BOX 350
TRENTON, NEW JERSEY 08625-0350

CHRIS CHRISTIE
GOVERNOR

KIM GUADAGNO
LT. GOVERNOR

RICHARD S. MROZ
PRESIDENT
TEL: (609) 777-3310
FAX: (609) 292-2264

April 17, 2017

William Golubinski
Manager – Energy Initiatives Unit
State of New Jersey
Department of Treasury
Department of Property Management and Construction
20 West State Street
Trenton, NJ 08625-0235

Dear Mr. Golubinski:

The NJBPU Town Center DER Microgrid Evaluation Team (Evaluation Team) has received your application for a TC DER microgrid feasibility study incentive. While this application was accepted for evaluation, there are a number of items that are required to be submitted in order to complete that evaluation. These items are listed below:

1. A general description of the overall cost

BPU has received 13 proposals for feasibility study incentives. The Board's approved DER microgrid line item budget is $1 million. The 13 proposals significantly exceed that budget. The TC DER evaluation team is requiring that you submit a best and final offer (BAFO) for your proposal. This BAFO should include your estimated breakdown of the budget for the prime investigator and all subcontracts including any estimated fees to be paid to the EDC/GDC. The above noted items, the BAFO and the budget breakdown of the prime investigator and subcontractors should be submitted to TCDERmicrogrid@bpu.nj.gov by close of business (COB) 5:00 p.m. on May 1, 2017. Non-submittal of the additional items, the BAFO and budget breakdown will result in a non-completeness determination of the proposal.

As noted in the TC DER microgrid feasibility study application, the Board has the sole discretion over the approval of projects and awards of incentives, and may change criteria or available funding at any point during the duration of the program.

Sincerely,

Michael Winka
Senior Policy Advisor

SourceOne
A Veolia Energy Company

April 25, 2017

Joseph Martorano P.E.
General Manager
Veolia North America
320 South Warren St.
Trenton, NJ 08608

Subject: Proposal 17P04-286 – Veolia Trenton Microgrid Investment Grade Assessment

Mr. Martorano:

SourceOne proposes to provide comprehensive energy master planning services for the evaluation of a Microgrid which would serve the loads currently supported by Veolia's Trenton, NJ central utility plant (CUP) and nearby NJ State facilities and other critical infrastructure. The project goal is to define the best fit technical and economic Microgrid configuration that could serve existing and new critical facilities with electric and thermal products.

The Microgrid investment grade assessment (IGA) will be focused on the following:

- Confirmation of energy load profiles and reliability requirements for the current and future energy demands of the critical facilities included in a Microgrid.
- Analysis of the technical feasibility and capital cost of new generation resources and the required electrical and thermal Microgrid distribution schemes.
- Infrastructure screening to identify any fatal flaws relating to electric and thermal interconnections, integration with Veolia site infrastructure, heating and cooling systems, and physical constraints.
- Development of a financial pro-forma that reflects the expected capital cost of the generation and distribution assets, associated operating costs, and potential revenues.
- Selection of a Microgrid configuration that best fits Veolia and State of NJ primary requirements:
    - Reliability and resiliency
    - Economic payback
    - Environmental benefits
- Schematic Design of selected Microgrid configuration to be developed at a 20% design level.

We look forward to the opportunity to expand our support of Veolia North America's energy infrastructure development needs through this engagement. If you have questions or need any additional information, please do not hesitate to contact me at 415-983-3619 or cvorse@s1inc.com.

Best Regards,

Colin Vorse, CEM
Director of Business Development
SourceOne, Inc.

1. Scope of Work

A. Project Management and Technical Coordination

- Lead development and evaluation of Trenton Microgrid commercial model and schematic design.
- Develop Microgrid IGA milestone schedule and work plan for distribution to project stakeholders
- Conduct bi-weekly project meetings with Veolia operations, engineering, and construction teams to solicit required technical and commercial input
- Conduct kickoff, preliminary and final project reviews and presentations to internal/external stakeholders
- Manage and integrate sub-contractor participation in study, as required by the NJ BPU program.
    - Concord Engineering - Peer Review and Regulatory Support
    - AECOM – Environmental/Permitting Review
    - Rutgers University - Utility cost-benefit analysis

B. Data Collection Review and Energy Use Analysis

- Examine existing Central Utility Plant documentation and available site drawings
    - Review electrical and thermal one-line diagrams
    - Review previous twenty-four (24) months of utility bills and develop load profiles for electricity, chilled water and high pressure hot water consumption and demand
    - Analyze available metered utility data including electric and natural gas (ie. hourly interval data)
- Create a facility energy and infrastructure database containing the following information for each facility in the proposed Trenton Microgrid
    - Hourly interval electrical data
    - Hourly interval thermal data
    - Electrical service infrastructure details
        - Feeder and Meter inventory
        - Switchgear nameplate data and configuration
        - Age of major onsite electrical equipment
        - Emergency generator inventory
        - Critical process loads
    - Thermal service infrastructure details
        - District heating supply details - line size, temperature, pressure
        - Onsite heating equipment/distribution
        - Age of major onsite thermal equipment
    - End use process descriptions
        - List of critical processes within each facility

C. Veolia Trenton CUP Facility Infrastructure Review and Condition Assessment

- Conduct interviews with Veolia to identify current and future expected usage and facility requirements
- Review future plant operation methodologies and maintenance requirements
- Perform two (2) day on-site walk-through of the facility in Trenton, NJ
    - Examine building mechanical and electrical infrastructure to determine and evaluate potential generation interconnection options
    - Review existing electric and thermal infrastructure capacities with Veolia
    - Evaluate and document available space for proposed generation equipment with support from Veolia corporate engineering as applicable
- Review the following CUP, electric and thermal distribution documentation:
    - CUP maintenance records
    - Piping condition assessment report(s)
- Develop infrastructure upgrade plan as required, including conceptual level drawings as needed

D. Utility Coordination

- Coordinate with Concord Engineering and PSE&G to determine required services by existing utilities
- Meet with PSE&G to discuss project requirements for electric and gas interconnections
- Prepare electric and gas load letter(s) for PSE&G
- Prepare interconnection request(s) for PSE&G
- Work with PSE&G to review electrical distribution circuits and substations within the boundary of the Microgrid. Determine feeder hosting capacity and interconnection(s) / point(s) of common coupling design for the Microgrid.
- Identify and document preliminary operating procedures during blue and black sky conditions by taking into account the following stakeholders
    - PSE&G
    - Microgrid owner(s)
    - Facility operators
    - State and local emergency management staff
- Document the desired level of service from PSE&G

E. Regulatory/Legal Evaluation

- Work with PSE&G to review applicable tariffs and regulatory and legal areas that need to be addressed in accordance with proposed ownership and operating agreements for the Microgrid.
- Support AECOM in reviewing all necessary protocol required by Federal, State and local regulations that effect the development and commercial operation of new proposed gas fired and/or renewable generation.

- Coordinate with AECOM to review process to ensure compliance with all Federal, State and Local requirements.
- Provide prime mover emissions constituents and max potential to emit (MPTE) to emissions consultant.
- Assist with development of a permitting plan that includes required permits, process description and schedule.

F. Commercial Options Evaluation

SourceOne will conduct a comprehensive economic evaluation of several proposed Microgrid scenarios examining multiple generation and distribution configurations. The analysis will establish the baseline Veolia Trenton annual operating costs (including utilities expense) that incorporates 2016 (or latest available) usage data for comparison with various Microgrid scenarios. SourceOne will evaluate the (7) Microgrid scenarios identified below:

- Microgrid scenarios 1-3 will be modeled against the 2016 baseline. Microgrid Scenario 2 +3 consisting of four (4) buildings – Labor, Health & Ag (H&A), Justice.
- Microgrid scenarios 4-7 will be evaluated on a standalone basis and as paired with scenarios 1-3. These scenarios have been segregated by geographical clusters. They can be modified based on the final buildings list evaluated for the Microgrid.

Microgrid Scenario	Description	CUP Loads			Electric Loads	
		CUP District Hot Water	CUP District Chilled Water	CUP Parasitic	Retail Sales (State of NJ) Utilize existing feeders	Wholesale Sales (PJM)
1	CUP only	X	X	X		
2	1+ Existing Retail Feeders	X	X	X	X	
3	1+2+Wholesale Export	X	X	X	X	X

Microgrid Scenario	Description	Electric Loads (Black-start power)
4	Capital Complex	X
5	Northeast Cluster	X
6	S Warren St	X
7	Prison	X

For each Microgrid scenario, SourceOne will:

- Develop commercial block diagrams outlining project stakeholders, ownership boundaries, operating boundaries/agreements, contract structures and overall value proposition
- Develop hourly load profiles for electric, hot water and chilled water consumption.
- Determine the most effective distribution method for providing blackstart power.
- Develop a Financial Proforma based on new generation plant and distribution space requirements, constructability, structural, acoustic/vibration, and environmental considerations.
    - Determine expenses to be borne by the Microgrid generation assets; inclusive of all capital, operating, maintenance, equipment replacement, finance, utility back-up, and fuel expenses
    - Forecast electric and natural gas costs based on local utility rates
    - Determine operating and maintenance expenses
    - Develop capital cost estimates for new generation plant(s), electric and thermal distribution
    - Identify and quantify any potential local, state and federal incentives
    - Conduct a life cycle cost analysis to determine payback period and annual revenues (or utility cost savings) from the Microgrid project
    - Calculate annual emissions outputs and GHG impact
- Support Rutgers University in performing utility rate payer cost-benefit analysis for selected Microgrid commercial model

G. Comprehensive Technical Evaluation

- SourceOne will prepare a technical evaluation of the overall design and construction plan of the proposed Microgrid.
- Develop the optimum Microgrid configuration to serve current and future electrical and thermal energy requirements at the Veolia Trenton facility and 3rd party stakeholders.
- Determine the appropriate location(s) for new generation assets; physical constraints may include elements that impact the owner's business decisions in relation to asset utilization, growth concerns, community impacts and property development plans.
- Develop conceptual design package to establish the basis of design. Package information shall contain:
    - Site Plan/Map showing major equipment, electric and thermal distribution and points of interconnection
    - General Arrangements
        - CUP Generation
        - Other Distributed Energy Resources
    - Conceptual electrical one line diagram
    - Conceptual process flow diagram/heat and mass balance

The SourceOne team will review each commercial model and conceptual design with Veolia to select the preferred Microgrid configuration that will be further evaluated in the Investment Grade Assessment (Task H).

H. Investment Grade Assessment (IGA)/Schematic Design Package

SourceOne will prepare a detailed Microgrid Investment Grade Assessment (IGA). SourceOne will deliver a written report comprised of technical, economic, operating and regulatory elements. The report will present the findings for each of the options evaluated and a detailed analysis of the recommended Microgrid configuration. The report will include:

- Executive Summary
- Project Approach
- Facility Review and Energy Use Analysis
- Microgrid Options Evaluation
    - Economic Evaluation - A financial summary of the project including proposed capital costs, financing and commercial ownership models, operations and maintenance expenses, potential subsidies/rebates.
    - Technical Evaluation - A summary of technical parameters the Owner must consider. These will include onsite system reliability, capacity, and utility interconnection requirements.
    - Regulatory Evaluation – A framework of the regulatory roles and responsibilities of all of the stakeholders involved.
- Recommended Microgrid Configuration
- Schematic Design Package:
    - Preliminary Electric One-line diagram
    - Conceptual Process Flow Diagram
    - Preliminary Equipment General Arrangement drawing
    - Major Equipment Schedule
    - Major Equipment Specifications
    - Capital Budget Estimate
    - Existing Condition Assessment
    - Preliminary Constructability Review
    - Preliminary Construction Schedule
    - Resiliency and Reliability Evaluation (as outlined in the Trenton Microgrid Application)
    - Environmental and Emissions Review

2. Project Schedule

SourceOne anticipates this assessment will be completed 16-18 weeks after receipt of a Purchase Order, assuming good collaboration from all stakeholders including PSE&G.

3. Fee Proposal

SourceOne proposes to complete the Trenton Microgrid Investment Grade Assessment as detailed in the above scope of work for a **Lump Sum Fee of $288,000.** The tasks below are provided for informational purposes and do not represent line item pricing.

Task	Description	Fee
A	Project Management/Technical Coordination	$56,500
B	Data Collection Review and Energy Use Analysis	$19,000
C	Trenton CUP Facility Infrastructure Review and Condition Assessment	$23,500
D	Utility Coordination	$36,000
E	Regulatory/Legal Evaluation	$29,000
F	Commercial Options Evaluation	$39,500
G	Comprehensive Technical Evaluation	$35,000
H	Investment Grade Assessment/Schematic Design Package	$49,500

Notes:

1. *Fees are inclusive of all travel, labor, resources and meetings involved in the above scope of work.*
2. *Subcontractor fees of $55,000 are included in our pricing above.*
3. *Invoicing will be done on a monthly basis and will be based upon project completion status.*
4. *This price is exclusive of any sales, use, excise, or other taxes applicable at the time services are performed.*

4. Acceptance

The enclosed SourceOne Terms and Conditions are an integral part of this Proposal. A Contract between SourceOne, Inc. (DE) and Veolia North America shall be effective as of the date the proposal is executed and delivered, issuance of a purchase order or other notice to proceed with reference to the Proposal, or permit for SourceOne to commence performance of any services in accordance with the Proposal, whichever first occurs. The enclosed SourceOne Terms and Conditions shall apply to the performance of services by SourceOne notwithstanding any preprinted terms or conditions contained in a purchase order that may be issued by Veolia North America and shall control in the event of any conflict with any other portion of the Contract.

If this Proposal is acceptable to you, please sign in the space provided below and return one signed copy to SourceOne.

Veolia North America

_____
Signature

_____
Name

_____
Title

_____
Date

SourceOne, Inc. (DE)

_____
Signature

_____
Name

_____
Title

_____
Date

5. Terms and Conditions

The following Terms and Conditions ("Terms and Conditions") are an integral part of the accompanying proposal ("Proposal") to perform the services described therein ("Services") as submitted by SourceOne to the customer named in the Proposal ("Customer"). A contract between SourceOne and Customer for the performance of the Services ("Agreement") shall be effective as of the earliest date that Customer executes and delivers the Proposal, issues a purchase order or other notice to proceed to SourceOne with reference to the Proposal, or permits SourceOne to commence performance of any Services in accordance with the Proposal; provided, however, that these Terms and Conditions shall apply to the performance of Services by SourceOne notwithstanding any preprinted terms or conditions contained in Customer's purchase order. In the event of any conflict between these Terms and Conditions and any other portion of the Agreement, these Terms and Conditions shall control.

Payment. Payment for Services shall be for the amount set forth on the invoice as provided by SourceOne, and due no later than thirty (30) days from receipt of invoice unless otherwise specified. Customer shall reimburse SourceOne for all expenses incurred in connection with the provision of the Services pursuant to this Agreement if mutually agreed to in writing. SourceOne shall itemize and submit such expenses to Customer from time to time, and Customer shall reimburse SourceOne within seven (7) days of such submission. In the event Customer fails to timely or completely pay any amount under this Agreement: (i) such failure shall be a material breach; (ii) interest at the rate of one percent (1.0%) per month shall accrue on all past due amounts until such amounts, including accrued interest, are paid in full; (iii) SourceOne shall have the right to immediately cease providing Customer with the Services; and, (iv) SourceOne shall have the right to pursue all other legal and equitable remedies available to it. All fees set forth in this Agreement are exclusive of all sales, use, value-added, excise, property, withholding, and other taxes and duties. Customer shall pay or promptly reimburse SourceOne for all taxes and duties assessed by any authority in connection with this Agreement.

LIMITED WARRANTY AND DISCLAIMER. Notwithstanding any other provision of the Agreement, until the first anniversary of the Completion Date (as hereinafter defined), SourceOne warrants that the Services shall have been performed in a professional manner consistent with the level of care and skill ordinarily exercised by other providers of such services performing under similar circumstances. Customer's sole remedy for any breach of such warranty shall be a refund of the portion of the fees paid to SourceOne for the deficient Services. EXCEPT AS EXPRESSLY SET FORTH IN THIS PARAGRAPH, SOURCEONE HAS NOT AND SHALL NOT BE DEEMED TO HAVE MADE ANY REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ALL WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Indemnification. Each party ("Indemnifying Party") shall indemnify, defend, and hold harmless the other party ("Indemnified Party") against and from any and all actions, causes of action, claims, demands, costs, liabilities, expenses (including reasonable attorneys' fees and court costs) and damages arising out of any and all third party claims to the extent caused by the Indemnifying Party's negligent or willful acts or omissions or any material breach by the Indemnifying Party of this Agreement. In connection with any claim or action described in this paragraph, the Indemnified Party (i) will give the Indemnifying Party prompt written notice of the claim, (ii) will cooperate with the Indemnifying Party (at the Indemnifying Party's expense) in connection with the defense and settlement of the claim, (iii) will permit the Indemnifying Party to control the defense and settlement of the claim, provided that the Indemnifying Party may not settle the claim without the Indemnified Party's prior written consent (which will not be unreasonably withheld) unless the claim involves only the payment of money damages, and (iv) the Indemnified Party (at its cost) may participate in the defense and settlement of the claim.

Insurance. Until the first anniversary of the Completion Date (as hereinafter defined), SourceOne shall maintain insurance against liabilities caused by the Services as follows: Statutory limits required by applicable Workers' Compensation law; Commercial General Liability -- $1,000,000 combined single limits per occurrence of bodily injury and property damage and $2,000,000 annual aggregate; Comprehensive Auto Liability -- $1,000,000 per accident for Bodily Injury and Property Damage Liability (Combined Single Limit); and Professional Liability (Errors & Omissions) -- $1,000,000 each claim and per project aggregate. SourceOne shall cause Customer to be named as additional insured under the Commercial General Liability and Comprehensive Auto Liability policies required by this paragraph in respect of liability caused by the Services.

LIMITATION OF LIABILITY. IN NO EVENT SHALL SOURCEONE BE LIABLE TO CUSTOMER FOR CONSEQUENTIAL, EXEMPLARY, SPECIAL, INCIDENTAL, RELIANCE, OR PUNITIVE DAMAGES, OR FOR LOST PROFITS, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, OR FOR ANY CLAIM FIRST ASSERTED AFTER THE FIRST ANNIVERSARY OF THE COMPLETION DATE (AS HEREINAFTER DEFINED). IN ANY EVENT, THE AGGREGATE LIABILITY OF SOURCEONE FOR ANY LOSS OR DAMAGES OF ANY TYPE DIRECTLY OR INDIRECTLY SUFFERED BY CUSTOMER ARISING FROM THE SERVICES PERFORMED BY SOURCEONE OR ANY FAILURE, ACT, OMISSION OR BREACH OF THE AGREEMENT BY SOURCEONE SHALL NOT EXCEED THE AGGREGATE FEES PAID BY CUSTOMER TO SOURCEONE PURSUANT TO THE AGREEMENT.

Site Conditions. Customer shall provide a safe working environment for SourceOne personnel performing Services at the site(s) referenced in the Proposal, including providing reasonable notice of and training with respect to site-specific environmental, health and safety policies and procedures. Customer shall fully disclose to SourceOne information pertaining to any existing conditions at such site(s) or that may affect SourceOne's ability to perform the Services and shall be responsible for any additional costs attendant to such conditions.

Use of Drawings, Specifications and Reports. Drawings, specifications and reports prepared by SourceOne are instruments of professional services to be used only in connection with the Services and are not suitable for any other purpose. Customer shall indemnify, defend and hold harmless SourceOne against and from any and all actions, causes of action, claims, demands, costs, liabilities, expenses (including reasonable attorneys' fees and court costs) and damages arising out of any reuse of drawings, specifications or reports without SourceOne's prior written authorization.

Publicity. Customer acknowledges and agrees that SourceOne shall have the right to use Customer's corporate name and logo in SourceOne's client roster, marketing materials and press releases unless otherwise directed by Customer not to do so.

Independent Contractor. Customer acknowledges that SourceOne is acting solely as an independent contractor and shall not have any authority to bind Customer as agent or in any other capacity.

Force Majeure. SourceOne shall be excused from delays in performing or from any failure to perform hereunder to the extent that such delay or failure results from any one or more of the following: acts of God; abnormal weather conditions or natural catastrophes; strikes, lock-outs or other industrial disturbances; acts of public enemies; war, whether or not declared; sabotage; terrorist acts; riots; civil disturbances; explosions; acts or omissions of governmental authorities; unavailability of or curtailment of fuel supplies; any interruption of electric or other utility service, or any change, interference, disruption or other defect in the supply or character of the electric energy or other utility service utilized by Customer; equipment failure arising from a manufacturing or design defect or the failure of the manufacturer or others to timely implement necessary repairs or replacements; or any other cause or event not reasonably within the control of SourceOne.

Termination. Either party may terminate the Agreement prior to completion of the Services ("Completion Date") in the event of a material breach of its terms by the other party, if such party fails to cure such breach within seven days after notice from the other party of such breach.

Assignment. Neither party may assign any rights or obligations under this Agreement without the prior written consent of the other, except to a third party pursuant to a merger, sale of all or substantially all assets, or other corporate reorganization.

Non-Solicitation. During the term of this engagement and for a period of one (1) year thereafter, each party agrees that it shall not, without the other party's consent, directly or indirectly employ, solicit, engage or retain the services of such personnel of the other party. In the event a party breaches this provision, the breaching party shall pay to the aggrieved party an amount equal to thirty percent (30%) of the annual base compensation of the relevant personnel in his/her new position, in addition to all other costs and expenses (including reasonable attorneys' fees and court costs) arising out of the breach of this provision. This provision shall not restrict the right of either party to solicit or recruit generally in the media.

Notice. All notices and other communications given or made pursuant to the Agreement shall be deemed to have been duly given or made (a) upon delivery, if sent by hand or by prepaid overnight courier service, with a record of

receipt, or (b) the second business day after the date of mailing, if delivered by registered or certified mail, postage prepaid, in each case to the parties at the respective addresses set forth for them in the Proposal. Either party may change the address to which notice to it shall be addressed by giving notice thereof to the other party in conformity with the foregoing.

Governing Law. This Agreement shall be governed and interpreted in accordance with the laws of the State of Delaware, without giving effect to any conflict or choice of law provision that would result in the imposition of the laws of another jurisdiction.

Disputes. In the event of a dispute between the parties arising out of this Agreement, the parties agree to attempt in good faith to resolve such dispute through discussions between their respective senior executives for a period not exceeding fifteen days and thereafter to submit to non-binding mediation. If such dispute cannot then be resolved through mediation, either party may file a lawsuit. The parties consent to the exclusive jurisdiction of the federal and state courts of the State of Delaware in any action related to or arising out of the Agreement. Each of the parties hereby waives any right it may have to assert the doctrine of forum non conveniens or similar doctrine or to object to venue with respect to any proceeding brought in any jurisdiction specified in this paragraph, it being the intention of the parties to preclude the possibility of litigation between them with respect to this Agreement in any jurisdiction other than as specified in this paragraph. Each of the parties hereby agrees to waive all its rights to a jury trial of any claim or cause of action related to or arising out of this Agreement. The prevailing party in any such action shall be entitled to recover its reasonable attorney's fees and other costs incurred in such action, in addition to any other relief to which such party may be entitled.

Miscellaneous. If any provision of this Agreement should be held invalid or unenforceable, the remainder of the Agreement shall be enforced to the fullest extent permitted by law. The Terms and Conditions shall survive the termination of the Agreement in accordance with their terms. This Agreement represents the entire agreement between SourceOne and Customer with respect to the subject matter hereof, and supersedes any and all prior negotiations, proposals, purchase orders, representations or agreements between them, whether written or oral. Paragraph headings in the Agreement are for convenience of reference only and shall not be utilized in interpreting the Agreement. This Agreement may be executed by the parties hereto in counterparts (including by facsimile transmission), each of which shall be deemed an original but all of which together shall be deemed one and the same instrument. This Agreement may not be modified or amended except by a writing signed by an officer of SourceOne and an officer of Customer.

Town Center Distributed Energy Resources Microgrid Feasibility Study Report Requirements

As set forth in the MOU the Town Center (TC) Distributed Energy Resource (DER) Microgrid Feasibility Study Report should be of sufficient detail to demonstrate how the TC DER Microgrid's functional and technical requirements will be executed, the proposed approach to solve technical problems, and how project goals will be accomplished.

The TC DER Microgrid Feasibility Study Report should include an Executive Summary including all project definitions and special terms used in the Report.

The full report must include, but is not necessarily limited to, the following

1. Table of Contents

2. Project Name

3. Project Applicant – This should be the local government or state agency that is the MOU signatory.

4. Project Partners – This should include any agreements entered into by the partners.

5. Project location – This should include a detailed mapping of the boundaries on the TC DER microgrid within the municipality.

6. Project Description including a detailed description of all included critical facilities with a description of why they are critical facilities within the proposed TC DER Microgrid. The Project Description should include the following: [1]

    i. The electrical and thermal loads for each critical facility over the month and year. This should include a description and illustration of any variability in loads including daily, weekend or seasonal loads that impact on the peak, minimum and average loads.

    ii. The electric and thermal load of the total microgrid project over the month and year. This should include a description and illustration of any variability in loads including daily, weekend and seasonal loads that impact on the peak, minimum and average loads as well as the coincident loads of the overall system.

[1] The energy data in this section and the full report should be provided through metered data were available but may also be provided through simulated data from models such as EnergyPlus. If the data is simulated the specific software and model should be identified and available.

iii. The monthly and annual energy costs for each critical facility and the overall project including both energy and demand costs. This should include the monthly cost and any variations over the year that could impact demand costs.

iv. The square footage of each building and the total project.

v. The overall boundaries of the proposed project and distance between critical facilities should be provided. A map should be provided showing the locations of any Right of Way (ROW) crossings.

vi. The size of the available emergency shelter facilities and for what periods they can serve during and after an emergency.

vii. The specific FEMA Category Classification of each building and whether they are a state or federal designated critical or emergency facility.

viii. A listing of all potential permits, permit issuing agency, and general timeframe for issuance.

ix. Any previously installed EE or energy conservation measure (ECM) or currently implemented demand response (DR) measure.

6. A detailed description of the ownership/business model for the overall project including all procurement issues between the various local government and state government partners. This should include a detailed description of the statutory and regulatory provisions of proposed ownership models, EDC/GDC utility roles, as well as any billing systems for electricity and thermal energy.

7. A detailed description of the technology, business and operational protocol to be developed and/or utilized and the location within the TC DER Microgrid. This should include the following:

i. A detailed description of the proposed connections (electric, gas and/or thermal) of the critical facilities and the DER technologies.

ii. A one line diagram of the microgrid and location of the electrical connections to the EDC's facilities/equipment.

iii. A detailed description of the type of distribution system the TC DER would be interconnecting into (radial or network) and the interconnection procedures and requirements.

iv. A detailed description of how the TC DER will black start and operate and over what time period in island mode and in sync with the distribution system.

v. A detailed description of the NJBPU and EDC tariff requirements/issues including any smart grid or distribution automation upgrades proposed or under development by the EDC.

vi. A detailed description of the FERC and PJM tariff requirements/issues.

8. A detailed description of the overall cost including site prep, equipment and equipment installation, construction, operations and maintenance including a detailed construction schedule. This should include a detailed description of the overall energy costs for each critical facility and the overall project as well as any proposed ECM or DR measure to be constructed or operated within each critical facility and the overall project and its impact of the overall operation costs.

(Both 7 and 8 should be detailed through an available microgrid modeling efforts. Applicants must also demonstrate that their proposed project is consistent with the use of the Societal Benefit Charge as set forth in N.J.S.A. 48:3-60(a)(3)).

9. A detailed cash flow evaluation. This should also include a description of the potential revenue markets for any ancillary services, demand response including EE, capacity or energy markets and any available emission or energy certificate trading markets.

10. A detailed description of the potential financing of each location/critical facility and/or the overall project.

11. A detailed description of the benefits of the proposed Town Center DER Microgrid as well as the need for the proposed project. This should include an estimate of the value for reliability, resiliency, flexibility, sustainability including avoided environmental impacts such as air emissions, water usage, wastewater discharges, land use and waste generation, affordability and security.[2]

12. A general description of the communication system between the TC DER microgrid and the EDC's system. This should include a detailed description of distribution management systems and controls and all building controls.

13. The estimated timeframe for the completion of the construction and commencement of operations of the individual critical facilities and the overall project.

14. A description of the on-going work with the EDC and GDC.

The overall quality of the TC DER microgrid feasibility study report and the data provided will be one factor used by the Board to determine which projects proceed to a Phase 2 – Detailed Engineering Design and TC DER microgrid pilot.

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[2] This valuation should follow the Grid Services and Technologies Valuation Framework developed by the USDOE in their Grid Modernization Initiative.

MEMORANDUM OF UNDERSTANDING
BETWEEN AND AMONG
THE NEW JERSEY BOARD OF PUBLIC UTILITIES,
AND
DEPARTMENT OF TREASURY
DIVISION OF PROPETY MANAGEMENT AND CONSTRUCTION

THIS MEMORANDUM OF UNDERSTANDING ("MOU"), is made this _____ day of _____, 2017, by and between **The DEPARTMENT OF TREASURY DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION** ("Recipient" or DPMC) **and The NEW JERSEY BOARD OF PUBLIC UTILITIES** ("BPU" in general or "Board" when referring to Board of Commissioners) (collectively the "Parties") setting forth the roles and responsibilities of the Parties in connection with the Town Center Distributed Energy Resource (TCDER) Microgrid Feasibility Study Incentive Program ("Program").[1]

WHEREAS, the BPU is charged with the authority to ensure that safe, adequate, and proper utility services are provided at reasonable, non-discriminatory rates to all members of the public who desire such services and to develop and regulate a competitive, economically cost effective energy policy that promotes responsible growth and clean renewable energy sources while maintaining a high quality of life in New Jersey; and

WHEREAS, as set forth in N.J.S.A. 48:2-13, BPU is responsible for regulatory oversight of all necessary services for transmission and distribution of electricity and natural gas including but not limited to safety, reliability, metering, meter reading and billing; and

WHEREAS, the BPU is chair of the Energy Master Plan Committee and is responsible for the preparation, adoption and revisions of the Energy Master Plan (EMP) regarding the production, distribution, and conservation of energy in this State; and

WHEREAS, the BPU 2015 Energy Master Plan Update (EMP Update) established a new overarching goal to "Improve Energy Infrastructure Resiliency & Emergency Preparedness and Response" in response to several extreme weather events that left many people

[1] Acronyms related to this program are referred to herein are as follows: Town Center (TC); Disributed Energy Resource (DER);

and businesses without power for extended periods of time. One "Plan for Action" policy recommendation included in the EMP Update is to "Increase the use of microgrid technologies and applications for Distributed Energy Resources (DER) to improve the grid's resiliency and reliability in the event of a major storm."; and

WHEREAS, specifically, this new policy recommends that:

"The State [of New Jersey] should continue its work with the [United States Department of Energy], the utilities, local and state governments and other strategic partners to identify, design and implement Town Center DER microgrids to power critical facilities and services across the State."; and

WHEREAS, The Board approved the FY17 Clean Energy Program Budget which established as part of the Office of Clean Energy Distributed Resources Program, the Town Center DER Microgrid Program and budget.; and

WHEREAS, The BPU staff has, under the direction and approval of the Board, issued a full report and recommendations regarding the utilization of TCDER Microgrids and subsequently issued an application for this Program; and

WHEREAS, the Recipients who are Parties to this MOU freely and voluntarily, in full consideration of the costs and benefits incident hereto, submitted an application to participate in the Program; and

WHEREAS, BPU Staff issued a draft application for public comment regarding this Program on August 5, 2016, a public meeting to discuss the draft application on August 23, 2016, and written comments were received and considered and staff responses were published; and

WHEREAS, the Board, by virtue of proper procedure, and execution of this MOU, has determined that the Recipient's application is approved and incentive funds will be awarded to the Recipient, pursuant to the terms included herein;

NOW THEREFORE, in consideration of the promises and mutual representations, warranties, and covenants herein contained, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

I. INCORPORATION

All of the above recitals, the entirety of the TCDER Micrigrid Feasibility Study Incentive Program Application (attached hereto as Appendix A), the entirety of the Recipient's submitted application (Sumbittal letter which references recipient's application is attached hereto as Appendix B), The Best and Final Offer request letter and recipient's response thereto (attached hereto as Appendix C), and final Feasability Study Report Requirements (attache hereto as Appendic D) are hereby incorporated by reference into this MOU as if set forth at length herein.

II. SCOPE OF THE AGREEMENT

This MOU applies only to the Feasibility Study phase of the Program which encompasses the incentive award funding for the satisfactory completion and submission of the Recipient's TCDER Microgrid Feasibility Study only. Conformance to the terms of this MOU and timely completion of the Feasibility Study does not guarantee Recipient's future participation in this Program or any other related programs. Furthermore, the terms and conditions included herein represent the entire scope of this agreement and supersede all former representations whether written or verbally communicated.

III. DUTIES OF THE PARTIES

A. The Recipient will submit a complete and final TCDER Microgrid Feasibility Study (The Study) in accordance with the terms and conditions of this MOU and incoporated documents.

B. The Recipient shall have one (1) year from the date that this MOU is executed to complete The Study, unless a timely request for extension is submitted by the recipient for good cause and is granted by Board Staff.

C. Recipient shall include in the Feasibility Study a Conceptual Design that should be of sufficient detail to demonstrate how the TCDER Microgid functional and technical requirements will be executed, the proposed approach to solve technical problems, and how project goals will be accomplished. The Recipient's Conceptual Design shall include at a minimum: (1) Design Analysis including design narrative and design calculations for all diciplines, an intended specifications list, environmental permitting memorandum that identifies any and all required permits and the detailed outline of process required to obtain the identified permits; (2) Schematic or one-line concept drawings; (3) Conceptual cost estimate; (4) Preliminary construction schedule in bar chart format; and, (5) Project definitions and special conditions.

D. Recipient shall report to Board Staff regarding the status and progress of The Study upon request.

E. The Recipient is solely responsible for fully complying with the terms and conditions of this MOU, the above-referenced incorporated documents, and any and all duly executed subsequent agreements between the Parties.

F. Effective upon execution of this MOU, BPU agrees to firmly commit the sum of $175,000, to cover costs to be incurred by the Recipient to administer, complete, and deliver the Feasibility Study.

G. All requisitions, pay applications, and invoices submitted for costs or expenses associated with the Feasibility Study shall be subject to review and approval by Recipient according to its standard procedures. Upon approval, Recipient shall promptly submit to BPU for payment all such requisitions, pay applications and invoices. In reviewing, approving, submitting and paying such requisitions, pay applications, Recipient and BPU shall be cognizant of and shall comply with the requirements of the New Jersey Prompt Payment Act, N.J.S.A. 2A:30A-1 et seq.

H. Recipient shall submit all final invoices of expenditures and a final draft of the Study within one year of the execution of this MOU or at the end of an approved extension pursuant to Section III B of this MOU.

I. Upon receipt of the Study and final invoices of expenditures, BPU Staff shall determine if the Study meets the requirements of the program and the MOU at Section III C. If BPU Staff determines that the Study does not meet any requirement(s), BPU Staff shall provide to Recipient a list of requested revisions which recipient shall forward to the consultant that completed the Study. The consultant shall then be afforded a reasonable period of time to make the requested revisions and will then resubmit the Study. Final payment shall be made upon BPU Staff approval of the Study.

J. Incentive funds for this program may not be diverted to pay for any work conducted prior to the date of execution of this MOU. Furthermore, Incentive funds must only be used in furtherance of the completion of the Feasibility Study specifically.

K. Recipient shall procure the services necessary to complete the Feasibility Study in compliance with N.J.S.A. 52:32-2, N.J.S.A. 52:34-9.1, et seq., and N.J.S.A. 52:35-1, et seq., and any and all applicable State and local procurement laws, rules, and procedures.

L. The BPU reserves the right to withhold or deny incentive funding for any invoice items submitted by Recipient that BPU determines to be unlawful or otherwise inappropriate for this Program.

IV. DESIGNATED REPRESENTATIVES

Written communication between the Parties for the purpose of this MOU as defined above shall be delivered to the following representatives.

New Jersey Board of Public Utilities
Attn: Michael Winka Sr Policy Advisor
44 S. Clinton Ave, Trenton, NJ 08625
Michael.Winka @bpu.nj.gov

Department of Treasury DPMC
Attn:
Addresss
XXXX.YYY@abc.gov

V. MISCELLANEOUS

A. No Personal Liability. No official or employee of BPU shall be charged personally by Recipient, its employees, agents, contractors, or subcontractors with any liability or held liable to Recipient, its employees, agents, contractors, or subcontractors under any term or provision of this MOU or because of its execution or attempted execution or because of any breach or attempted or alleged breach of this MOU.

No official or employee of Recipient shall be charged personally by BPU, its employees, agents, contractors, or subcontractors with any liability or held liable to BPU, its employees, agents, contractors, or subcontractors under any term or provision of this MOU or because of its execution or attempted execution or because of any breach or attempted or alleged breach of this MOU.

C. Captions. The captions appearing in this MOU are inserted and included solely for convenience and shall not be considered or given effect in construing this MOU, or its provisions, in connection with the duties, obligations, or liabilities of the Parties or in ascertaining intent, if a question of intent arises. The preambles are incorporated into this paragraph as though set forth in verbatim.

D. Entirety of Agreement. This MOU and its attachments represent the entire and integrated agreement between the Parties and supersedes any and all prior agreements or understandings (whether or not in writing). No modification or termination hereof shall be effective, unless in writing and approved as required by law.

E. Amendments. This MOU may be amended by the written request of any Party and with the consent of the other Party. Any proposed amendment of this MOU shall be submitted by one Party to the other Party at least five (5) business days prior to formal discussion or negotiation of the issue. Any agreed amendment of this MOU shall be set forth in writing and signed by an authorized representative of each Party in order to become effective.

F. No Third-Party Beneficiaries. This MOU does not create in any individual or entity the status of third-party beneficiary, and this MOU shall not be construed to create such status. The rights, duties, and obligations contained in this MOU shall operate only between the Parties and shall inure solely to the benefit of the Parties. The provisions of this MOU are intended only to assist the Parties in determining and performing their obligations under this MOU. The Parties intend and expressly agree that only the Parties shall have any legal or equitable right to enforce this MOU, to seek any remedy arising out of a Party's performance or failure to perform any term or condition of this MOU, or to bring any action for breach of this MOU.

G. No Assignment. This MOU shall not be assignable, but shall bind and inure to the benefit of the Parties hereto and their respective successors.

H. Governing Law. This MOU and the rights and obligations of the Parties shall be interpreted, construed, and enforced in accordance with the laws of the State of New Jersey.

I. Authority. By execution of this MOU, the Parties represent that they are duly authorized and empowered to enter into this MOU and to perform all duties and responsibilities established in this MOU.

J. Term. This MOU shall be effective as of the date hereinabove written and, unless terminated sooner as set forth below, shall remain in effect until the completion of the Feasibility Study and payment of funds as set forth in Section III.

K. Termination. Board Staff and the Recipient may terminate this contract in whole, or in part, when both parties agree that the continuation of the project would not produce beneficial results commensurate with the expenditure of funds. The two parties shall agree upon the termination conditions including the date on which the termination shall take effect, and, in case of partial terminations, the portion to be terminated.

K. Counterparts. This MOU may be executed in duplicate parts, each of which shall be an original, but all of which shall together constitute one (1) and the same instrument.

[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, the parties have signed this Memorandum of Understanding the date first written above.

Witness:

Department of Treasury DPMC

_____ By: _____

.....

Dated: _____

Witness:

New Jersey Board of Public Utilities

_____ By: _____

Richard S. Mroz, President

Dated: _____

APPROVED AS TO FORM:
Andrew Kuntz
Attorney General, State of New Jersey

By: _____