WEST DEPTFORD TOWNSHIP

MUNICIPAL GARAGE BUILDING

120 Grove Ave, West Deptford NJ 08086

LOCAL GOVERNMENT ENERGY AUDIT PROGRAM
FOR
NEW JERSEY
BOARD OF PUBLIC UTILITIES

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CHA PROJECT NO. 29528

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REPORT DISCLAIMER

This audit was conducted in accordance with the standards developed by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) for a Level II audit. Cost and savings calculations for a given measure were estimated to within ±20%, and are based on data obtained from the owner, data obtained during site observations, professional experience, historical data, and standard engineering practice. Cost data does not include soft costs such as engineering fees, legal fees, project management fees, financing, etc.

A thorough walkthrough of the building was performed, which included gathering nameplate information and operating parameters for all accessible equipment and lighting systems. Unless otherwise stated, model, efficiency, and capacity information included in this report were collected directly from equipment nameplates and /or from documentation provided by the owner during the site visit. Typical operation and scheduling information was obtained from interviewing staff and spot measurements taken in the field.

List of Common Energy Audit Abbreviations

- A/C – Air Conditioning
- AHS – Air Handling Unit
- BMS – Building Management System
- Btu – British thermal unit
- CDW – Condenser Water
- CFM – Cubic feet per minute
- CHW – Chilled Water
- DCV – Demand Control Ventilation
- DDC – Direct Digital Control
- DHW – Domestic Hot Water
- DX – Direct Expansion
- EER – Energy Efficiency Ratio
- EF – Exhaust Fan
- EUI – Energy Use Intensity
- Gal – Gallon
- GPD – Gallons per day
- GPF – Gallons Per Flush
- GPH – Gallons per hour
- GPM – Gallons per minute
- GPS – Gallons per second
- HHW – Heating Hot Water
- HID – High Intensity Discharge
- HP – Horsepower
- HRU – Heat Recovery Unit
- HVAC – Heating, Ventilation, Air Conditioning
- HX – Heat Exchanger
- kbtu/mbtu – One thousand (1,000) Btu
- kW – Kilowatt (1,000 watts)
- kWh – Kilowatt-hours
- LED – Light Emitting Diode
- mbh – Thousand Btu per hour
- mmbtu – One million (1,000,000) Btu
- OCC – Occupancy Sensor
- PSI – Pounds per square inch
- RTU – Rooftop Unit
- SBC – System Benefits Charge
- SF – Square foot
- UH – Unit Heater
- V – Volts
- VAV – Variable Air Volume
- VSD – Variable Speed Drive
- W – Watt

1.0 EXECUTIVE SUMMARY

This report summarizes the energy audit performed by CHA for West Deptford Township in connection with the New Jersey Board of Public Utilities (NJBPU) Local Government Energy Audit (LGEA) Program. The purpose of this report is to identify energy savings opportunities associated with major energy consumers and inefficient practices. Low-cost and no-cost opportunities are also identified during the study. This report details the results of the energy audit conducted for the building listed below:

Building Name	Address	Square Feet	Construction Date
Municipal Garage Building	120 Grove Ave, West Deptford NJ 08086	14,960	1971

The potential total annual energy and cost savings for the recommended energy conservation measures (ECM) identified in the survey are shown below:

Building Name	Electric Savings (kWh)	NG Savings (therms)	Total Savings ($)	Payback (years)
Municipal Garage Building	8,390	907	3,825	14.9

Each individual measure's annual savings are dependent on that measure alone, there are no interactive effects calculated. Incentives shown (if any) are based only on the SmartStart Incentive Program. Other NJBPU or local utility incentives may also be available/ applicable and are discussed in Section 6.0.

Each measure recommended by CHA typically has a stand-alone simple payback period of 15 years or less. However, if the owner choses to pursue an Energy Savings Improvement Plan (ESIP), high payback measures could be bundled with lower payback measures which ultimately can result in a payback which is favorable for an ESIP project to proceed. Occasionally, we will recommend an ECM that has a longer payback period, based on the need to replace that piece(s) of equipment due to its age, such as a boiler for example.

The following table provides a detailed summary of each ECM for the building surveyed, including costs, savings, SmartStart incentives and payback.

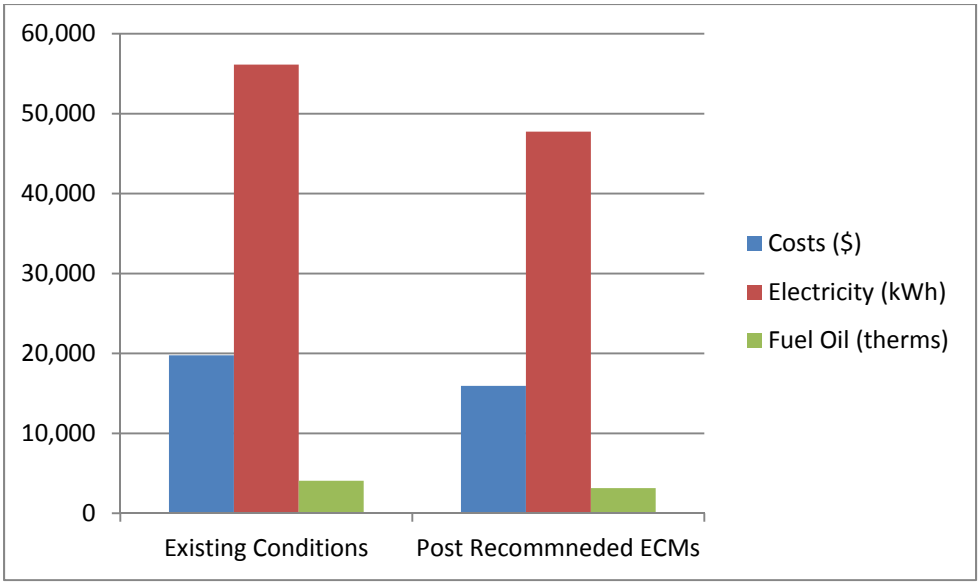
Summary of Energy Conservation Measures

ECM #	Energy Conservation Measure	Est. Costs ($)	Est. Savings ($/year)	Payback w/o Incentive	Potential Incentive ($)*	Payback w/ Incentive	Recommended
ECM-1	Replace Rollup Garage Doors with Insulated Rollup Garage Doors	39,188	1,968	19.9	0	19.9	Y
ECM-2	Convert Fuel Oil to Natural Gas	217,658	7,105	30.6	5,107	29.9	N
ECM-3	Install Window AC Unit Controllers	1,200	846	1.4	0	1.4	Y
ECM-4	Replace the Manual Thermostats for the Unit Heaters with Programmable Thermostats	6,819	498	13.7	1,600	10.5	Y
ECM-5	Upgrade the Plumbing Fixtures with Low Flow Fixtures	12,657	210	60.2	0	60.2	N
ECM-L1**	Lighting Replacements / Upgrades	8,269	457	18.1	1,550	14.7	N
ECM-L2**	Install Lighting Controls (Add Occupancy Sensors)	1,360	100	13.6	175	11.9	N
ECM-L3	Lighting Replacements with Controls (Occupancy Sensors)	9,616	513	18.7	1,725	15.4	Y
	Total**	287,138	11,140	25.8	8,432	25.0	
	Total(Recommended)	56,823	3,825	14.9	3,325	14.0	

* Incentive shown is per the New Jersey SmartStart Program.
** These ECMs are not included in the Total, as they are alternate measures not recommended.

If West Deptford Township Implements the recommended ECMs, energy savings would be as follows:

	Existing Conditions	Post Recommended ECMs	Percent Savings
Costs ($)	19,769	15,944	19%
Electricity (kWh)	56,136	47,746	15%
Natural Gas (therms)	4,066	3,160	22%
Site EUI (kbtu/SF/Yr)	40.0	32.0	



2.0 BUILDING INFORMATION AND EXISTING CONDITIONS

The following is a summary of building information related to HVAC, plumbing, building envelope, lighting, kitchen equipment and domestic hot water systems as observed during CHAs site visit. See appendix B for detailed information on mechanical equipment, including capacities, model numbers and age. See appendix F for some representative photos of some of the existing conditions observed while onsite.

Building Name: Municipal Garage Building
Address: 120 Grove Ave, West Deptford NJ 08086
Gross Floor Area: 14,960
Number of Floors: 1
Year Built: 1971

Building Envelope

Description of Spaces: Offices, tools room, garages, lunch rooms, locker room and restrooms.
Description of Occupancy: The facility has 2 staff working during the office hours.
Number of Computers: The building has one computer.
Building Usage: Operates approximately 50 weeks per year and about 40 hours per week.
Construction Materials: Concrete masonry units (CMU) with brick façade.
Roof: The building has a pitched roof which is covered with asphalt shingles. The attic space has good insulation. No ECMs associated with roof improvements are evaluated.
Windows: The windows are all double pane, aluminum framed except for a couple of windows in the tool rooms which are single pane. The windows are overall in good condition therefore no ECMs associated with window replacements are evaluated.

Exterior Doors: The building has 19 rollup overhead garage doors which do not have insulation on them. An ECM is included that evaluated the energy savings associated with replacing the steel garage doors with insulated fiberglass rollup garage doors.

Heating Ventilation & Air Conditioning (HVAC) Systems

Heating/Cooling: The building is heated by an oil fired steam boiler that appears to be original 1971 vintage. The boiler has a modulating burner that has a minimum oil input of 486.5MBH and maximum oil input of 1,251 MBH. Steam is supplied to twelve unit heaters to heat the garages and tool rooms. The steam condensate is pumped back to boiler by two 1/3 HP condensate pumps. Only the offices and lunch room in the building are cooled by six window AC units. Each of the window AC unit has cooling capacity in the range of 12,000 BTU/hr. ECMs evaluating the conversion of the building to natural gas and adding gas unit heaters as well as adding window AC controllers are included.

Ventilation and Exhaust: The building has several fractional HP exhaust fans for the locker room and restrooms. The building is ventilated by naturally when the garage doors are open. No ECMs associated with improving the ventilation or exhaust systems are considered.

Controls Systems

This building does not have a central control system; the steam unit heaters are controlled by manual thermostats on the wall and the window AC units are controlled by integral manual controllers. The unit heater thermostats are in poor condition and it was unclear what temperature they were set at. An ECM is included that evaluated the energy savings for replacing these thermostats with programmable thermostats and setting the unoccupied temperature lower.

Domestic Hot Water Systems

The domestic hot water (DHW) is provided by a 6 gallon steam-hot water heat exchanger located in the boiler room. The heat exchanger appears to be in good condition. Hot water is used in only a few sinks, therefore no ECM was considered for upgrading the DHW system.

Kitchen Equipment

This building does not have a kitchen.

Plug Load

This building has a few residential appliances (microwave, refrigerator) and air tools which contribute to the plug load in the building. The staff usually turn off the compressor when leave the building.

Plumbing Systems

The building has two restrooms. The urinals and toilets appear to be high volume plumbing fixtures. The sink faucets do not seem to have low-flow type aerators. Therefore, an ECM associated with water conserving plumbing fixtures is evaluated.

Lighting Systems

The majority of lighting fixtures are T-8 fluorescent linear fixtures. All of the lights are controlled by regular switches or key switches. We have provided three alternatives for lighting that include adding occupancy sensors to the existing lights, replacing the lights with LED lights and a third ECM that evaluates adding occupancy sensors to the proposed LED lights.

3.0 UTILITIES

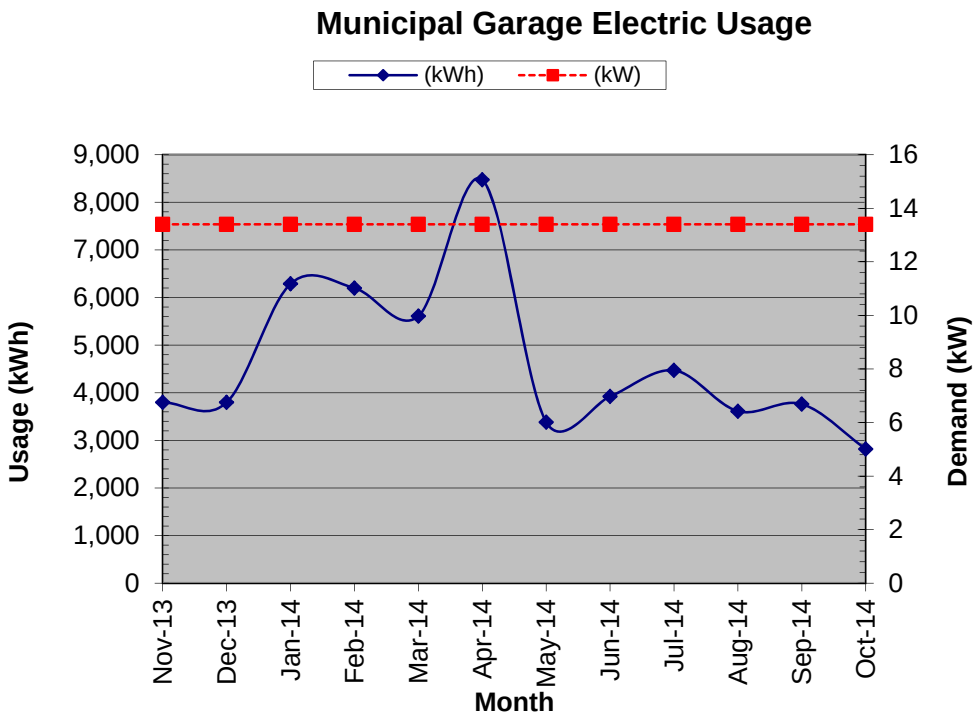
Electricity is separately metered into this building. Fuel oil is delivered when the tank level is low. Utilities used by the building are delivered and supplied by the following utility companies:

	Electric	Fuel Oil
Deliverer	PSE&G	Majestic Oil Company
Supplier	PSE&G	Majestic Oil Company

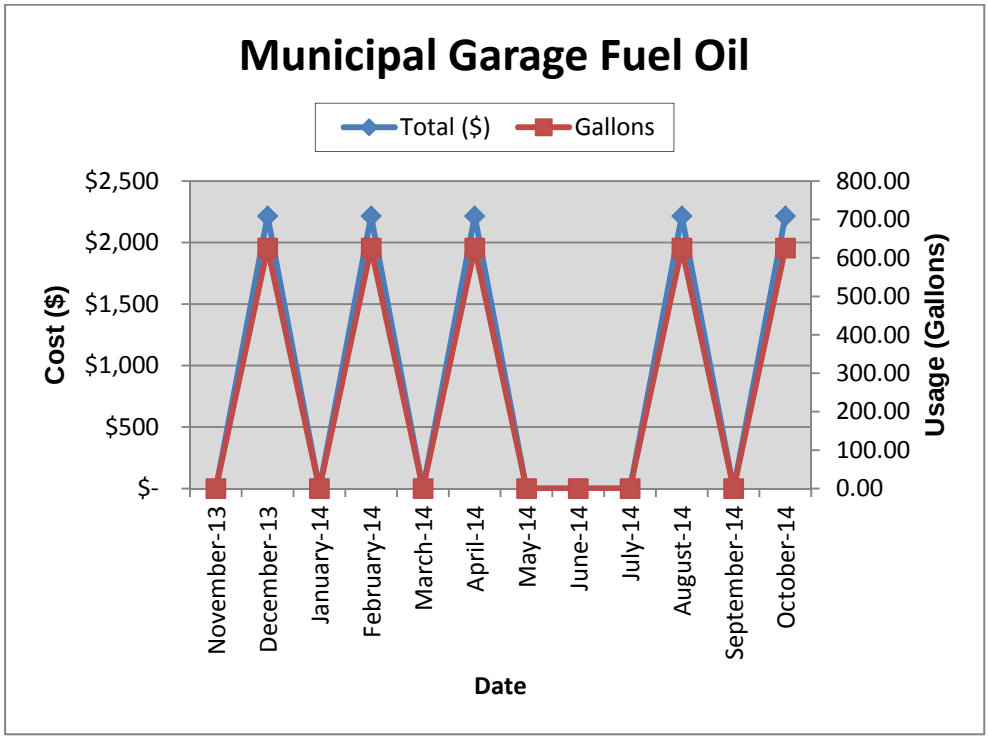
For the 12-month period ending in October 2014, the utilities usages and costs for the building were as follows:

Electric		
Annual Consumption	56,136	kWh
Annual Cost	8,055	$
Blended Unit Rate	0.143	$/kWh
Supply Rate	0.118	$/kWh
Demand Rate	8.80	$/kW
Peak Demand	13.4	kW
Fuel Oil #2		
Annual Consumption	3,128	Gallon
Annual Cost	11,076	$
Unit Rate	3.541	$/gallon

Blended Rate: Average rate charged determined by the annual cost / annual usage
Supply Rate: Actual rate charged for electricity usage in kWh (based on most recent electric bill)
Demand Rate: Rate charged for actual electrical demand in kW (based on July 2014 electric bill)
*Some months that do not have utility data and the missing demand usage are estimated and highlighted in the utility spreadsheet



The electric usage varies with the usage of the building. It appears that the garage is utilized more from January to April.



The fuel oil was delivered whenever the tank is low; therefore it does not truly reflected the usage of the building.

See Appendix A for utility analysis.

Under New Jersey's energy deregulation law, the supply portion of the electric (or natural gas) bill is separated from the delivery portion. The supply portion is open to competition, and customers can shop around for the best price for their energy suppliers. The electric and natural gas distribution utilities will still deliver the gas/ electric supplies through their wires and pipes – and respond to emergencies, should they arise – regardless of where those supplies are purchased. Purchasing the energy supplies from a company other than your electric or gas utility is purely an economic decision; it has no impact on the reliability or safety of the service.

Comparison of Utility Rates to NJ State Average Rates*				Recommended to Shop for Third Party Supplier?
Utility	Units	Average Rate	NJ Average Rate	
Electricity	$/kWh	$0.143	$0.13	Y
Natural Gas	$/Therm	N/A	$0.96	N

* Per U.S. Energy Information Administration (2013 data – Electricity and Natural Gas, 2012 data – Fuel Oil)

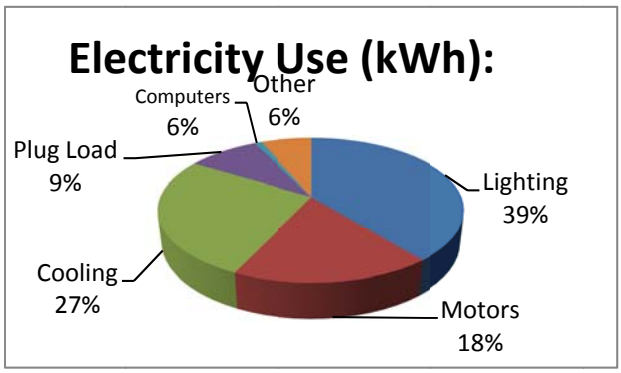
Additional information on selecting a third party energy supplier is available here:

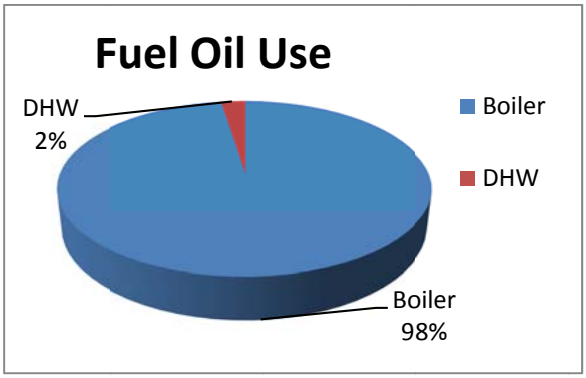
http://www.state.nj.us/bpu/commercial/shopping.html.

See Appendix A for a list of third-party energy suppliers licensed by the Board of Public Utilities to sell within the building's service area.

The charts below represent estimated utility end-use utility profiles for the building. The values used within the charts were estimated from a review of the utility analysis and the energy savings calculations.

Site End-Use Utility Profile





4.0 BENCHMARKING

The EPA Portfolio Manager benchmarking tool provides a site and source Energy Use Intensity (EUI), as well as an Energy Star performance rating for qualifying building types. The EUIs are provided in kBtu/ft2/year, and the performance rating represents how energy efficient a building is on a scale of 1 to 100, with 100 being the most efficient. In order for a building to receive and Energy Star label, the energy benchmark rating must be at least 75. As energy use decreases from implementation of the proposed measures, the Energy Star rating will increase. However, the EPA does not have score for all types of buildings. The buildings that do not have energy rating now are compared with national median EUI.

The site EUI is the amount of heat and electricity consumed by a building as reflected in utility bills. Site energy may be delivered to a facility in the form of primary energy, which is raw fuel burned to create heat or electricity, such as natural gas or oil; or as secondary energy, which is the product created from a raw fuel such as electricity or district steam. To provide an equitable comparison for different buildings with varying proportions of primary and secondary energy consumption, Portfolio Manager uses the convention of source EUIs. The source energy also accounts for losses incurred in production, storage, transmission, and delivery of energy to the site, which provide an equivalent measure for various types of buildings with differing energy sources. The results of the benchmarking are contained in the table below. Copies of the benchmarking report are available in Appendix G.

Site EUI kBtu/ft^2/yr	Source EUI (kBtu/ft^2/yr)	Energy Star Rating (1-100)
41.7	69.3	N/A

The building has higher EUIs than the national median EUIs (national median site EUI is 60.3 kBtu/ft^2 and national median source EUI is 100.4 kBtu/ft^2), and therefore is considered to be an above average energy efficient building. It is believed that the low usage of the building and conservative room temperature set points contribute to the low EUI of this building.

5.0 ENERGY CONSERVATION MEASURES

The following types of energy savings opportunities are identified in this section of the report:

- Energy conservation measures (ECMs) are energy savings recommendations that typically require a financial investment. For these areas of opportunity, CHA prepared detailed calculations, as summarized in this section and in Appendix C. In general, additional savings may exist from reductions in maintenance activities associated with new equipment or better controls; however for conservatism, maintenance savings are not accounted for in this report; instead the only savings which are reported are those derived directly from reductions in energy which can be tracked by the utility bills.

- Operational and Maintenance measures (O&M) consist of low- or no-cost operational opportunities, which if implemented would have positive impacts on overall building operation, comfort levels, and/or energy usage. There are no estimated savings, costs or paybacks associated with the O&M measures included as part of this study.

Energy savings were quantified in the form of:

- electrical usage (kWh=Kilowatt-hour),
- electrical demand (kW=kilowatts),
- natural gas (therms=100,000 Btu),
- propane gas (gallons=91,650 Btu),
- fuel oil (gallons =138,700 Btu), and
- water (kgal=1,000 gallons).

These recommendations are influenced by the time period that it takes for a proposed project to "break even" referred to as "Simple Payback". Simple payback is calculated by dividing the estimated cost of implementing the ECM by the energy cost savings (in dollars) of that ECM.

Another financial indicator of the performance of a particular ECM is the Return on Investment or ROI, which represents the benefit (annual savings over the life of a project) of an investment divided by the cost of the investment. The result is expressed as a percentage or ratio.

Two other financial analyses included in this report are Internal Rate of Return (IRR) and Net Present Value (NPV). Internal Rate of Return is the discount rate at which the present value of a project costs equals the present value of the project savings. Net Present Value is the difference between present value of an investment's future net cash flows and the initial investment. If the NPV equals "0", the project would equate to investing the same amount of dollars at the desired rate. NPV is sometimes referred to as Net Present Worth. These values are provided in the Summary Tab in Appendix C.

5.1 ECM-1 Replace Rollup Garage Doors with Insulated Rollup Garage Doors

The rollup garage doors are steel with no insulation resulting in poor heat transfer resistance and increased fuel usage. This measure calls for the replacement of the 19 rollup garage door with insulated fiberglass doors. Replacement of these doors will result in a reduction of the buildings heating load, therefore providing fuel oil savings. The infiltration rate and heat resistant difference are multiplied by the BIN weather data and the equipment efficiencies to determine the annual energy savings.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-1 Replace Rollup Garage Doors with Insulated Rollup Garage Doors

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total				
$	kW	kWh	Therms	$		$	Years	Years
39,188	0	0	724	1,968	0.0	0	19.9	19.9

* Does not qualify for Incentive from the New Jersey SmartStart Program. See section 6.0 for other incentive opportunities

This measure is recommended.

5.2 ECM-2 Convert Fuel Oil to Natural Gas

The building use fuel oil#2 for the heating system. Fuel oil#2 has less efficiency in combustion and more expensive in price compared with natural gas. The buildings across the street from Municipal Garage have natural gas piping available. It is presumed that the utility company could extend the gas piping to this building. However, a further study from the utility company is recommended to ensure the gas piping to the building is possible.

This ECM evaluates the installation of gas piping to the building and replacing the existing fuel oil fired steam boiler with gas fired steam boiler. The savings are from efficiency improvement from the boiler and the less capital cost of the natural gas.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-2 Convert Fuel Oil to Natural Gas

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total				
$	kW	kWh	Therms	$		$	Years	Years
217,658	0	0	757	7,105	(0.9)	5,107	30.6	29.9

* Does not qualify for Incentive from the New Jersey SmartStart Program. See section 6.0 for other incentive opportunities

This measure is recommended.

5.3 ECM-3 Install Window AC Unit Controllers

There are 6 window A/C units which are assumed to be left operating by the occupants when they leave the room.

This ECM evaluates the installation of programmable "smart" controllers that interrupt the electrical supply to the window air conditioners when the room is unoccupied. The timers are configurable to operate as a standalone timer or they can be wirelessly interconnected to provide remote temperature control using software.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-3 Install a Window AC units Control System

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total				
$	kW	kWh	Therms	$		$	Years	Years
1,200	0	5,456	0	846	9.6	0	1.4	1.4

* Does not qualify for Incentive from the New Jersey SmartStart Program. See section 6.0 for other incentive opportunities

This measure is recommended.

5.4 ECM-4 Replace the Manual Thermostats with Programmable Thermostats

The existing Unit heaters are controlled by manual thermostats which are broken and/or not functioning properly. It is suggested that digital programmable thermostats be installed to control the unit heaters and implement a night set-back temperature during unoccupied hours. Savings result from the reduced steam boiler operation.

The cost of implementing this measure includes installing the programmable thermostats, wiring and disconnecting the old thermostats, and the labor cost on doing programming on these new thermostats.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-4 Replace the Manual Thermostats with Programmable Thermostats

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total				
$	kW	kWh	Therms	$		$	Years	Years
6,819	0	0	183	498	0.1	1,600	13.7	10.5

* Does not qualify for Incentive from the New Jersey SmartStart Program. See section 6.0 for other incentive opportunities

This measure is recommended.

5.5 ECM-5 Upgrade the Plumbing Fixtures with Low Flow Fixtures

This building contains older style high flow water toilets (3.5 GPF), urinals (1.5 GPF), and high flow faucets (2.0 GPM). Waterless urinals and low-flow toilets/faucets are recommended to replace the existing plumbing fixtures.

The water savings associated from replacing existing high flow fixtures with low-flow/no-flow fixtures was calculated by taking the difference of the annual water usage for the proposed and base case. The basis of this calculation is the estimate usage of each fixture, gallons per use, and number of fixtures. Replacing the existing fixtures in the restrooms with 1.28 Gals/flush toilets, waterless urinals, and 0.5 gpm faucets will conserve water which will result in lower annual water and sewer charges. Faucets with low-flow push valves were not considered for replacement.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-5 Upgrade the Plumbing Fixtures with Low Flow Fixtures

Budgetary Cost	Annual Utility Savings			ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Water	Natural Gas	Total				
$	kGal	Therms	$		$	Years	Years
12,657	13	41	210	(0.8)	0	60.2	60.2

* Does not qualify for Incentive from the New Jersey SmartStart Program. See section 6.0 for other incentive opportunities

This measure is not recommended due to long payback period.

5.6.1 ECM-L1 Lighting Replacement / Upgrades

The building is mostly illuminated by T-8 fluorescent linear fixtures which are controlled by switches. Recent technological improvements in light emitting diode (LED) technologies have driven down the initial costs making it a viable option for installation.

Overall energy consumption can be reduced by replacing inefficient bulbs and linear fluorescent bulbs with more efficient LED technology. To compute the annual savings for this ECM, the energy consumption of the current lighting fixtures was established and compared to the proposed fixture power requirement with the same annual hours of operation. The difference between the existing and proposed annual energy consumption was the energy savings. These calculations are based on 1 to 1 replacements of the fixtures, and do not take into account lumen output requirements for a given space. A more comprehensive engineering study should be performed to determine correct lighting levels.

Supporting calculations, including assumptions for lighting hours and annual energy usage for each fixture, are provided in Appendix C and summarized below:

ECM-L1 Lighting Replacement / Upgrades

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total				
$	kW	kWh	Therms	$		$	Years	Years
8,269	1	2,500	0	457	(0.1)	1,550	18.1	14.7

* LED retrofits must go through the "custom" measures incentive option under New Jersey SmartStart Program. There are no "prescriptive" incentives for LED retrofits. Projects must achieve a minimum of 75,000 kWh annual savings to qualify for "custom" incentives. See section 6.0 for other incentive opportunities

This measure is not recommended in lieu of ECM L3.

5.6.2 ECM-L2 Install Lighting Controls (Occupancy Sensors)

Presently, all interior lighting fixtures are controlled by wall mounted switches. Review of the comprehensive lighting survey determined that lighting in some areas could benefit from installation of occupancy sensors to turn off lights when they are unoccupied.

This measure recommends installing occupancy sensors for the current lighting system. Using a process similar to that utilized in Section ECM-L1, the energy savings for this measure was calculated by applying the known fixture wattages in the space to the estimated existing and proposed times of operation for each fixture.

The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-L2 Install Lighting Controls (Occupancy Sensors)

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total				
$	kW	kWh	Therms	$		$	Years	Years
1,360	0	767	0	100	0.3	175	13.6	11.9

* Incentive shown is per the New Jersey SmartStart Program. See section 6.0 for other incentive opportunities.

This measure is not recommended in lieu of ECM L3.

5.6.3 ECM-L3 Lighting Replacements with Controls (Occupancy Sensors)

This measure is a combination of ECM-L1 and ECM-L2; recommending replace/upgrade the current lighting fixtures to more efficient ones and installing occupancy sensors on the new lights. Interactive effects of the higher efficiency lights and occupancy sensors lead the energy and cost savings for this measure to not be cumulative or equivalent to the sum of replacing the lighting fixtures alone and installing occupancy sensors without the lighting upgrade. The implementation cost and savings related to this ECM are presented in Appendix C and summarized below:

ECM-L3 Lighting Replacements with Controls (Occupancy Sensors)

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total				
$	kW	kWh	Therms	$		$	Years	Years
9,616	1	2,934	0	513	(0.1)	1,725	18.7	15.4

* LED retrofits must go through the "custom" measures incentive option under New Jersey SmartStart Program. There are no "prescriptive" incentives for LED retrofits. Projects must achieve a minimum of 75,000 kWh annual savings to qualify for "custom" incentives. See section 6.0 for other incentive opportunities

This measure is recommended.

5.7 Additional O&M Opportunities

This list of operations and maintenance (O&M) - type measures represent low-cost or no-cost opportunities, which if implemented will have a positive impact on the overall building operations, comfort and/or energy consumption. The recommended O&M measures for this building are as follows:

- Purchase ENERGY STAR® window AC units and appliances when needed
- Develop an Energy Master Plan to measure and track energy performance
- Perform steam trap survey

6.0 PROJECT INCENTIVES

6.1 Incentives Overview

The following sections give detailed information on available incentive programs including New Jersey Smart Start, Direct Install, New Jersey Pay for Performance (P4P) and Energy Savings Improvement Plan (ESIP). If the Township wishes to and is eligible to participate in the Energy Savings Improvement Plan (ESIP) program and/or the Pay for Performance Incentive Program (P4P), it cannot participate in either the Smart Start or Direct Install Programs. Refer to Appendix D for more information on the Smart Start program.

6.1.1 New Jersey Smart Start Program

For this energy audit, The New Jersey Smart Start Incentives are used in the energy savings calculations, where applicable. This program is intended for medium and large energy users and provides incentives for:

- Electric Chillers
- Gas Chillers
- Gas Heating
- Unitary HVAC
- Ground Source Heat Pumps
- Variable frequency Drives/ motors
- Refrigeration
- Prescriptive and performance lighting and lighting controls

The equipment is procured using a typical bid- build method, installed and paid for and then the incentives are reimbursed to the owner.

Refer to Appendix D for more information on the Smart Start program.

6.1.2 Direct Install Program

The Direct Install Program applies to smaller facilities that have a peak electrical demand of 200 kW or less in any of the previous 12 months. Buildings must be located in New Jersey and served by one of the state's public, regulated electric utility companies.

Direct Install is funded through New Jersey's Clean Energy Program and is designed to provide capital for building energy upgrade projects to fast track implementation. The program will pay up to 70% of the costs for lighting, HVAC, motors, refrigeration, and other equipment upgrades with higher efficiency alternatives. If a building is eligible for this funding, the Direct Install Program can reduce the implementation cost of energy conservation projects.

The Direct Install program has specific HVAC equipment and lighting requirements and is generally applicable only to smaller package HVAC units, small boilers and lighting retrofits.

The program pays a maximum amount of $75,000 per building, and up to $250,000 per customer per year. Installations must be completed by an approved Direct Install participating contractor, a list of which can be found on the New Jersey Clean Energy Website. Contractors will coordinate with the applicant to arrange installation of recommended measures identified in a previous energy assessment, such as this energy audit. The incentive is reimbursed to the Owner upon successful replacement and payment of the equipment.

The building does qualify for this program because its electrical demand is less than the maximum peak electrical demand of 200 kW for the last 12 month period.

Refer to Appendix D for more information on this program.

6.1.3 New Jersey Pay For Performance Program (P4P)

This building may be eligible for incentives from the New Jersey Office of Clean Energy. The most significant incentives are available from the New Jersey Pay for Performance (P4P) Program. The P4P program is designed to offset the cost of energy conservation projects for facilities that pay the Societal Benefits Charge (SBC) and whose demand (kW) in any of the preceding 12 months exceeds 100 kW. This demand minimum has been waived for buildings owned by local governments or municipalities and non-profit organizations and *is not applicable to public schools*. Facilities that meet this criterion must also achieve a minimum performance target of 15% energy reduction by using the EPA Portfolio Manager benchmarking tool before and after implementation of the measure(s). Additionally, the overall return on investment (ROI) must exceed 10%. If the participant is a municipal electric company customer, and a customer of a regulated gas New Jersey Utility, only gas measures will be eligible under the Program. Available incentives are as follows:

Incentive #1: Energy Reduction Plan – This incentive is designed to offset the cost of services associated with the development of the Energy Reduction Plan (ERP). The ERP must include a detailed energy audit of the desired ECMs, energy savings calculations (using building modeling software) and inputting of all utility bills into the EPA Portfolio Manager website.

- Incentive Amount: $0.10/SF
- Minimum incentive: $5,000
- Maximum Incentive: $50,000 or 50% of Facility annual energy cost

The standard incentive pays $0.10 per square foot, up to a maximum of $50,000, not to exceed 50% of facility annual energy cost, paid after approval of application. For building audits funded by the New Jersey Board of Public Utilities, which receive an initial 75% incentive toward performance of the energy audit, facilities are only eligible for an additional $0.05 per square foot, up to a maximum of $25,000, rather than the standard incentive noted above. The ERP must be completed by a Certified Energy Manager (CEM) and submitted along with the project application.

Incentive #2: Installation of Recommended Measures – This incentive is based on projected energy savings as determined in Incentive #1 (Minimum 15% savings must be achieved), and is paid upon successful installation of recommended measures.

Electric

- Base incentive based on 15% savings: $0.09/ per projected kWh saved.
- For each % over 15% add: $0.005 per projected kWh saved.
- Maximum incentive: $0.11/ kWh per projected kWh saved.

Gas

- Base incentive based on 15% savings: $0.90/ per projected Therm saved.
- For each % over 15% add: $0.05 per projected Therm saved.
- Maximum incentive: $1.25 per projected Therm saved.

Incentive cap: 25% of total project cost

Incentive #3: Post-Construction Benchmarking Report – This incentive is paid after acceptance of a report proving energy savings over one year utilizing the Environmental Protection Agency (EPA) Portfolio Manager benchmarking tool.

Electric

- Base incentive based on 15% savings: $0.09/ per projected kWh saved.
- For each % over 15% add: $0.005 per projected kWh saved.
- Maximum incentive: $0.11/ kWh per projected kWh saved.

Gas

- Base incentive based on 15% savings: $0.90/ per projected Therm saved.
- For each % over 15% add: $0.05 per projected Therm saved.
- Maximum incentive: $1.25 per projected Therm saved.

Combining Incentives #2 and #3 will provide a total of $0.18/ kWh and $1.8/therm not to exceed 50% of total project cost. Additional Incentives for #2 and #3 are increased by $0.005/kWh and $0.05/therm for each percentage increase above the 15% minimum target to 20%, calculated with the EPA Portfolio Manager benchmarking tool, not to exceed 50% of total project cost.

For the purpose of demonstrating the eligibility of the ECM's to meet the minimum savings requirement of 15% annual savings and 10% ROI for the Pay for Performance Program, all ECM's identified in this report have been included in the incentive calculations. The results for the building are shown in Appendix C, with more detailed program information in Appendix D.

6.1.4 Energy Savings Improvement Plan

The Energy Savings Improvement Program (ESIP) allows government agencies to make energy related improvements to their facilities and pay for the costs using the value of energy savings that result from the improvements. Under the recently enacted Chapter 4 of the Laws of 2009 (the law), the ESIP provides all government agencies in New Jersey with a flexible tool to improve and reduce energy usage with minimal expenditure of new financial resources.

ESIP allows local units to use “energy savings obligations” (ESO) to pay for the capital costs of energy improvements to their facilities. ESIP loans have a maximum loan term of 15 year. ESOs are not considered “new general obligation debt” of a local unit and do not count against debt limits or require voter approval. They may be issued as refunding bonds or leases. Savings generated from the installation of energy conservation measures pay the principal of and interest on the bonds; for that reason, the debt service created by the ESOs is not paid from the debt service fund, but is paid from the general fund.

For local governments interested in pursuing an ESIP, the first step is to perform an energy audit. Pursuing a Local Government Energy Audit through New Jersey's Clean Energy Program is a valuable first step to the ESIP approach. The “Local Finance Notice” outlines how local governments can develop and implement an ESIP for their facilities. The ESIP can be prepared internally if the entity has qualified staff. If not, the ESIP must be implemented by an independent contractor and not by the energy savings company producing the Energy Reduction Plan.

The ESIP approach may not be appropriate for all energy conservation and energy efficiency improvements. Local units should carefully consider all alternatives to develop an approach that best meets their needs. Refer to Appendix D for more information on this program.

6.1.5 Renewable Energy Incentive Program

The Renewable Energy Incentive Program (REIP) is part of New Jersey's efforts to reach its Energy Master Plan goals of striving to use 30 percent of electricity from renewable sources by 2020.

Incentives for sustainable bio-power projects and for energy storage projects are currently under development, with competitive solicitations for each of those technologies expected to begin in the first quarter of 2014. The wind program is currently on hold.

New solar projects are no longer eligible for REIP incentives, but can register for Solar Renewable Energy Certificates (SRECs) through the SREC Registration Program (SRP).

7.0 ALTERNATIVE ENERGY SCREENING EVALUATION

7.1 Solar

7.1.1 Photovoltaic Rooftop Solar Power Generation

The building was evaluated for the potential to install rooftop photovoltaic (PV) solar panels for power generation. Present technology incorporates the use of solar cell arrays that produce direct current (DC) electricity. This DC current is converted to alternating current (AC) with the use of an electrical device known as an inverter. The amount of available roof area determines how large of a solar array can be installed on any given roof. The table below summarizes the approximate roof area available on the building and the associated solar array size that can be installed.

Available Roof Area (Ft^2)	Potential PV Array Size (kW)
2,260	31

The PVWATTS solar power generation model was utilized to calculate PV power generation; this model is provided in Appendix E.

Installation of (PV) arrays in the state New Jersey will allow the owner to participate in the New Jersey Solar Renewable Energy Certificates Program (SREC). This is a program that has been set up to allow entities with large amounts of environmentally unfriendly emissions to purchase credits from zero emission (PV) solar-producers. An alternative compliance penalty (ACP) is paid for by the high emission producers and is set each year on a declining scale of 3% per year. One SREC credit is equivalent to 1000 kilowatt hours of PV electrical production; these credits can be traded for period of 15 years from the date of installation. Payments that will be received by the PV producer will change from year to year dependent upon supply and demand. There is no definitive way to calculate an exact price that will be received by the PV producer for SREC credits over the next 15 years. Renewable Energy Consultants estimates an average of $215/SREC for January 2015 and this number was utilized in the cash flow for this report.

The system costs for PV installations were derived from recent solar contractor budgetary pricing in the state of New Jersey and include the total cost of the system installation (PV panels, inverters, wiring, ballast, controls). The cost of installation is currently about $4.00 per watt or $4,000 per kW of installed system, for a typical system. There are other considerations that have not been included in this pricing, such as the condition of the roof and need for structural reinforcement. Photovoltaic systems can be ground mounted if the roof is not suitable, however, this installation requires a substantial amount of open property (not wooded) and underground wiring, which adds more cost. PV panels have an approximate 20 year life span; however, the inverter device that converts DC electricity to AC has a life span of 10 to 12 years and will most likely need to be replaced during the useful life of the PV system.

The implementation cost and savings related to this ECM are presented in Appendix E and summarized as follows:

Photovoltaic (PV) Rooftop Solar Power Generation – 31 kW System

Budgetary Cost	Annual Utility Savings			Total Savings	New Jersey Renewable SREC	Payback (without SREC)	Payback (with SREC)	Recommended
	Electricity		Natural Gas					
$	kW	kWh	Therms	$	$	Years	Years	Y/N
$124,000	31.0	39,684	0	$6,151	$8,532	20.2	8.4	FS

Note: CHA typically recommends a more detailed evaluation be conducted for the installation of PV Solar arrays when the screening evaluation shows a payback of less than 20 years. Therefore, this ECM is recommended for further study. Before implementation is pursued, the township should consult with a certified solar PV contractor.

7.1.2 Solar Thermal Hot Water Generation

Active solar thermal systems use solar collectors to gather the sun's energy to heat a fluid. An absorber in the collector (usually black colored piping) converts the sun's energy into heat. The heat is transferred to circulating water, antifreeze, or air for immediate use or is storage for later utilization. Applications for active solar thermal energy include supplementing domestic hot water, heating swimming pools, space heating or preheating air in residential and commercial buildings.

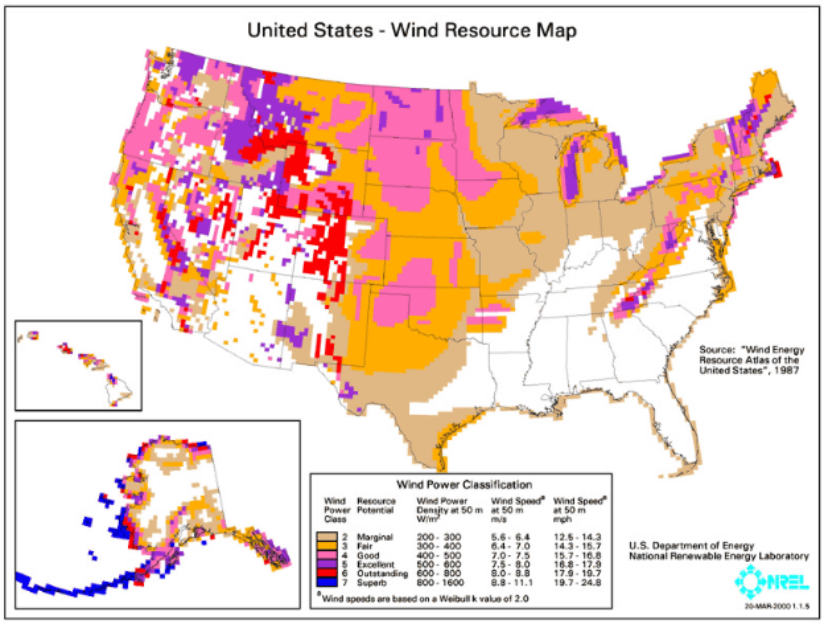
A standard solar hot water system is typically composed of solar collectors, heat storage vessel, piping, circulators, and controls. Systems are typically integrated to work alongside a conventional heating system that provides heat when solar resources are not sufficient. The solar collectors are usually placed on the roof of the building, oriented south, and tilted at the same angle as the site's latitude, to maximize the amount of solar radiation collected on a yearly basis.

Several options exist for using active solar thermal systems for space heating. The most common method is called a passive solar hot water system involves using glazed collectors to heat a liquid held in a storage tank (similar to an active solar hot water system described above which requires pumping). The most practical system would transfer the heat from the panels to thermal storage tanks and then use the pre-heated water for domestic hot water production. DHW is presently produced by natural gas fired water heaters and, therefore, this measure would offer natural gas utility savings. Unfortunately, the amount of domestic hot water that is currently used by this building is very small. Installing a solar domestic hot water system is not recommended due to the limited amount of domestic hot water presently consumed by the building.

This measure is not recommended due to the relatively low domestic hot water usage.

7.2 Wind Powered Turbines

Wind power is the conversion of kinetic energy from wind into mechanical power that is used to drive a generator which creates electricity by means of a wind turbine. A wind turbine consists of rotor and blades connected to a gearbox and generator that are mounted onto a tower. Newer wind turbines also use advanced technology to generate electricity at a variety of frequencies depending on the wind speed, convert it to DC and then back to AC before sending it to the grid. Wind turbines range from 50 – 750 kW for utility scale turbines down to below 50 kW for residential use. On a scale of 1 (the lowest) to 7 (the highest), Class 3 and above (wind speeds of 13 mph or greater) are generally considered "good wind resource" according to the Wind Energy Development Programmatic EIS Information Center hosted by the Bureau of Land Management. According to the map below, published by NREL, Newark, NJ is classified as Class 1 at 50m, meaning the city would not be a good candidate for wind power.



This measure is not recommended due to the location of the building.

7.3 Combined Heat and Power Plant

Combined heat and power (CHP), cogeneration, is self-production of electricity on-site with beneficial recovery of the heat byproduct from the electrical generator. Common CHP equipment includes reciprocating engine-driven, micro turbines, steam turbines, and fuel cells. Typical CHP customers include industrial, commercial, institutional, educational institutions, and multifamily residential facilities. CHP systems that are commercially viable at the present time are sized approximately 50 kW and above, with numerous options in blocks grouped around 300 kW, 800 kW, 1,200 kW and larger. Typically, CHP systems are used to produce a portion of the electricity needed by a facility some or all of the time, with the balance of electric needs satisfied by purchase from the grid.

Any proposed CHP project will need to consider many factors, such as existing system load, use of thermal energy produced, system size, natural gas fuel availability, and proposed plant location. The building has sufficient need for electrical generation and the ability to use most of the thermal byproduct during the winter; however thermal usage during the summer months does not exist. Thermal energy produced by the CHP plant in the warmer months will be wasted. An absorption chiller could be installed to utilize the heat to produce chilled water; however, there is no chilled water distribution system in the building. CHP is not recommended due to the building's limited summer thermal demand.

This measure is not recommended due to the absence of year-round thermal loads which are needed for efficiency CHP operation. However, a mini-size CHP could be an option for West Deptford Township to consider. The sizing and energy savings of the mini-size CHP require further study.

7.4 Demand Response Curtailment

Presently, electricity is delivered by PSE&G, which receives the electricity from regional power grid RFC. PSE&G is the regional transmission organization (RTO) that coordinates the movement of wholesale electricity in all or parts of 13 states and the District of Columbia including the State of New Jersey.

Utility Curtailment is an agreement with the utility provider's regional transmission organization and an approved Curtailment Service Provider (CSP) to shed electrical load by either turning major equipment off or energizing all or part of a facility utilizing an emergency generator; therefore, reducing the electrical demand on the utility grid. This program is to benefit the utility company during high demand periods and utility provider offers incentives to the CSP to participate in this program. Enrolling in the program will require program participants to drop electrical load or turn on emergency generators during high electrical demand conditions or during emergencies. Part of the program also will require that program participants reduce their required load or run emergency generators with notice to test the system.

A pre-approved CSP will require a minimum of 100 kW of load reduction to participate in any curtailment program. From February 2013 through January 2014 the following table summarizes the electricity load profile for the building.

Building Electric Load Profile

Peak Demand kW	Min Demand kW	Avg Demand kW	Onsite Generation Y/N	Eligible? Y/N
13.4	13.4	13.4	N	N

*the demand is estimated from one month bill

This measure is not recommended due to the small demand.

8.0 CONCLUSIONS & RECOMMENDATIONS

The following section summarizes the LGEA energy audit conducted by CHA for West Deptford Township.

The following projects should be considered for implementation:

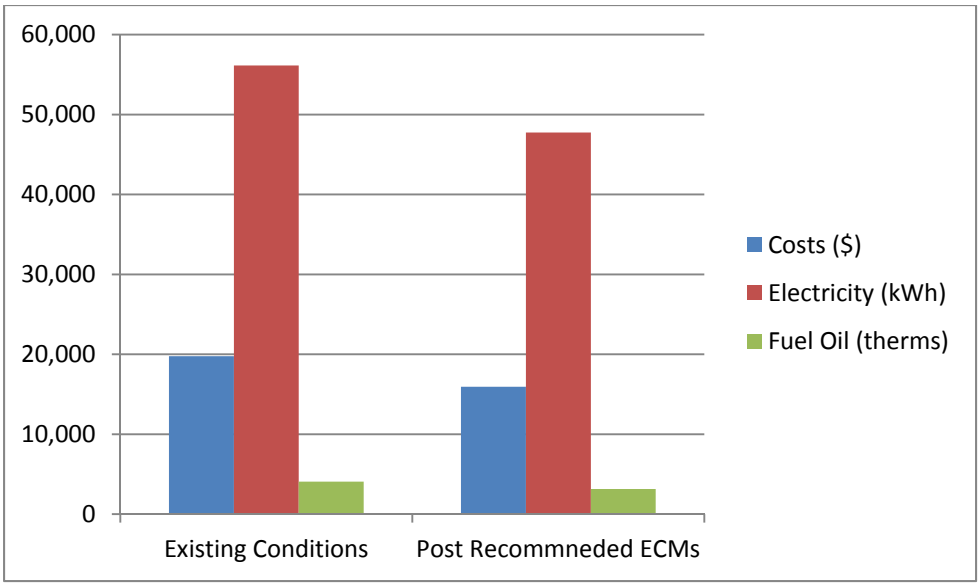
- Replace Rollup Garage Doors with Insulated Rollup Garage Doors
- Install Window AC Unit Controllers
- Replace the Manual Thermostats for the Unit Heaters with Programmable Thermostats
- Lighting Replacements with Controls (Occupancy Sensors)

The potential annual energy and cost savings for the recommended ECMs are shown in the following table.

Electric Savings (kWh)	Natural Gas Savings (therms)	Total Savings ($)	Payback (years)
8,390	907	3,825	14.9

If West Deptford Township implements the recommended ECMs, energy savings would be as follows:

	Existing Conditions	Post Recommended ECMs	Percent Savings
Costs ($)	19,769	15,944	19%
Electricity (kWh)	56,136	47,746	15%
Natural Gas (therms)	4,066	3,160	22%
Site EUI (kbtu/SF/Yr)	40.0	32.0	



Next Steps: This energy audit has identified several areas of potential energy savings. West Deptford Township can use this information to pursue incentives offered by the NJBPU's NJ Clean Energy Program. Additional meetings will be scheduled with Township staff members to review possible options.

APPENDIX A

Utility Usage Analysis and Alternate Utility Suppliers

West Deptford LGEA
Municipal Garage Electric Usage

Annual Utilities

12-month Summary

Electric		
Annual Usage	56,136	kWh/yr
Annual Cost	8,693	$
Blended Rate	0.155	$/kWh
Consumption Rate	0.130	$/kWh
Demand Rate	8.80	$/kW
Peak Demand	13.4	kW
Min. Demand	13.4	kW
Avg. Demand	13.4	kW
Fuel Oil		
Annual Usage	3,128	gallons/yr
Annual Cost	11,076	$
Rate	3.541	$/gallon

West Deptford LGEA
Municipal Garage

Utility Bills: Account Numbers

Account Number	Building Name	Location	Type	Notes
65 139 127 09	Municipal Garage	120 Grove Ave West Deptford NJ 08086	Electricity	
	Municipal Garage	120 Grove Ave West Deptford NJ 08086	Fuel Oil	

West Deptford LGEA
Municipal Garage Electric Usage

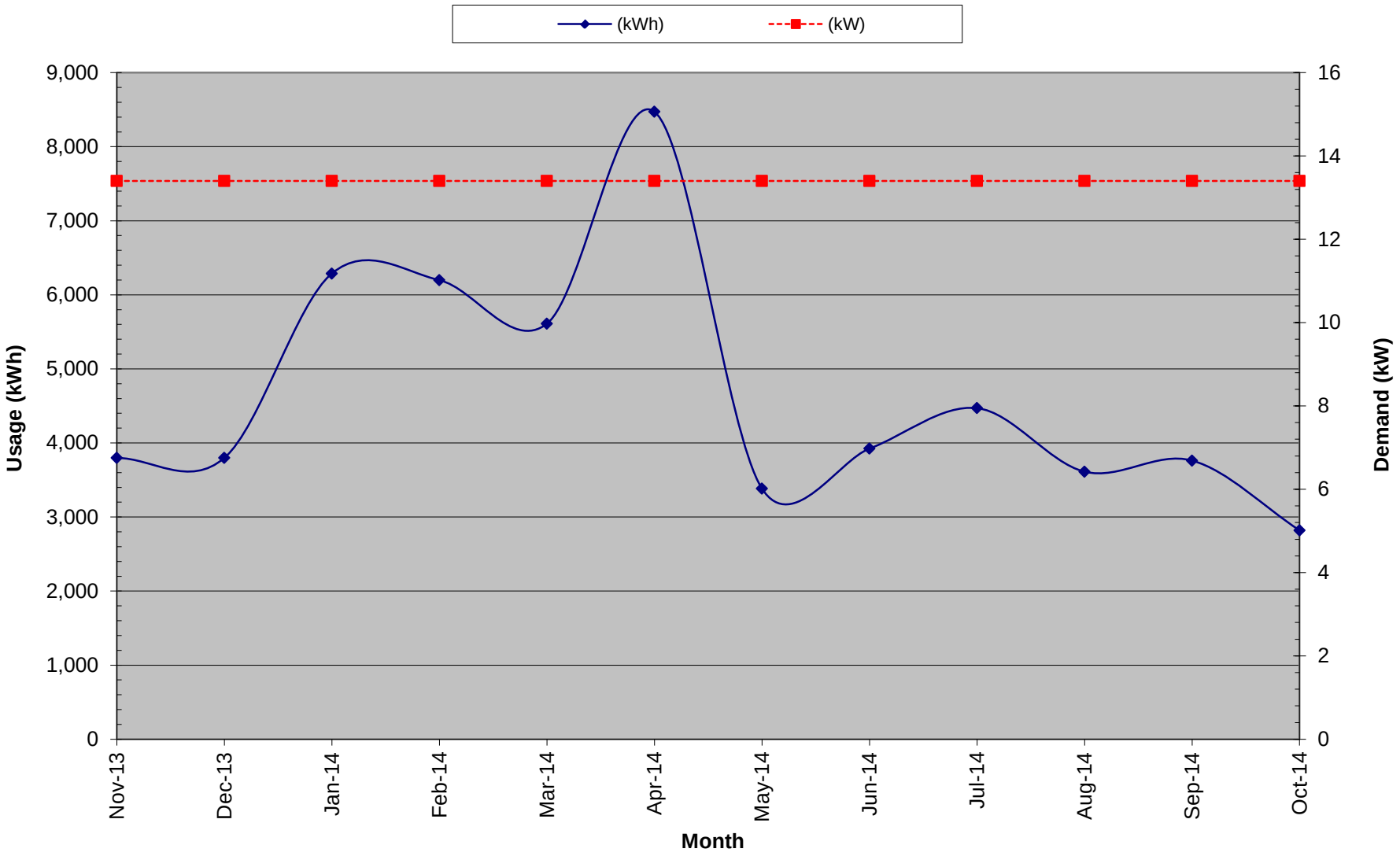
For Service at:
Account No.: **65 139 127 09** **Delivery -** PSE&G
Meter No.: **728003387** **Supplier -** PSE&G
Electric Service

			Provider Charges			Usage (kWh) vs. Demand (kW) Charge		Unit Costs		
Month	**Consumption (kWh)**	**Demand (kW)**	**Delivery ($)**	**Supplier ($)**	**Total ($)**	**Consumption ($)**	**Demand ($)**	**Blended Rate ($/kWh)**	**Consumption ($/kWh)**	**Demand ($/kW)**
November-13	3,798	13.40	183.99	380.36	564.35	507.00	57.35	0.15	0.13	4.28
December-13	3,798	13.40	183.99	380.36	564.35	507.00	57.35	0.15	0.13	4.28
January-14	6,288	13.40	275.84	557.86	833.70	776.35	57.35	0.13	0.12	4.28
February-14	6,198	13.40	277.27	579.05	856.32	798.97	57.35	0.14	0.13	4.28
March-14	5,610	13.40	257.27	564.53	821.80	764.45	57.35	0.15	0.14	4.28
April-14	8,472	13.40	413.65	905.51	1,319.16	1,261.81	57.35	0.16	0.15	4.28
May-14	3,384	13.40	170.7	379.53	550.23	492.88	57.35	0.16	0.15	4.28
June-14	3,924	13.40	197.9	440.1	638.03	399.06	238.97	0.16	0.10	17.83
July-14	4,470	13.40	337.16	361.95	699.11	460.14	238.97	0.16	0.10	17.83
August-14	3,612	13.40	307.59	382.93	690.52	451.55	238.97	0.19	0.13	17.83
September-14	3,762	13.40	306.99	394.47	701.46	462.49	238.97	0.19	0.12	17.83
October-14	2,820	13.40	137.04	317.35	454.39	397.04	57.35	0.16	0.14	4.28
Total (All)	**56,136**	**13.40**	**$3,049.43**	**$5,643.99**	**$8,693.42**	**$7,278.73**	**$1,414.70**	**$0.15**	**$0.13**	**$8.80**
Total (12 Months)	**56,136**	**13.40**	**$3,049.43**	**$5,643.99**	**$8,693.42**	**$7,278.73**	**$1,414.70**	**$0.15**	**$0.13**	**$8.80**
Notes	1	13.4	3	4	5	6	7	8	9	10

1.) Number of kWh of electri 13.40
2.) Number of kW of power measured
3.) Electric charges from Delivery provider
4.) Electric charges from Supply provider
5.) Total charges (Delivery + Supplier)
6.) Charges based on the number of kWh of electric energy used
7.) Charges based on the number of kW of power measured
8.) Total Charges ($) / Consumption (kWh)
9.) Consumption Charges ($) / Consumption (kWh)
10.) Demand Charges ($) / Demand (kW)

Estimated due to missing data

Municipal Garage Electric Usage

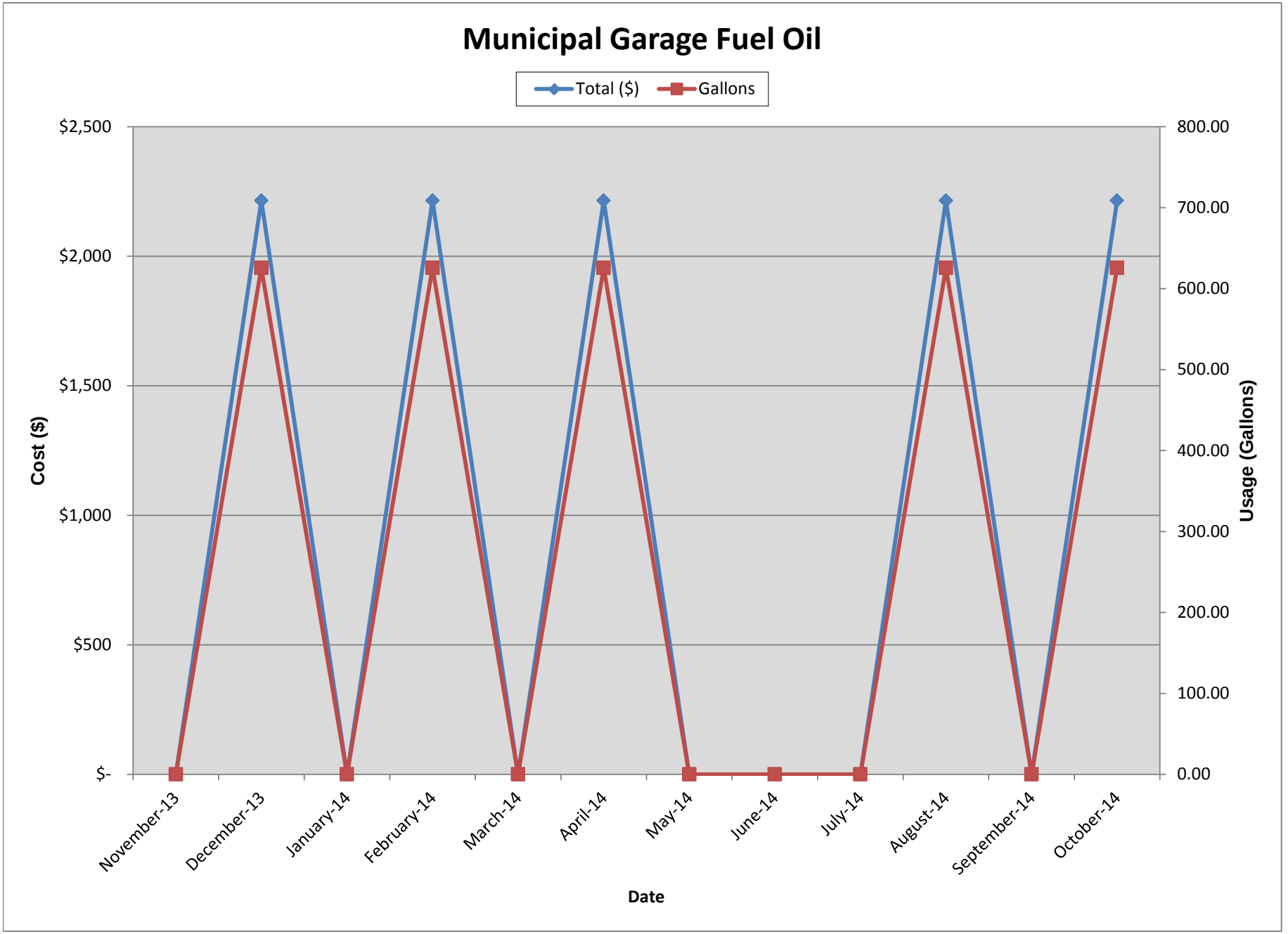


Municipal Garage Utility Data.xlsx
Electric Graph

West Deptford LGEA
Municipal Garage Fuel Oil

For Service at:
Account No.:
Meter No.: **Delivery -** **Majestic Oil Com**
Fuel Oil Service **Supplier -** **Majestic Oil Com**

Month	Total ($)	Gallons	$/Gallon
November-13	$ -	0.00	
December-13	$ 2,215.20	625.60	$ 3.54
January-14	$ -	0.00	
February-14	$ 2,215.20	625.60	$ 3.54
March-14	$ -	0.00	
April-14	$ 2,215.20	625.60	$ 3.54
May-14	$ -	0.00	
June-14	$ -	0.00	
July-14	$ -	0.00	
August-14	$ 2,215.20	625.60	$ 3.54
September-14	$ -	0.00	
October-14	$ 2,215.20	625.60	$ 3.54
Total	**$ 11,076.00**	**3,128.00**	**$ 3.54**


Municipal Garage Fuel Oil
Total ($)
Gallons
$2,500
$2,000
$1,500
$1,000
$500
$-
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
Cost ($)
Usage (Gallons)
November-13
December-13
January-14
February-14
March-14
April-14
May-14
June-14
July-14
August-14
September-14
October-14
Date

PSE&G ELECTRIC SERVICE TERRITORY
Last Updated: 9/04/14

***CUSTOMER CLASS** - **R – RESIDENTIAL C – COMMERCIAL I –INDUSTRIAL**

Supplier	Telephone & Web Site	*Customer Class
Abest Power & Gas of NJ, LLC 202 Smith Street Perth Amboy, NJ 08861	(888)987-6937 www.AbestPower.com	**R/C/I** **ACTIVE**
AEP Energy, Inc. 309 Fellowship Road, Fl. 2 Mount Laurel, NJ 08054	(866) 258-3782 www.aepenergy.com	**R/C/I** **ACTIVE**
Alpha Gas and Electric, LLC 641 5th Street Lakewood, NJ 08701	(855) 553-6374 www.alphagasandelectric.com	**R/C** **ACTIVE**
Ambit Northeast, LLC d/b/a Ambit Energy 103 Carnegie Center Suite 300 Princeton, NJ 08540	877-282-6284 www.ambitenergy.com	**R/C** **ACTIVE**
American Powernet Management, LP 437 North Grove St. Berlin, NJ 08009	(877) 977-2636 www.americanpowernet.com	**C/I** **ACTIVE**
Amerigreen Energy, Inc. 333Sylvan Avenue Englewood Cliffs, NJ 07632	888-559-4567 www.amerigreen.com	**R/C** **ACTIVE**
AP Gas & Electric, (NJ) LLC 10 North Park Place, Suite 420 Morristown, NJ 07960	(855) 544-4895 www.apgellc.com	**R/C/I** **ACTIVE**
Astral Energy LLC 16 Tyson Place Bergenfield, NJ 07621	(888)850-1872 www.AstralEnergyLLC.com	**R/C/I** **ACTIVE**
Barclays Capital Services, Inc. 70 Hudson Street Jersey City, NJ 07302-4585	(800) 526-7000 www.barclays.com	**C** **ACTIVE**
BBPC, LLC d/b/a Great Eastern Energy 116 Village Blvd. Suite 200	(888) 651-4121	**C**

Princeton, NJ 08540	www.greateasternenergy.com	**ACTIVE**
Berkshire Energy Partners, LLC 9 Berkshire Road Landenberg, PA 19350 Attn: Dana A. LeSage, P.E.	(610) 255-5070 www.berkshireenergypartners.com	**C/I** **ACTIVE**
Blue Pilot Energy, LLC 197 State Rte. 18 South Ste. 3000 East Brunswick, NJ 08816	(800) 451-6356 www.bluepilotenergy.com	**R/C** **ACTIVE**
Brick Standard, LLC 235 Hudson Street Suite 1 Hoboken, NJ 07030	(201)706-8101 www.standardalternative.com	**C/I** **ACTIVE**
CCES LLC dba Clean Currents Energy Services 566 Terhune Street Teaneck, NJ 07666	(877) 933-2453 www.cleancurrents.com	**R/C** **ACTIVE**
Champion Energy Services, LLC 1200 Route 22 Bridgewater, NJ 08807	(888) 653-0093 www.championenergyservices.com	**R/C/I** **ACTIVE**
Choice Energy, LLC 4257 US Highway 9, Suite 6C Freehold, NJ 07728	(888) 565-4490 www.4choiceenergy.com	**R/C** **ACTIVE**
Clearview Electric, Inc. 1744 Lexington Avenue Pennsauken, NJ 08110	(888) CLR-VIEW (800) 746- 4702 www.clearviewenergy.com	**R/C/I** **ACTIVE**
Commerce Energy, Inc. 7 Cedar Terrace Ramsey, NJ 07446	1-866-587-8674 www.commerceenergy.com	**R/C** **ACTIVE**
Community Energy Inc. 51 Sandbrook Headquarters Road Stockton, NJ 08559	(866)946-3123 www.communityenergyinc.com	**R/C/I** **ACTIVE**
ConEdison Solutions Cherry Tree Corporate Center 535 State Highway Suite 180 Cherry Hill, NJ 08002	(888) 665-0955 www.conedsolutions.com	**C/I** **ACTIVE**

ConocoPhillips Company 224 Strawbridge Drive Suite 107 Moorestown, NJ 08057	(800) 646-4427 www.conocophillips.com	**C/I** **ACTIVE**
Constellation NewEnergy, Inc. 900A Lake Street, Suite 2 Ramsey, NJ 07446	(888) 635-0827 www.constellation.com	**R/C/I** **ACTIVE**
Constellation Energy 900A Lake Street, Suite 2 Ramsey, NJ 07446	(877) 997-9995 www.constellation.com	**R** **ACTIVE**
Credit Suisse, (USA) Inc. 700 College Road East Princeton, NJ 08450	(212) 538-3124 www.creditsuisse.com	**C** **ACTIVE**
Direct Energy Business, LLC 120 Wood Avenue, Suite 611 Iselin, NJ 08830	(888) 925-9115 http://www.business.directenergy.com/	**R** **ACTIVE**
Direct Energy Business Marketing, LLC (fka Hess Energy Marketing) 1 Hess Plaza Woodbridge, NJ 07095	(800) 437-7872 http://www.business.directenergy.com/	**C/I** **ACTIVE**
Direct Energy Services, LLC 120 Wood Avenue, Suite 611 Iselin, NJ 08830	(888) 925-9115 www.directenergy.com	**R** **ACTIVE**
Direct Energy Small Business, LLC (fka Hess Small Business Services, LLC) One Hess Plaza Woodbridge, NJ 07095	(888) 464-4377 http://www.business.directenergy.com/	**C/I** **ACTIVE**
Discount Energy Group, LLC 811 Church Road, Suite 149 Cherry Hill, New Jersey 08002	(800) 282-3331 www.discountenergygroup.com	**R/C** **ACTIVE**
Dominion Retail, Inc. d/b/a Dominion Energy Solutions 395 Route #70 West Suite 125 Lakewood, NJ 08701	(866) 275-4240 www.dom.com/products	**R/C** **ACTIVE**

DTE Energy Supply, Inc. One Gateway Center, Suite 2600 Newark, NJ 07102	(877) 332-2450 www.dtesupply.com	**C/I** **ACTIVE**
Energy.me Midwest LLC 90 Washington Blvd Bedminster, NJ 07921	(855) 243-7270 www.energy.me	**R/C/I** **ACTIVE**
Energy Plus Holdings LLC 309 Fellowship Road East Gate Center, Suite 200 Mt. Laurel, NJ 08054	(877) 866-9193 www.energypluscompany.com	**R/C** **ACTIVE**
Ethical Electric Benefit Co. d/b/a Ethical Electric 100 Overlook Center, 2nd Fl. Princeton, NJ 08540	(888) 444-9452 www.ethicalelectric.com	**R/C** **ACTIVE**
Energy Service Providers, Inc., d/b/a New Jersey Gas & Electric 1 Bridge Plaza fl. 2 Fort Lee, NJ 07024	(866) 568-0290 www.njgande.com	**R/C** **ACTIVE**
FirstEnergy Solutions 150 West State Street Trenton, NJ 08608	(866) 625-7318 www.fes.com	**C/I** **ACTIVE**
Gateway Energy Services Corp. 120 Wood Avenue Suite 611 Iselin, NJ 08830	(866)348-4193 www.directenergybusiness.com	**R/C** **ACTIVE**
GDF SUEZ Energy Resources NA, Inc. 333 Thornall Street Sixth Floor Edison, NJ 08837	(866) 999-8374 www.gdfsuezenergyresources.com	**C/I** **ACTIVE**
GDF Suez Retail Energy Solutions LLC d/b/a THINK ENERGY 333 Thornall St. Sixth Floor Edison, NJ 08819	1-866-252-0078 www.mythinkenergy.com	**R/C/I** **ACTIVE**
Glacial Energy of New Jersey, Inc. 21 Pine Street, Suite 237 Rockaway, NJ 07866	(888) 452-2425 www.glacialenergy.com	**C/I** **ACTIVE**

Global Energy Marketing LLC 129 Wentz Avenue Springfield, NJ 07081	(800) 542-0778 www.globalp.com	**R/C/I** **ACTIVE**
Green Mountain Energy Company 211 Carnegie Center Drive Princeton, NJ 08540	(866) 767-5818 www.greenmountain.com/commercial-home	**C/I** **ACTIVE**
Harborside Energy LLC 101 Hudson Street Suite 2100 Jersey City, NJ 07302	(877) 940-3835 www.harborsideenergynj.com	**R/C** **ACTIVE**
Hess Corporation 1 Hess Plaza Woodbridge, NJ 07095	(800) 437-7872 www.hess.com	**C/I** **ACTIVE**
HIKO Energy, LLC 655 Suffern Road Teaneck, NJ 07666	(888) 264-4908 www.hikoenergy.com	**R/C/I** **ACTIVE**
Hudson Energy Services, LLC 7 Cedar Street Ramsey, New Jersey 07446	(877) Hudson 9 www.hudsonenergyservices.com	**C** **ACTIVE**
IDT Energy, Inc. 550 Broad Street Newark, NJ 07102	(877) 887-6866 www.idtenergy.com	**R/C** **ACTIVE**
Independence Energy Group, LLC 211 Carnegie Center Princeton, NJ 08540	(877) 235-6708 www.chooseindependence.com	**R/C** **ACTIVE**
Inspire Energy Holdings LLC 923 Haddonfield Road 3rd Fl. Building B2 Cherry Hill, NJ 08002	(866) 403-2620 www.inspireenergy.com	**R/C/I**
Integrys Energy Services, Inc. 33 Wood Ave, South, Suite 610 Iselin, NJ 08830	(800) 536-0151 www.integrysenergy.com	**C/I** **ACTIVE**
Jsynergy, LLC 445 Central Ave. Suite 204 Cedarhurst, NY 11516	(516) 331-2020 Jsynergyllc.com	**R/C/I** **ACTIVE**

Kuehne Chemical Company, Inc. 86 North Hackensack Avenue South Kearney, NJ 07032	(973) 589-0700 kuehnechemical@comcast.net	**I**
Liberty Power Delaware, LLC 1973 Highway 34, Suite 211 Wall, NJ 07719	(866) 769-3799 www.libertypowercorp.com	**C/I** **ACTIVE**
Liberty Power Holdings, LLC 1973 Highway 34, Suite 211 Wall, NJ 07719	(866) 769-3799 www.libertypowercorp.com	**R/C/I** **ACTIVE**
Linde Energy Services 575 Mountain Avenue Murray Hill, NJ 07974	(800) 247-2644 www.linde.com	**C/I** **ACTIVE**
Marathon Power LLC 302 Main Street Paterson, NJ 07505	(888) 779-7255 www.mecny.com	**R/C/I** **ACTIVE**
MP2 Energy NJ, LLC 111 River Street, Suite 1204 Hoboken, NJ 07030	(877) 238-5343 www.mp2energy.com	**R/C/I** **ACTIVE**
Natures Current, LLC 95 Fairmount Avenue Philadelphia, Pennsylvania 19123	(215) 464-6000 www.naturescurrent.com	**R/C/I** **ACTIVE**
MPower Energy NJ LLC One University Plaza, Suite 507 Hackensack, NJ 07601	(877) 286-7693 www.mpowerenergy.com	**R/C/I** **ACTIVE**
NATGASCO, Inc. (Supreme Energy, Inc.) 532 Freeman St. Orange, NJ 07050	(800) 840-4427 www.supremeenergyinc.com	**R/C** **ACTIVE**
New Jersey Gas & Electric 10 North Park Place Suite 420 Morristown, NJ 07960	(866) 568-0290 www.njgande.com	**R/C/** **ACTIVE**
NextEra Energy Services New Jersey, LLC 651 Jernee Mill Road Sayreville, NJ 08872	(877) 528-2890 Commercial (800) 882-1276 Residential www.nexteraenergyservices.com	**R/C/I** **ACTIVE**

Noble Americas Energy Solutions The Mac-Cali Building 581 Main Street, 8th Floor Woodbridge, NJ 07095	(877) 273-6772 www.noblesolutions.com	**C/I** **ACTIVE**
Nordic Energy Services, LLC 50 Tice Boulevard, Suite 340 Woodcliff Lake, NJ 07677	(877) 808-1027 www.nordiceenergy.us.com	**R/C/I** **ACTIVE**
North American Power and Gas, LLC 222 Ridgedale Avenue Cedar Knolls, NJ 07927	(888) 313-9086 www.napower.com	**R/C/I** **ACTIVE**
North Eastern States, Inc. d/b/a Entrust Energy 90 Washington Valley Road Bedminster, NJ 07921	(888) 535-6340 www.entrustenergy.com	**R/C/I** **ACTIVE**
Oasis Power, LLC d/b/a Oasis Energy 11152 Westheimer, Suite 901 Houston, TX 77042	(800)324-3046 www.oasisenergy.com	**R/C** **ACTIVE**
Palmco Power NJ, LLC One Greentree Centre 10,000 Lincoln Drive East, Suite 201 Marlton, NJ 08053	(877) 726-5862 www.PalmcoEnergy.com	**R/C/I** **ACTIVE**
Park Power, LLC 1200 South Church St. Suite 23 Mount Laurel, NJ 08054	(856) 778-0079 www.parkpower.com	**R/C/I** **ACTIVE**
Plymouth Rock Energy, LLC 338 Maitland Avenue Teaneck, NJ 07666	(855) 32-POWER (76937) www.plymouthenergy.com	**R/C/I** **ACTIVE**
Power Management Co., LLC b/b/a PMC Lightsavers Limited Liability Company 1600 Moseley Road Victor, NY 14564	(585) 249-1360 www.powermanagementco.com	**C/I** **ACTIVE**
PPL Energy Plus, LLC 811 Church Road Cherry Hill, NJ 08002	(800) 281-2000 www.pplenergyplus.com	**C/I** **ACTIVE**

PPL EnergyPlus Retail, LLC 788 Shrewsbury Avenue, Suite 220 Tinton Falls, NJ 07724	(732) 741-0505 – 2000 www.pplenergyplus.com	**C/I** **ACTIVE**
Progressive Energy Consulting, LLC PO Box 4582 Wayne, New Jersey 07474	(917) 837-7400 Progressivenrg@optionline.net	**R/C/I** **ACTIVE**
Prospect Resources, Inc. 208 W. State Street Trenton, NJ 08608-1002	(847) 673-1959 www.prospectresources.com	**C** **ACTIVE**
Public Power & Utility of New Jersey, LLC One International Blvd, Suite 400 Mahwah, NJ 07495	(888) 354-4415 www.ppandu.com	**R/C/I** **ACTIVE**
Reliant Energy 211 Carnegie Center Princeton, NJ 08540	(877) 297-3795 (877) 297-3780 www.reliant.com	**R/C/I** **ACTIVE**
ResCom Energy LLC 18C Wave Crest Ave. Winfield Park, NJ 07036	(888) 238-4041 http://rescomenergy.com	**R/C/I** **ACTIVE**
Residents Energy, LLC 550 Broad Street Newark, NJ 07102	(888) 828-7374 www.residentsenergy.com	**R/C**
Respond Power LLC 1001 East Lawn Drive Teaneck, NJ 07666	(877) 973-7763 www.majorenergy.com	**R/C/I** **ACTIVE**
Save on Energy, LLC 1101 Red Ventures Drive Fort Mill, SC 29707	1 (877)-658-3183 www.saveonenergy.com	**R/C**
S.J. Energy Partners, Inc. 208 White Horse Pike, Suite 4 Barrington, NJ 08007	(800) 695-0666 www.sjnaturalgas.com	**C** **ACTIVE**
SmartEnergy Holdings, LLC 100 Overlook Center 2nd Floor Princeton, NJ NJ 08540 United States of America	(800) 443-4440 www.smartenergy.com	**R/C/I** **ACTIVE**

South Jersey Energy Company 1 South Jersey Plaza, Route 54 Folsom, NJ 08037	(800) 266-6020 www.southjerseyenergy.com	**R/C/I** **ACTIVE**
Spark Energy Gas, LP/ Spark Energy 2105 City West Blvd. Suite 100 Houston, TX 77042	(713)600-2600 www.sparkenergy.com	**R/C/I** **ACTIVE**
Sperian Energy Corp. 1200 Route 22 East, Suite 2000 Bridgewater, NJ 08807	(888) 682-8082 www.sperianenergy.com	**R/C/I** **ACTIVE**
Starion Energy PA Inc. 101 Warburton Avenue Hawthorne, NJ 07506	(800) 600-3040 www.starionenergy.com	**R/C/I** **ACTIVE**
Stream Energy New Jersey, LLC 309 Fellowship Rd., Suite 200 Mt. Laurel, NJ 08054	(877) 369-8150 www.streamenergy.net	**R/C** **ACTIVE**
Summit Energy Services, Inc. 10350 Ormsby Park Place Suite 400 Louisville, KY 40223	1 (800) 90-SUMMIT www.summitenergy.com	**C/I** **ACTIVE**
Texas Retail Energy LLC Park 80 West Plaza II, Suite 200 Saddle Brook, NJ 07663 Attn: Chris Hendrix	(866) 532-0761 Texasretailenergy.com	**C/I** **ACTIVE**
TransCanada Power Marketing Ltd. 190 Middlesex Essex Turnpike, Suite 200 Iselin, NJ 08830	(877) MEGAWAT www.transcanada.com/powermarketing	**C/I** **ACTIVE**
TriEagle Energy, LP 90 Washington Valley Rd Bedminster, NJ 07921	(877) 933-2453 www.trieagleenergy.com	**R/C/I** **ACTIVE**
UGI Energy Services, Inc. dba UGI Energy Link 224 Strawbridge Drive Suite 107 Moorestown, NJ 08057	(800) 427-8545 www.ugienergylink.com	**C/I** **ACTIVE**

Verde Energy USA, Inc. 2001 Route 46 Waterview Plaza Suite 301 Parsippany, NJ 07054	(800) 388-3862 www.lowcostpower.com	**R/C** **ACTIVE**
Viridian Energy 2001 Route 46, Waterview Plaza Suite 310 Parsippany, NJ 07054	(866) 663-2508 www.viridian.com	**R/C/I** **ACTIVE**
XOOM Energy New Jersey, LLC 744 Broad Street. 16th Floor Newark, NJ 07102	(888) 997-8979 www.xoomenergy.com	**R/C/I** **ACTIVE**
YEP Energy 89 Headquarters Plaza North #1463 Morristown, NJ 07960	(855) 363-7736 www.yepenergyNJ.com	**R/C/I** **ACTIVE**
Your Energy Holdings, LLC One International Boulevard Suite 400 Mahwah, NJ 07495-0400	(855) 732-2493 www.thisisyourenergy.com	**R/C/I** **ACTIVE**

Back to the main supplier page

APPENDIX B

Equipment Inventory

CHA Project # 29528
Municipal Garage Building
West Deptford NJ

Description	QTY	Manufacturer Name	Model No.	Serial No.	Equipment Type / Utility	Capacity/Size /Efficiency	Efficiency	Location	Areas/Equipment Served	Date Installed	Remaining Useful Life (years)	Other Info.	Current year	Years Old	ASHRAE life expectancy
DHW	1	N/A	N/A	N/A	Steam-Hot water Heat Exchanger to produce domestic hot water from the main steam boiler	about 6 gallon	N/A	Boiler Room	The Whole Building	2000	5		2015	15	20
HHW Boiler	1	Weil-Mclain	WRL62 2-0-05		Fuel Oil#2 Steam Boiler	Maximum 1,251 MBH and Minimum 486.5 MBH Energy Input	~75% Heating Capacity	Boiler Room	The Whole Building	1960	-25		2015	55	30
Steam Unit Heaters	10	N/A	N/A	N/A	Unit heaters	N/A		Garage Bay	The Whole Building	1960	-35		2015	55	20
Window AC Units	6	Varies	Varies	Varies	Window AC Units	~1 ton cooling capacity	N/A	Offices and Lunch Rooms	Offices and Lunch Rooms	1995	0		2015	20	20

APPENDIX C

ECM Calculations

WEST DEPTFORD TOWNSHIP - Municipal Garage
CHA Project Numer: 29528

Rate of Discount (used for NPV) 3.0%

Utility Costs			Yearly Usage	Metric Ton Carbon Dioxide Equivalent	Building Area	Annual Utility Cost		
$ 0.155	$/kWh blended		0.000420205	14,960	Electric	Fuel Oil	
$ 0.130	$/kWh supply	56,136	0.000420205		$ 8,693	$ 11,076	
$ 8.80	$/kW	13.4	0				
Fuel Oil#2 $ 2.72	$/Therm	4,066	0.00533471	<therm(3128 gallon)			
Estimated $ 7.50	$/kgals		0				
	$/Gal						

Municipal Garage

Recommend? Y or N		Item	Savings kW	kWh	therms	No. 2 Oil gal	Water kgal	$	Cost	Simple Payback	Life Expectancy	Equivalent CO (Metric tons)	NJ Smart Start Incentives	Direct Install Eligible (Y/N)	Payback w/ Incentives	Simple Projected Lifetime Savings kW	kWh	therms	kgal/yr	$	ROI	NPV	IRR
Y	ECM-1	Replace Rollup Garage Doors with Insulated Rollup Garage Doors	0.0	0	724	0	0	1,968	$ 39,188	19.9	20	3.9	$ -	N	19.9	0.0	0	14,470	0	$ 39,359	0.0	($9,909)	0.0%
N	ECM-2	Convert Fuel Oil to Natural Gas	0.0	0	757	0	0	7,105	$ 217,658	30.6	15	4.0	$ 1,782	N	30.4	0.0	0	11,361	0	$ 30,901	(0.9)	($131,055)	-7.8%
Y	ECM-3	Install Window AC Unit Controllers	0.0	5,456	0	0	0	846	$ 1,200	1.4	15	2.3	$ -	N	1.4	0.0	81,836	0	0	$ 12,685	9.6	$8,895	70.4%
Y	ECM-4	Replace the Manual Thermostats for the Unit Heaters with Programmable Thermostats	0.0	0	183	0	0	498	$ 6,819	13.7	15	1.0	$ 1,600	N	10.5	0.0	0	2,746	0	$ 7,468	0.1	$725	4.9%
N	ECM-5	Upgrade the Plumbing Fixtures with Low Flow Fixtures	0.0	0	41	0	13	210	$ 12,657	60.2	15	0.2	$ -	N	60.2	0.0	0	615	197	$ 3,153	(0.8)	($10,148)	-13.8%
N	ECM-L1	Lighting Replacements / Upgrades	1	2,500	0	0	0	457	$ 8,269	18.1	15	1.1	$ 1,550	N	14.7	18.8	37,500	0	0	$ 7,793	(0.1)	($1,263)	0.3%
N	ECM-L2	Install Lighting Controls (Add Occupancy Sensors)	0	767	0	0	0	100	$ 1,360	13.6	15	0.3	$ 175	N	11.9	0.0	11,505	0	0	$ 1,783	0.3	$5	3.1%
Y	ECM-L3	Lighting Replacements with Controls (Occupancy Sensors)	1	2,934	0	0	0	513	$ 9,616	18.7	15	1.2	$ 1,725	N	15.4	18.8	44,010	0	0	$ 8,802	(0.1)	($1,762)	-0.3%
		Total	**1.3**	**8,390**	**1,705**	**0**	**13**	**$ 11,140**	**$ 287,138**	**25.8**	**15.8**	**13**	**$ 5,107**		**25.3**	**19**	**125,846**	**29,192**	**197**	**$ 102,368**	**(0.6)**	**(143,254)**	**-5.9%**
		Recommended Measures (highlighted green above)	**1.3**	**8,390**	**907**	**0**	**0**	**$ 3,825**	**$ 56,823**	**14.9**	**16.3**	**8**	**$ 3,325**	**0**	**14.0**	**19**	**125,846**	**17,216**	**-**	**$ 68,314**	**0.2**	**(2,051)**	**1.6%**
		% of Existing	**9%**	**15%**	**22%**	**0**	**0**																

City:	Philadelphia, PA
Occupied Hours/Week	40

Temp	Enthalpy h (Btu/lb)	Bin Hours	Building Operating Hours	Auditorium Occupied Hours	Gymnasium Occupied Hours	Library Occupied Hours	Classrooms Occupied Hours
102.5							
97.5	33	3	1	0	0	0	0
92.5	38	33	8	0	0	0	0
87.5	36	123	29	0	0	0	0
82.5	34	477	114	0	0	0	0
77.5	33	656	156	0	0	0	0
72.5	31	742	177	0	0	0	0
67.5	28	784	187	0	0	0	0
62.5	25	983	234	0	0	0	0
57.5	21	625	149	0	0	0	0
52.5	18	540	129	0	0	0	0
47.5	16	457	109	0	0	0	0
42.5	14	671	160	0	0	0	0
37.5	12	1,067	254	0	0	0	0
32.5	10	685	163	0	0	0	0
27.5	9	369	88	0	0	0	0
22.5	7	321	76	0	0	0	0
17.5	5	184	44	0	0	0	0
12.5	4	40	10	0	0	0	0
7.5		0	0	0	0	0	0
2.5		0	0	0	0	0	0
-2.5		0					
-7.5							

Multipliers	
Material:	1.027
Labor:	1.246
Equipment:	1.124

Heating System Efficiency	76%
Cooling Eff (kW/ton)	1.3

Heating		
Hours	4,427	Hrs
Weighted Avg	40	F
Avg	28	F

Cooling		
Hours	4,333	Hrs
Weighted Avg	68	F
Avg	78	F

WEST DEPTFORD TOWNSHIP - Municipal Garage
CHA Project Numer: 29528
Municipal Garage

Note: pricing is for energy calculations only -do not use for procurement

ECM-1 Replace Rollup Garage Doors with Insulated Rollup Garage Doors

Existing: The building has old style garage door which may not have sufficient insulation. Replacing these old garage doors with well insulated garage doors will result in energy savings.
Proposed: Replace single pane windows with double windows.

Linear Feet of panel Edge	1,026.0	LF	Cooling System Efficiency	0	kW/ton	Heating System Efficiency	76%		
Area of Panel	3,420.0	SF	Ex Occupied Clng Temp.	60	*F	Heating On Temp.	55	*F	
Existing Infiltration Factor	**0.60**	**cfm/LF**	Ex Unoccupied Clng Temp.	60	*F	Ex Occupied Htg Temp.	65	*F	
Proposed Infiltration Factor	**0.40**	**cfm/LF**	Cooling Occ Enthalpy Setpoint	27.5	Btu/lb	Ex Unoccupied Htg Temp.	65	*F	
Existing U Value	**1.10**	**Btuh/SF/*F**	Cooling Unocc Enthalpy Setpoint	27.5	Btu/lb	Electricity	$ 0.155	$/kWh	
Proposed U Value	**0.60**	**Btuh/SF/*F**				Natural Gas	$ 2.72	$/therm	

					EXISTING LOADS		PROPOSED LOADS		COOLING ENERGY		HEATING ENERGY	
					Occupied	Unoccupied	Occupied	Unoccupied				
Avg Outdoor Air Temp. Bins *F	**Avg Outdoor Air Enthalpy**	**Existing Equipment Bin Hours**	**Occupied Equipment Bin Hours**	**Unoccupied Equipment Bin Hours**	**Panel Infiltration & Heat Load BTUH**	**Panel Infiltration & Heat Load BTUH**	**Panel Infiltration & Heat Load BTUH**	**Panel Infiltration & Heat Load BTUH**	**Existing Cooling Energy kWh**	**Proposed Cooling Energy kWh**	**Existing Heating Energy Therms**	**Proposed Heating Energy Therms**
A		**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**
102.5	50.1	0	0	0	-222,492	-222,492	-128,948	-128,948	0	0	0	0
97.5	42.5	3	1	0	-182,628	-182,628	-104,652	-104,652	0	0	0	0
92.5	39.5	33	8	0	-155,507	-155,507	-88,852	-88,852	0	0	0	0
87.5	36.6	123	29	0	-128,664	-128,664	-73,236	-73,236	0	0	0	0
82.5	34.0	477	114	0	-102,651	-102,651	-58,174	-58,174	0	0	0	0
77.5	31.6	656	156	0	-77,193	-77,193	-43,482	-43,482	0	0	0	0
72.5	29.2	742	177	0	-51,734	-51,734	-28,790	-28,790	0	0	0	0
67.5	27.0	784	187	0	-26,830	-26,830	-14,467	-14,467	0	0	0	0
62.5	24.5	983	234	0	-1,094	-1,094	410	410	0	0	0	1
57.5	21.4	625	149	0	0	0	0	0	0	0	0	0
52.5	18.7	540	129	0	55,336	55,336	31,190	31,190	0	0	94	53
47.5	16.2	457	109	0	77,470	77,470	43,667	43,667	0	0	111	63
42.5	14.4	671	160	0	99,604	99,604	56,143	56,143	0	0	209	118
37.5	12.6	1,067	254	0	121,738	121,738	68,619	68,619	0	0	407	229
32.5	10.7	685	163	0	143,873	143,873	81,095	81,095	0	0	309	174
27.5	8.6	369	88	0	166,007	166,007	93,571	93,571	0	0	192	108
22.5	6.8	321	76	0	188,141	188,141	106,047	106,047	0	0	189	107
17.5	5.5	184	44	0	210,275	210,275	118,524	118,524	0	0	121	68
12.5	4.1	40	10	0	232,410	232,410	131,000	131,000	0	0	29	16
7.5	2.6	0	0	0	254,544	254,544	143,476	143,476	0	0	0	0
2.5	1.0	0	0	0	276,678	276,678	155,952	155,952	0	0	0	0
-2.5	0.0	0	0	0	298,812	298,812	168,428	168,428	0	0	0	0
-7.5	-1.5	0	0	0	320,946	320,946	180,904	180,904	0	0	0	0
TOTALS		**8,760**	**2,086**	**0**					0	0	**1,661**	**938**

Existing Panel Infiltration	**616**	**cfm**
Existing Panel Heat Transfer	**3,762**	**Btuh/*F**
Proposed Panel Infiltration	**410**	**cfm**
Proposed Panel Heat Transfer	**2,052**	**Btuh/*F**

Savings			
	724	**Therms**	**$ 1,968**
	0	**kWh**	**$ -**
			$ 1,968

Panel ID	Location	Quantity	Width (ft)	Height (ft)	Linear Feet (LF)	Area (SF)	Infiltration Rate (CFM/LF)	U Value (Btuh/SF/*F)	Infiltration (CFM)	Heat Transfer (Btuh/*F)
1	Garage door	19	12	15	1026.0	3420.0	0.6	1.1	615.6	3762.0
Total		**19**	**12**	**15**	**1,026.0**	**3,420.0**	**0.60**	**1.10**	**615.6**	**3762.0**

WEST DEPTFORD TOWNSHIP - Municipal Garage
CHA Project Numer: 29528
Municipal Garage

Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.12

ECM-1 Replace Rollup Garage Doors with Insulated Rollup Garage Doors - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
									$ -	
Rollup Garage Door	19	EA	$ 1,000	$ 500	$ -	$ 19,513	$ 11,837	$ -	$ 31,350	Estimated based on Internet Price
						$ -	$ -	$ -	$ -	

**Cost Estimates are for Energy Savings calculations only, do not use for procurement

$ 31,350	Subtotal
$ 7,838	25% Contingency
$ 39,188	**Total**

WEST DEPTFORD TOWNSHIP - Municipal Garage
CHA Project Numer: 29528
Municipal Garage

ECM-2 Convert Fuel Oil to Natural Gas

Description: This ECM evaluates converting fuel oil to natural gas. The fuel oil is much more expensive and the combusion efficiency is lower compared gas. Installing gas piping and convert the fuel oil boiler to a gas boiler.

Item	Value	Units	Formula/Comments
Baseline Fuel Cost	$ 2.72	/ Therm	No. 2 Oil
Baseline Fuel Cost	$ 1.20	/ Therm	Natural Gas (Estimated Price)
FORMULA CONSTANTS			
Oversize Factor	0.8		
Hours per Day	24		
Infrared Conversion Factor	1.0		1.0 if Boiler, 0.8 if Infrared Heater
EXISTING			
Capacity	500,000	btu/hr	Estimated Boiler Load % and Capacity
Heating Combustion Efficiency	72%		Estimated averaged Efficiency
Heating Degree-Day	2,655	Degree-day	
Design Temperature Difference	57	F	
Fuel Conversion	100,000	btu/therm	
PROPOSED			
Capacity	500,000	btu/hr	
Efficiency	82%		Estimated Efficiency after the HHW Reset
SAVINGS			
Fuel Savings	757	therms	NJ Protocols Calculation
Fuel Cost Savings	$ 7,105		

Savings calculation formulas are taken from NJ Protocols document for Occupancy Controlled Thermostats

Algorithms

$$Gas\ Savings\ (Therms) = \frac{OF \times ((CAPY_{Bi} \times EFF_Q) - (CAPY_{Qi} \times EFF_B \times ICF)) \times HDD_{mod} \times 24}{\Delta T \times HC_{fuel} \times EFF_B \times ICF \times EFF_Q}$$

Definition of Variables

OF = Oversize factor of standard boiler or furnace (OF=0.8)

$CAPY_{Bi}$ = Total input capacity of the baseline furnace, boiler or heater in Btu/hour

$CAPY_{Qi}$ = Total input capacity of the qualifying furnace, boiler or heater in Btu/hour

HDD_{mod} = HDD by zone and building type

24 = Hours/Day

ΔT = design temperature difference

HC_{fuel} = Conversion from Btu to therms of gas or gallons of oil or propane (100,000 btu/therm 138,700 btu/gal of #2 oil; 92,000 btu/gal of propane)

EFF_Q = Efficiency of qualifying heater(s) (AFUE %)

EFF_B = Efficiency of baseline heaters (AFUE %)

ICF = Infrared Compensation Factor (ICF = 0.8 for IR Heaters, 1.0 for furnaces/boilers)[2]

Furnaces and Boilers

Component	Type	Value	Source
$AFUE_q$	Variable		Application
$AFUE_b$	Fixed	Furnaces: 78% Boilers: 80% Infrared: 78%	EPACT Standard for furnaces and boilers
$CAPY_{in}$	Variable		Application
ΔT	Variable	See Table Below	1
HDD_{mod}	Fixed	See Table Below	1

Sources:

1. KEMA, *Smartstart Program Protocol Review*. 2009.
2. http://www.spaceray.com/1_space-ray_faqs.php

Adjusted Heating Degree Days by Building Type

Building Type	Heating Energy Density (kBtu/sf)	Degree Day Adjustment Factor	Atlantic City (HDD)	Newark (HDD)	Philadelphia (HDD)	Monticello (HDD)
Education	29.5	0.55	2792	2783	2655	3886
Food Sales	35.6	0.66	3369	3359	3204	4689
Food Service	39.0	0.73	3691	3680	3510	5137
Health Care	53.6	1.00	5073	5057	4824	7060
Lodging	15.0	0.28	1420	1415	1350	1976
Retail	29.3	0.55	2773	2764	2637	3859
Office	28.1	0.52	2660	2651	2529	3701
Public Assembly	33.8	0.63	3199	3189	3042	4452
Public Order/Safety	24.1	0.45	2281	2274	2169	3174
Religious Worship	29.1	0.54	2754	2745	2619	3833
Service	47.8	0.89	4524	4510	4302	6296
Warehouse/Storage	20.2	0.38	1912	1906	1818	2661

Heating Degree Days and Outdoor Design Temperature by Zone

Weather Station	HDD	Outdoor Design Temperature (F)
Atlantic City	5073	13
Newark	5057	14
Philadelphia, PA	4824	15
Monticello, NY	7060	8

WEST DEPTFORD TOWNSHIP - Municipal Garage
CHA Project Numer: 29528
Municipal Garage

ECM-2 Convert Fuel Oil to Natural Gas - Cost

Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.12

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
1,084 MBH NG Steam Boiler	1	EA	$ 13,200	$ 4,175		$ 13,556	$ 5,202	$ -	$ 18,758	RS Means 2012
Flue Installation	1	LS	$ 1,000.0	$1,000.00		$ 1,027	$ 1,246	$ -	$ 2,273	Estimated
Controls	1	EA	$ 5,000.0	$3,000.00		$ 5,135	$ 3,738	$ -	$ 8,873	Estimated
Miscellaneous Electrical	1	LS	$ 1,000	$ 2,500		$ 1,027	$ 3,115	$ -	$ 4,142	Estimated
Utility Gas Piping Construction	1	EA	$ 100,000	$ 30,000		$ 102,700	$ 37,380	$ -	$ 140,080	Estimated
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	

**Cost Estimates are for Energy Savings calculations only, do not use for procurement

$ 174,126	Subtotal
$ 43,532	25% Contingency
$ 217,658	**Total**

WEST DEPTFORD TOWNSHIP - Municipal Garage
CHA Project Numer: 29528
Municipal Garage

EQUIPMENT	AREA/EQUIPMENT SERVED	COOLING CAPACITY (btu/h)
Window AC Units	Offices and Lounges	108,000

6

Total btu/h of all window A/C Units: *108,000* *btu/h*

ECM-3 Install Window AC Unit Controllers

ECM Description : Window A/C units are currently controlled manually by the occupants and are not turned off when the room is unoccupied. This ECM evaluates implementation of a digital timer device that will automatically turn the window A/C unit off at a preset time .

ASSUMPTIONS			Comments
Electric Cost	$0.155	/ kWh	
Average run hours per Week	80	Hours	
Space Balance Point	55	F	
Space Temperature Setpoint	72	deg F	Setpoint.
BTU/Hr Rating of existing DX equipment	108,000	Btu / Hr	Total BTU/hr of DX cooling equipment to be replaced.
Average EER	10.0		
Existing Annual Electric Usage	10,461	kWh	

Item	Value	Units	Comments
Proposed Annual Electric Usage	5,005	kWh	Unit will cycle on w/ temp of room. Possible operating time shown below

ANNUAL SAVINGS		
Annual Electrical Usage Savings	5,456	kWh
Annual Cost Savings	$846	
Total Project Cost	$1,200	
Simple Payback	1	years

OAT - DB Bin Temp F	Annual Hours	**Existing Hours of Operation**	Proposed % of time of operation	**Proposed hrs of Operation**
102.5	0	0	100%	0
97.5	3	1	89%	1
92.5	33	16	79%	12
87.5	123	59	68%	40
82.5	477	227	58%	132
77.5	656	312	47%	148
72.5	742	353	37%	130
67.5	784	0	0%	0
62.5	983	0	0%	0
57.5	625	0	0%	0
52.5	540	0	0%	0
47.5	457	0	0%	0
42.5	671	0	0%	0
37.5	1,067	0	0%	0
32.5	685	0	0%	0
27.5	369	0	0%	0
22.5	321	0	0%	0
17.5	184	0	0%	0
12.5	40	0	0%	0
7.5	0	0	0%	0
2.5	0	0	0%	0
-2.5	0	0	0%	0
-7.5	0	0	0%	0
Total	8,760	**969**	48%	**463**

WEST DEPTFORD TOWNSHIP - Municipal Garage
CHA Project Numer: 29528
Municipal Garage

ECM-3 Install Window AC Unit Controllers - Cost

Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.12

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
						0	$ -	$ -	$ -	
Window AC Controller	6	EA	$ 150	$ -	$ -	924.3	$ -	$ -	$ 924	Estimated
						$ -	$ -	$ -	$ -	

**Cost Estimates are for Energy Savings calculations only, do not use for procurement

$ 924	Subtotal
$ 231	25% Contingency
$ 1,200	**Total**

WEST DEPTFORD TOWNSHIP - Municipal Garage
CHA Project Numer: 29528
Municipal Garage

ECM-4 Replace the Manual Thermostats for the Unit Heaters with Programmable Thermostats

Discription: This measure assesses the energy savings associated with replacing the a standard non programmable thermostat with a programmable thermostat allowing

Fuel Oil Savings	183	Therms
Cooling Electricity Savings	0	kWh
Total Cost Savings	$ 498	
Estimated Total Project Cost	$ 6,819	
Simple Payback	13.7	Yrs

Building Information:

14,960	Sq Footage	$0.16	$/kWh Blended
N	Cooling	$2.72	$/Therm
Y	Heating		

Nighttime Setback

EXISTING CONDITIONS		
Heating		
Heating Season Facility Temp	65	F
Weekly Occupied Hours	40	hrs
Heating Season Setback Temp	55	F
Heating Season % Savings per Degree Setback	1%	
Annual Heating Capacity	1,000	Mbtu/yr
Connected Heating Load Capacity	120,000	Btu/hr
Equivalent Full Load Heating Hours	1,131	hrs
Heating Equipment Efficiency	76%	
SAVINGS		
Fuel Oil Savings	183	Therms[3]
Cooling Electricity Savings	0	kWh

Savings calculation formulas for setback are taken from NJ Protocols document for Occupancy Controlled Thermostats
Savings calculations for additional controls are estimated based on the level of control to be added and prior experience

WEST DEPTFORD TOWNSHIP - Municipal Garage
CHA Project Numer: 29528
Municipal Garage

Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.00

ECM-4 Replace the Manual Thermostats for the Unit Heaters with Programmable Thermostats - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
						$ -	$ -	$ -	$ -	
Controller & Programming	12	EA	$ 200	$ 200		$ 2,465	$ 2,990	$ -	$ 5,455	Estimated
						$ -	$ -	$ -	$ -	
						$ -	$ -	$ -	$ -	

**Cost Estimates are for Energy Savings calculations only, do not use for procurement

$ 5,455	Subtotal
$ 1,364	25% Contingency
$ 6,819	**Total**

WEST DEPTFORD TOWNSHIP - Municipal Garage
CHA Project Numer: 29528
Municipal Garage

ECM-6 : Replace urinals and flush valves with no flow

Description: This ECM evaluates the water savings associated with replacing urinals with waterless urinals.

EXISTING CONDITIONS		
Cost of Water / 1000 Gallons	$7.50	$ / kGal
Urinals in Building to be replaced	3	
Average Flushes / Urinal (per Day)	3	
Average Gallons / Flush	1.5	Gal

PROPOSED CONDITIONS		
Proposed Urinals to be Replaced	3	
Proposed Gallons / Flush	0.000	Gal
Proposed Material Cost of new urinal & valve	$500	RS Means 2012
Proposed Installation Cost of new urinal & valve	$500	RS Means 2012
Total cost of new urinals & valves		

SAVINGS		
Current Urinal Water Use	4.93	kGal / year
Proposed Urinal Water Use	0.00	kGal / year
Water Savings	4.93	kGal / year
Cost Savings	$37	/ year

**Cost Estimates are for Energy Savings calculations only, do not use for procurement

WEST DEPTFORD TOWNSHIP - Municipal Garage
CHA Project Numer: 29528
Municipal Garage

ECM-6: Replace toiletsand flush valves with low flow

Description: This ECM evaluates the water savings associated with repalcing/ upgrading toilets to 1.28 GPF fixtures and/or flush valves.

E X I S T I N G C O N D I T I O N S		
Cost of Water / 1000 Gallons	$7.50	$ / kGal
Toilets in Building	3	
Average Flushes / Toilet (per Day)	3	
Average Gallons / Flush	3.5	Gal

P R O P O S E D C O N D I T I O N S		
Proposed Toilets to be Replaced	3	
Proposed Gallons / Flush	1.28	Gal

S A V I N G S		
Current Toilet Water Use	11.50	kGal / year
Proposed Toilet Water Use	4.20	kGal / year
Water Savings	7.29	kGal / year
Cost Savings	$55	/ year

WEST DEPTFORD TOWNSHIP - Municipal Garage
CHA Project Numer: 29528
Municipal Garage

ECM-6: Replace faucets with low flow

Description; This ECM evaluates the water savings resulting from replacing/ upgrading faucets to 0.5 gallon per minute flow

EXISTING CONDITIONS		
Cost of Water / 1000 Gallons	$7.50	$ / kGal
Faucets in Building	5	
Average Uses / Faucet (per day)	3	# Uses
Average Time of Use	10.0	seconds
Average Flowrate	2.0	gpm

PROPOSED CONDITIONS		
Proposed Faucets to be Replaced	5	
Proposed Flowrate	0.5	gpm

HEATING SAVINGS		
Fuel Cost	$ 2.72	/kWh
Number of Faucets	5	
Hours per Day of Usage	0.1	hrs
Days per Year of Facility Usage	250	days
Average Flowrate	2.0	gpm
Proposed Flowrate	0.5	gpm
Heat Content of Water	8.33	Btu/gal/F
Temperature Difference (Intake and Output)	35	F
Water Heating Equipment Efficiency	80%	
Conversion Factor	100,000	Btu/Therm
SAVINGS		
Current Faucet Water Use	1.25	kGal / year
Proposed Faucet Water Use	0.31	kGal / year
Water Savings	0.94	kGal / year
Heating Savings	41	Therms
Cost Savings	$119	/ year

Savings calculation formulas are taken from NJ Protocols document for Faucet

**Cost Estimates are for Energy Savings calculations only, do not use for procurement

WEST DEPTFORD TOWNSHIP - Municipal Garage
CHA Project Numer: 29528
Municipal Garage

Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.12

Replace Plumbing Fixtures with Low-Flow Equivalents - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
									$ -	
Waterless Urinal	3	EA	$ 500	$ 500	$ -	$ 1,541	$ 1,869	$ -	$ 3,410	Vendor Estimate
Low-Flow Toilet	3	EA	$ 800	$ 500	$ -	$ 2,465	$ 1,869	$ -	$ 4,334	Vendor Estimate
Low-Flow faucet	5	EA	$ 100	$ 300	$ -	$ 514	$ 1,869	$ -	$ 2,383	Vendor Estimate
						$ -	$ -	$ -	$ -	

**Cost Estimates are for Energy Savings calculations only, do not use for procurement

$ 10,126	Subtotal
$ 2,531	25% Contingency
$ 12,657	**Total**

WEST DEPTFORD TOWNSHIP - Municipal Garage
CHA Project Numer: 29528
Municipal Garage

New Jersey Pay For Performance Incentive Program

Note: The following calculation is based on the New Jersey Pay For Performance Incentive Program per April, 2012. Building must have a minimum average electric demand of 100 kW. This minimum is waived for buildings owned by local governements or non-profit organizations.

At a minimum, all recommended measures were used for this calculation. To qualify for P4P incentives, the following P4P requirements must be met:

- At least 15% source energy savings
- No more than 50% savings from lighting measures
- Scope includes more than one measure
- Project has at least a 10% internal rate of return
- At least 50% of the source energy savings must come from investor-owned electricity and/or natural gas (note: exemption for fuel conversions)

Total Building Area (Square Feet)	14,960
Is this audit funded by NJ BPU (Y/N)	Yes

Board of Public Utilites (BPU)

Incentive #1		
Audit is funded by NJ BPU	$0.05	$/sqft

	Annual Utilities	
	kWh	Therms
Existing Cost (from utility)	$8,693	$11,076
Existing Usage (from utility)	56,136	4,066
Proposed Savings	8,390	907
Existing Total MMBtus	598	
Proposed Savings MMBtus	119	
% Energy Reduction	**19.9%**	
Proposed Annual Savings	$3,825	

	Min (Savings = 15%)		Increase (Savings > 15%)		Max Incentive		Achieved Incentive	
	$/kWh	$/therm	$/kWh	$/therm	$/kWh	$/therm	$/kWh	$/therm
Incentive #2	$0.09	$0.90	$0.005	$0.05	$0.11	$1.25	$0.11	$1.15
Incentive #3	$0.09	$0.90	$0.005	$0.05	$0.11	$1.25	$0.11	$1.15

	Incentives $		
	Elec	Gas	Total
Incentive #1	$0	$0	$5,000
Incentive #2	$923	$1,040	$1,963
Incentive #3	$923	$1,040	$1,963
Total All Incentives	**$1,846**	**$2,080**	**$8,925**

Total Project Cost	$56,823

		Allowable Incentive
% Incentives #1 of Utility Cost*	25.3%	$5,000
% Incentives #2 of Project Cost**	3.5%	$1,963
% Incentives #3 of Project Cost**	3.5%	$1,963
Total Eligible Incentives***	**$8,925**	
Project Cost w/ Incentives	$47,897	

Project Payback (years)	
w/o Incentives	w/ Incentives
14.9	12.5

* Maximum allowable incentive is 50% of annual utility cost if not funded by NJ BPU, and %25 if it is.

** Maximum allowable amount of Incentive #2 is 25% of total project cost.

Maximum allowable amount of Incentive #3 is 25% of total project cost.

*** Maximum allowable amount of Incentive #1 is $50,000 if not funded by NJ BPU, and $25,000 if it is.

Maximum allowable amount of Incentive #2 & #3 is $1 million per gas account and $1 million per electric account; maximum 2 million per project

Energy Audit of the Municipal Garage
CHA Project No. 29528
Existing Lighting & Audit Input

Cost of Electricity: **$0.130** **$/kWh**
$8.80 **$/kW**

			EXISTING CONDITIONS									Retrofit Control	
	Area Description	Usage	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh			
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	Describe Usage Type using Operating Hours	No. of fixtures before the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated annual hours for the usage group	(kW/space) * (Annual Hours)		Retrofit control device	Notes
191	Bay 1	Garage	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		None	
40LED	Bay 1	Garage	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2000	120		None	
191	Bay 2	Garage	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		None	
40LED	Bay 2	Garage	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2000	120		None	
191	Bay 3	Garage	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		None	
40LED	Bay 3	Garage	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2000	120		None	
191	Bay 4	Garage	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		None	
40LED	Bay 4	Garage	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2000	120		None	
191	Bay 5	Garage	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		None	
40LED	Bay 5	Garage	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2000	120		None	
191	Bay 6	Garage	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		None	
40LED	Bay 6	Garage	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2000	120		None	
191	Bay 7	Garage	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		None	
40LED	Bay 7	Garage	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2000	120		None	
191	Bay 8	Garage	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		None	
40LED	Bay 8	Garage	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2000	120		None	
191	Bay 9	Garage	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		None	
40LED	Bay 9	Garage	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2000	120		None	
191	Bay 10	Garage	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		None	
40LED	Bay 10	Garage	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2000	120		None	
191	Bay 11	Garage	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		None	
40LED	Bay 11	Garage	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2000	120		None	
191	Bay 12	Garage	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		None	
40LED	Bay 12	Garage	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2000	120		None	
191	Bay 13	Garage	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		None	
40LED	Bay 13	Garage	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2000	120		None	
191	Bay 14	Garage	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		None	
40LED	Bay 14	Garage	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2000	120		None	
191	Bay 15	Garage	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		None	
40LED	Bay 15	Garage	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2000	120		None	
191	Bay 16	Garage	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		None	
40LED	Bay 16	Garage	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2000	120		None	
191	Bay 17	Garage	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		None	
40LED	Bay 17	Garage	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2000	120		None	
191	Bay 18	Garage	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		None	
40LED	Bay 18	Garage	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2000	120		None	
191	Bay 19	Garage	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		None	
40LED	Bay 19	Garage	1	T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2000	120		None	
40LED	Tool Room	Storage Areas	3	T 32 R F 2 (ELE)	F42LL	60	0.18	SW	2000	360		C-OCC	
191	Tool Room	Storage Areas	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.37	SW	2000	738		C-OCC	
196LED	Lunch Room	Staff Lounge	4	W 32 C F 4 (ELE)	F44ILL	112	0.45	SW	2000	896		C-OCC	
196LED	Locker Room	Locker Room	5	W 32 C F 4 (ELE)	F44ILL	112	0.56	SW	2000	1,120		C-OCC	
35LED	Storage Area	Storage Areas	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.36	SW	2000	720		C-OCC	
	Total		**95**				**10.07**			**20,136**			

Energy Audit of the Municipal Garage
CHA Project No. 29528
ECM-L1 Lighting Replacements

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of fixtures before the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated daily hours for the usage group	(kW/space) * (Annual Hours)	No. of fixtures after the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Number of Fixtures)	Retrofit control device	Estimated annual hours for the usage group	(kW/space) * (Annual Hours)	(Original Annual kWh) - (Retrofit Annual kWh)	(Original Annual kW) - (Retrofit Annual kW)	($/kWh) * (kWh Saved)	Cost for renovations to lighting system	Prescriptive Lighting Measures	Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered
191	Bay 1	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
40LED	Bay 1	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	SW	2,000	76	44	0.0	$ 8.04	$ 236.25	$50	29.4	23.2
191	Bay 2	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
40LED	Bay 2	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	SW	2,000	76	44	0.0	$ 8.04	$ 236.25	$50	29.4	23.2
191	Bay 3	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
40LED	Bay 3	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	SW	2,000	76	44	0.0	$ 8.04	$ 236.25	$50	29.4	23.2
191	Bay 4	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
40LED	Bay 4	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	SW	2,000	76	44	0.0	$ 8.04	$ 236.25	$50	29.4	23.2
191	Bay 5	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
40LED	Bay 5	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	SW	2,000	76	44	0.0	$ 8.04	$ 236.25	$50	29.4	23.2
191	Bay 6	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
40LED	Bay 6	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	SW	2,000	76	44	0.0	$ 8.04	$ 236.25	$50	29.4	23.2
191	Bay 7	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
40LED	Bay 7	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	SW	2,000	76	44	0.0	$ 8.04	$ 236.25	$50	29.4	23.2
191	Bay 8	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
40LED	Bay 8	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	SW	2,000	76	44	0.0	$ 8.04	$ 236.25	$50	29.4	23.2
191	Bay 9	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
40LED	Bay 9	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	SW	2,000	76	44	0.0	$ 8.04	$ 236.25	$50	29.4	23.2
191	Bay 10	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
40LED	Bay 10	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	SW	2,000	76	44	0.0	$ 8.04	$ 236.25	$50	29.4	23.2
191	Bay 11	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
40LED	Bay 11	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	SW	2,000	76	44	0.0	$ 8.04	$ 236.25	$50	29.4	23.2
191	Bay 12	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
40LED	Bay 12	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	SW	2,000	76	44	0.0	$ 8.04	$ 236.25	$50	29.4	23.2
191	Bay 13	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
40LED	Bay 13	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	SW	2,000	76	44	0.0	$ 8.04	$ 236.25	$50	29.4	23.2
191	Bay 14	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
40LED	Bay 14	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	SW	2,000	76	44	0.0	$ 8.04	$ 236.25	$50	29.4	23.2
191	Bay 15	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
40LED	Bay 15	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	SW	2,000	76	44	0.0	$ 8.04	$ 236.25	$50	29.4	23.2
191	Bay 16	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
40LED	Bay 16	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	SW	2,000	76	44	0.0	$ 8.04	$ 236.25	$50	29.4	23.2
191	Bay 17	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
40LED	Bay 17	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	SW	2,000	76	44	0.0	$ 8.04	$ 236.25	$50	29.4	23.2
191	Bay 18	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
40LED	Bay 18	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	SW	2,000	76	44	0.0	$ 8.04	$ 236.25	$50	29.4	23.2
191	Bay 19	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
40LED	Bay 19	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	SW	2,000	76	44	0.0	$ 8.04	$ 236.25	$50	29.4	23.2
40LED	Tool Room	3	T 32 R F 2 (ELE)	F42LL	60	0.2	SW	2000	360	3	T 38 R LED	RTLED38	38	0.1	SW	2,000	228	132	0.1	$ 24.13	$ 708.75	$150	29.4	23.2
191	Tool Room	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2,000	738	-	0.0	$ -	$ -	$0		#DIV/0!
196LED	Lunch Room	4	W 32 C F 4 (ELE)	F44ILL	112	0.4	SW	2000	896	4	T 50 R LED	RTLED50	50	0.2	SW	2,000	400	496	0.2	$ 90.67	$ 945.00	$200	10.4	8.2
196LED	Locker Room	5	W 32 C F 4 (ELE)	F44ILL	112	0.6	SW	2000	1,120	5	T 50 R LED	RTLED50	50	0.3	SW	2,000	500	620	0.3	$ 113.34	$ 1,181.25	$250	10.4	8.2
35LED	Storage Area	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	2000	720	4	T 59 R LED	RTLED38	38	0.2	SW	2,000	304	416	0.2	$ 76.04	$ 945.00	$0	12.4	12.4
	Total	**95**				**10.1**			**20,136**	**95**			**3,358**	**8.8**			**17,636**	**2,500**	**1.3**	**$457**	**$8,269**	**$1,550**		
																		Demand Savings		**1.3**	**$132**			
																		kWh Savings		**2,500**	**$325**			
																		Total savings			**$457**		**18.1**	**14.7**

Energy Audit of the Municipal Garage
CHA Project No. 29528
ECM-L2 Install Occupancy Sensors

		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual $ Saved	Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Payback With Out Incentive	Simple Payback
Field Code	Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of fixtures before the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated annual hours for the usage group	(kWspace) * (Annual Hours)	No. of fixtures after the retrofit	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	Code from Table of Standard Fixture Wattages	Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Number of Fixtures)	Retrofit control device	Estimated annual hours for the usage group	(kWspace) * (Annual Hours)	(Original Annual kWh) - (Retrofit Annual kWh)	(Original Annual kW) - (Retrofit Annual kW)	(kW Saved) * ($/kWh)	Cost for renovations to lighting system		Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered
191	Bay 1	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2000	738.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Bay 1	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	None	2000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
191	Bay 2	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2000	738.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Bay 2	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	None	2000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
191	Bay 3	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2000	738.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Bay 3	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	None	2000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
191	Bay 4	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2000	738.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Bay 4	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	None	2000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
191	Bay 5	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2000	738.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Bay 5	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	None	2000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
191	Bay 6	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2000	738.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Bay 6	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	None	2000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
191	Bay 7	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2000	738.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Bay 7	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	None	2000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
191	Bay 8	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2000	738.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Bay 8	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	None	2000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
191	Bay 9	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2000	738.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Bay 9	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	None	2000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
191	Bay 10	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2000	738.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Bay 10	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	None	2000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
191	Bay 11	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2000	738.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Bay 11	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	None	2000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
191	Bay 12	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2000	738.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Bay 12	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	None	2000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
191	Bay 13	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2000	738.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Bay 13	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	None	2000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
191	Bay 14	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2000	738.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Bay 14	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	None	2000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
191	Bay 15	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2000	738.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Bay 15	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	None	2000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
191	Bay 16	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2000	738.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Bay 16	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	None	2000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
191	Bay 17	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2000	738.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Bay 17	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	None	2000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
191	Bay 18	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2000	738.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Bay 18	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	None	2000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
191	Bay 19	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2000	738.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Bay 19	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120.0	1	T 32 R F 2 (ELE)	F42LL	60	0.1	None	2000	120.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
40LED	Tool Room	3	T 32 R F 2 (ELE)	F42LL	60	0.2	SW	2000	360.0	3	T 32 R F 2 (ELE)	F42LL	60	0.2	C-OCC	1600	288.0	72.0	0.0	$9.36	$270.00	$35.00	28.8	25.1
191	Tool Room	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738.0	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	C-OCC	1600	590.4	147.6	0.0	$19.19	$270.00	$35.00	14.1	12.2
196LED	Lunch Room	4	W 32 C F 4 (ELE)	F44ILL	112	0.4	SW	2000	896.0	4	W 32 C F 4 (ELE)	F44ILL	112	0.4	C-OCC	1600	716.8	179.2	0.0	$23.30	$270.00	$35.00	11.6	10.1
196LED	Locker Room	5	W 32 C F 4 (ELE)	F44ILL	112	0.6	SW	2000	1,120.0	5	W 32 C F 4 (ELE)	F44ILL	112	0.6	C-OCC	1600	896.0	224.0	0.0	$29.12	$270.00	$35.00	9.3	8.1
35LED	Storage Area	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	2000	720.0	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	1600	576.0	144.0	0.0	$18.72	$270.00	$35.00	14.4	12.6
	Total	**95**				**10.1**			**20136.0**	**95.0**				**10.1**			**19369.2**	**766.8**	**0.0**	**99.7**	**1350.0**	**175.0**		
																		Demand Savings		**0.0**	**$0**			
																		kWh Savings			**767**	**$100**		
																		Total Savings				**$100**		**13.5**	**11.8**

Energy Audit of the Municipal Garage
CHA Project No. 29528
ECM-L3 Lighting Replacements with Occupancy Sensors

		EXISTING CONDITIONS							RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
Field Code	Area Description Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of Fixtures No. of fixtures before the retrofit	Standard Fixture Code Lighting Fixture Code	Fixture Code Code from Table of Standard Fixture Wattages	Watts per Fixture Value from Table of Standard Fixture Wattages	kW/Space (Watts/Fixt) * (Fixt No.)	Exist Control Pre-Inst. control device	Annual Hours Estimated daily hours for the usage group	Annual kWh (kW/space) * (Annual Hours)	Number of Fixtures No. of fixtures after the retrofit	Standard Fixture Code Lighting Fixture Code	Fixture Code Code from Table of Standard Fixture Wattages	Watts per Fixture Value from Table of Standard Fixture Wattages	kW/Space (Watts/Fixt) * (Number of Fixtures)	Retrofit Control Retrofit control device	Annual Hours Estimated annual hours for the usage group	Annual kWh (kW/space) * (Annual Hours)	Annual kWh Saved (Original Annual kWh) - (Retrofit Annual kWh)	Annual kW Saved (Original Annual kW) - (Retrofit Annual kW)	Annual $ Saved (kWh Saved) * ($/kWh)	Retrofit Cost Cost for renovations to lighting system	NJ Smart Start Lighting Incentive Prescriptive Lighting Measures	Simple Payback With Out Incentive Length of time for renovations cost to be recovered	Simple Payback Length of time for renovations cost to be recovered
191	Bay 1	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2,000	738	-	0.0	$ -	$ -	$ -	$ -	
40LED	Bay 1	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	None	2,000	76	44	0.0	$ 8.04	$ 236.25	$ 50	29.4	23.2
191	Bay 2	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2,000	738	-	0.0	$ -	$ -	$ -	$ -	
40LED	Bay 2	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	None	2,000	76	44	0.0	$ 8.04	$ 236.25	$ 50	29.4	23.2
191	Bay 3	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2,000	738	-	0.0	$ -	$ -	$ -	$ -	
40LED	Bay 3	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	None	2,000	76	44	0.0	$ 8.04	$ 236.25	$ 50	29.4	23.2
191	Bay 4	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2,000	738	-	0.0	$ -	$ -	$ -	$ -	
40LED	Bay 4	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	None	2,000	76	44	0.0	$ 8.04	$ 236.25	$ 50	29.4	23.2
191	Bay 5	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2,000	738	-	0.0	$ -	$ -	$ -	$ -	
40LED	Bay 5	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	None	2,000	76	44	0.0	$ 8.04	$ 236.25	$ 50	29.4	23.2
191	Bay 6	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2,000	738	-	0.0	$ -	$ -	$ -	$ -	
40LED	Bay 6	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	None	2,000	76	44	0.0	$ 8.04	$ 236.25	$ 50	29.4	23.2
191	Bay 7	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2,000	738	-	0.0	$ -	$ -	$ -	$ -	
40LED	Bay 7	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	None	2,000	76	44	0.0	$ 8.04	$ 236.25	$ 50	29.4	23.2
191	Bay 8	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2,000	738	-	0.0	$ -	$ -	$ -	$ -	
40LED	Bay 8	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	None	2,000	76	44	0.0	$ 8.04	$ 236.25	$ 50	29.4	23.2
191	Bay 9	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2,000	738	-	0.0	$ -	$ -	$ -	$ -	
40LED	Bay 9	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	None	2,000	76	44	0.0	$ 8.04	$ 236.25	$ 50	29.4	23.2
191	Bay 10	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2,000	738	-	0.0	$ -	$ -	$ -	$ -	
40LED	Bay 10	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	None	2,000	76	44	0.0	$ 8.04	$ 236.25	$ 50	29.4	23.2
191	Bay 11	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2,000	738	-	0.0	$ -	$ -	$ -	$ -	
40LED	Bay 11	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	None	2,000	76	44	0.0	$ 8.04	$ 236.25	$ 50	29.4	23.2
191	Bay 12	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2,000	738	-	0.0	$ -	$ -	$ -	$ -	
40LED	Bay 12	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	None	2,000	76	44	0.0	$ 8.04	$ 236.25	$ 50	29.4	23.2
191	Bay 13	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2,000	738	-	0.0	$ -	$ -	$ -	$ -	
40LED	Bay 13	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	None	2,000	76	44	0.0	$ 8.04	$ 236.25	$ 50	29.4	23.2
191	Bay 14	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2,000	738	-	0.0	$ -	$ -	$ -	$ -	
40LED	Bay 14	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	None	2,000	76	44	0.0	$ 8.04	$ 236.25	$ 50	29.4	23.2
191	Bay 15	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2,000	738	-	0.0	$ -	$ -	$ -	$ -	
40LED	Bay 15	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	None	2,000	76	44	0.0	$ 8.04	$ 236.25	$ 50	29.4	23.2
191	Bay 16	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2,000	738	-	0.0	$ -	$ -	$ -	$ -	
40LED	Bay 16	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	None	2,000	76	44	0.0	$ 8.04	$ 236.25	$ 50	29.4	23.2
191	Bay 17	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2,000	738	-	0.0	$ -	$ -	$ -	$ -	
40LED	Bay 17	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	None	2,000	76	44	0.0	$ 8.04	$ 236.25	$ 50	29.4	23.2
191	Bay 18	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2,000	738	-	0.0	$ -	$ -	$ -	$ -	
40LED	Bay 18	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	None	2,000	76	44	0.0	$ 8.04	$ 236.25	$ 50	29.4	23.2
191	Bay 19	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	None	2,000	738	-	0.0	$ -	$ -	$ -	$ -	
40LED	Bay 19	1	T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	120	1	T 38 R LED	RTLED38	38	0.0	None	2,000	76	44	0.0	$ 8.04	$ 236.25	$ 50	29.4	23.2
40LED	Tool Room	3	T 32 R F 2 (ELE)	F42LL	60	0.2	SW	2000	360	3	T 38 R LED	RTLED38	38	0.1	C-OCC	1,600	182	178	0.1	$ 30.06	$ 978.75	$ 185	32.6	26.4
191	Tool Room	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	SW	2000	738	3	S 60 C F 2 (ELE) 8'	F82EE	123	0.4	C-OCC	1,600	590	148	0.0	$ 19.19	$ 270.00	$ 35	14.1	12.2
196LED	Lunch Room	4	W 32 C F 4 (ELE)	F44ILL	112	0.4	SW	2000	896	4	T 50 R LED	RTLED50	50	0.2	C-OCC	1,600	320	576	0.2	$ 101.07	$ 1,215.00	$ 235	12.0	9.7
196LED	Locker Room	5	W 32 C F 4 (ELE)	F44ILL	112	0.6	SW	2000	1,120	5	T 50 R LED	RTLED50	50	0.3	C-OCC	1,600	400	720	0.3	$ 126.34	$ 1,451.25	$ 285	11.5	9.2
35LED	Storage Area	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	2000	720	4	T 59 R LED	RTLED38	38	0.2	C-OCC	1,600	243	477	0.2	$ 83.95	$ 1,215.00	$ 35	14.5	14.1
S	Total	95				10.1			20,136	95				8.8			17,202		1.3	513	9,619	$1,725		
S																	Demand Savings			1.3	$132			
S																	kWh Savings			2,834	$381			
S																	Total Savings				$513		18.7	15.4

APPENDIX D

New Jersey Board of Public Utilities Incentives

i. **Smart Start**

ii. **Direct Install**

iii. **Pay for Performance (P4P)**

iv. **Energy Savings Improvement Plan (ESIP)**

I. SMART START

NJ SmartStart Buildings

Program Overview

With New Jersey SmartStart Buildings ...

... A smart start now means better performance later! Whether you're starting a commer industrial project from the ground up, renovating existing space, or upgrading equipmen unique opportunities to upgrade the energy efficiency of the project.

Special Notice

Enhanced incentives are available for NJ SmartStart Building upgrades in buildings im Hurricane Sandy. Eligible projects receive an additional 50% and new incentives have added for high efficiency food service equipment.

Visit the Sandy web page for details and important links.

New Jersey SmartStart Buildings can provide a range of support — at no cost to you — substantial energy savings, both now and for the future. Learn more about:

- Project Categories
- Custom Measures
- Incentives for Qualifying Equipment and Projects
- Program Terms and Conditions
- Find a Trade Ally

Please note: pre-approval is required for almost all energy efficiency incentives. T you must submit an application form (and applicable worksheets) and receive an approv from the program before any equipment is installed (click here for complete Terms and Upon receipt of an approval letter, you may proceed to install the equipment listed on yc approved application. Equipment installed prior to the date of the approval letter is not e an incentive. **Any customer and/or agent who purchases equipment prior to the re incentive approval letter does so at his/her own risk.**

Getting Started

Submit your project application form as soon as you know you will be doing a constructi or replacing/adding equipment.

PAST PROGRAMS

TOOLS AND RESOURCES

PROGRAM UPDATES

CONTACT US

Apply for pre-approval by submitting an application for the type of equipment you have c install. The application should be accompanied by a related worksheet, where applicabl manufacturer's specification sheet (refer to the specific program requirements on the ba application for specs needed for your project) for the equipment you are planning to inst (Program representatives will review your application package and approve it, reject it, a advise you of upgrades in equipment that will save energy costs and/or increase your in

Support for Custom Energy-Efficiency Measures

Custom measures allows program participants the opportunity to receive an incentive fo energy-efficiency measures that are not on the prescriptive equipment Incentive list, but project/facility specific.

Incentives for Qualifying Equipment and Projects

Financial incentives are available for large and small projects. These incentives offset s maybe even all! — of the added cost to purchase qualifying energy-efficient equipment, provides significant long-term energy savings. Ranges of incentives are available for qu equipment (depending on type, size, and efficiency) in several categories.

Find out more about equipment incentives

For specific details on equipment requirements and financial incentives, including ince equipment not listed here, contact a program representative. Fiscal year financial incent be limited to a maximum of $500,000 per customer utility account and are available as f permits.

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COMMERCIAL, INDUSTRIAL AND LOCAL GOVERNMENT

HURRICANE SANDY

PROGRAMS

NJ SMARTSTART BUILDINGS

EQUIPMENT INCENTIVES

FOOD SERVICE EQUIPMENT

APPLICATION FORMS

TOOLS AND RESOURCES

PAY FOR PERFORMANCE

COMBINED HEAT & POWER AND FUEL CELLS

LOCAL GOVERNMENT ENERGY AUDIT

LARGE ENERGY USERS PROGRAM

ENERGY SAVINGS IMPROVEMENT PROGRAM

DIRECT INSTALL

ENERGY BENCHMARKING

OIL, PROPANE & MUNICIPAL ELECTRIC CUSTOMERS

EDA PROGRAMS

SBC CREDIT PROGRAM

Home » Commercial & Industrial » Programs » NJ SmartStart Buildings

Equipment Incentives

Special Notice

Enhanced incentives are available for NJ SmartStart Building upgrades in buildings im Hurricane Sandy. Eligible projects receive an additional 50% and new incentives have added for high efficiency food service equipment.

Visit the Sandy web page for details and important links.

More reasons for a smart start on your next project!

New Jersey SmartStart Buildings provides **financial incentives for qualifying equipment**. These incentives were developed to help our customers offset some of the added cost to purchase qualifying energy-efficient equipment, which provides significant long-term energy savings. A wide range of incentives are available for qualifying equipment (depending on type, size and efficiency).

Listed below are the types of qualifying equipment and ranges of incentives. For details on equipment requirements and full listings of incentives, refer to the **online application forms**.

Please note that almost all equipment incentives require pre-approval before equipment is installed. (**click for exceptions**)To start the pre-approval process, submit an Equipment Application, and appropriate Equipment Worksheets, for the type types of equipment you are planning to install along with equipment specification sheets (refer to the specific program requirements on the back of the application for specificatic needed for your project) and a current utility bill(s).

In order to be eligible to receive financial incentives under this Program, Applicants mus receive electric and/or gas service from one of the regulated electric and/or gas utilities the State of New Jersey. They are: Atlantic City Electric, Jersey Central Power & Light, Rockland Electric Company, New Jersey Natural Gas, Elizabethtown Gas, PSE&G, and South Jersey Gas.

Electric Chillers

Water-cooled chillers ($12 - $170 per ton)
Air-cooled chillers ($8 - $52 per ton)

Gas Cooling

Gas absorption chillers ($185-$450 per ton)
Gas Engine-Driven Chillers (Calculated through Custom Measure F

PAST PROGRAMS

TOOLS AND RESOURCES

PROGRAM UPDATES

CONTACT US

Desiccant Systems ($1.00 per cfm - gas or electric)

Electric Unitary HVAC

Unitary AC and split systems ($73 - $92 per ton)
Air-to-air heat pumps ($73 - $92 per ton)
Water-source heat pumps ($81 per ton)
Packaged terminal AC & HP ($65 per ton)
Central DX AC Systems ($40 - $72 per ton)
Dual Enthalpy Economizer Controls ($250)
Occupancy Controlled Thermostats ($75 each)
A/C Economizing Controls ($85 - $170 each)

Ground Source Heat Pumps

Closed Loop ($450-750 per ton)

Gas Heating

Gas-fired boilers < 300 MBH ($300 per unit)
Gas-fired boilers ≥ 300 MBH - 1500 MBH ($1.75 per MBH)
Gas-fired boilers ≥ 1500 MBH - ≤ 4000 MBH ($1.00 per MBH)
Gas-fired boilers > 4000 MBH (Calculated through Custom Measur
Gas furnaces ($300-$400 per unit)
Gas infrared heaters - indoor only ($300 - $500 per unit)
Boiler economizing controls ($1,200 - $2,700 per unit)

Variable Frequency Drives

Variable air volume ($65 - $155 per hp)
Chilled-water pumps ($60 per hp)
Compressors ($5,250 to $12,500 per drive)

Natural Gas Water Heating

Gas water heaters ≤ 50 gallons ($50 per unit)
Gas-fired water heaters > 50 gallons ($1.00 - $2.00 per MBH)
Tankless water heaters replacing a free standing water heater > 82 energy factor ($300 per heater)
Gas-fired booster water heaters ($17 - $35 per MBH)

Premium Motors

Three-phase motors ($45 - $700 per motor) **(Incentive was discor effective March 1, 2013 except for buildings impacted by Hurri Sandy. Approved applications will have the standard timefram year from the program commitment date to complete the instal**

Refrigerator/Freezer Case Premium Efficiency Motors (ECM)

Fractional (< 1 HP) Electronic Commutated Motors (ECM) ($40 per for replacement of existing shaded-pole motor in refrigerated/freeze

Prescriptive Lighting

New Linear Fluorescent

- T-12, HID and Incandescent to T-5 and T-8 ($25 - $200 p fixture) **(Note: T12 replacements are only available for buildings impacted by Hurricane Sandy)**
- New Induction ($70 per replaced HID fixture)
- New LED
  - Screw-in/Plug-in ($10 - $20 per lamp)
  - Refrigerator/Freezer Case ($30 - $65 per fixture)
  - Outdoor pole/arm/wall-mounted luminaires ($100 - $175 p fixture)
  - Display case ($30 per case)
  - Shelf-mounted display and task ($15 per linear foot)
  - Wall-wash, desk, recessed ($20 - $35 per fixture)
  - Parking garage luminaires ($100 per fixture)
  - Track or Mono-Point directional ($50 per fixture)
  - Stairwell and Passageway luminaires ($40 per fixture)
  - High-Bay, Low-Bay ($150 per fixture)
  - Bollard ($50 per fixture)
  - luminaires for Ambient Lighting of Interior Commercial Spa *Linear panels ($50 per fixture)*
  - Fuel pump canopy ($100 per fixture)
  - LED retrofit kits (custom measures)
- New Pulse-Start Metal Hallide ($25 per fixture)
- Linear Fluorescent Retrofit ($10 - $20 per fixture)
- Induction Retrofit ($50 per retrofitted HID fixture)
- New Construction/Complete Renovation (performance-based)

Note: Incentives for T-12 to T-5 and T-8 lamps with electronic ballast in facilities ($10 per fixture, 1-4 lamps) and T-5/T-8 high bay fixtures ($16 - per fixture) were discontinued effective March 1, 2013 for T-12 retrofits replacements except for buildings impacted by Hurricane Sandy. Appr applications will have the standard timeframe of one year from the pro commitment date to complete the installation

Lighting Controls

- Occupancy Sensors
  - Wall mounted ($20 per control)
  - Remote mounted ($35 per control)
  - Daylight dimmers ($25 per fixture controlled, $50 per fixtu office applications only)
  - Occupancy controlled hi-low fluorescent controls ($25 per controlled)
- HID or Fluorescent Hi-Bay Controls
  - Occupancy hi-low ($35 per fixture controlled)
  - Daylight dimming ($45 per fixture controlled)

Refrigeration

- Covers and Doors
  - Energy-Efficient doors for open refrigerated doors/covers per door)
  - Aluminum Night Curtains for open refrigerated cases ($3.5 linear foot)
- Controls
  - Door Heater Control ($50 per control)
  - Electric Defrost Control ($50 per control)
  - Evaporator Fan Control ($75 per control)
  - Novelty Cooler Shutoff ($50 per control)

Food Service Equipment

Cooking
- Combination Electric Oven/Steamer ($1,000 per oven)
- Combination Gas Oven/Steamer ($750 per oven)
- Electric Convection Oven ($350 per oven)
- Gas Convection Oven ($500 per oven)
- Gas Rack Oven ($1,000 single, $2,000 double)
- Gas Conveyor Oven ($500 small deck, $750 large deck)
- Electric Fryer ($200 per vat)
- Gas Fryer ($749 per vat)
- Electric Large Vat Fryer ($200 per vat)
- Gas Large Vat Fryer ($500 per vat)
- Electric Griddle ($300 per griddle)
- Gas Griddle ($125 per griddle)
- Electric Steam Cooker ($1,250 per steamer)
- Gas Steam Cooker ($2,000 per steamer)

Holding
- Full Size Insulated Cabinets ($300 per cabinet)
- Three Quarter Size Insulated Cabinets ($250 per cabinet)
- Half Size Insulated Cabinets ($200 per cabinet)

Cooling
- Glass Door Refrigerators ($75 - $150 per unit)
- Solid Door Refrigerators ($50 - $200 per unit)
- Glass Door Freezers ($200 - $1,000 per unit)
- Solid Door Freezers ($100 - $600 per unit)
- Ice Machines ($50 - $500 per unit)

Cleaning
- Dishwashers ($400 - $1,500 per unit)

Other Equipment Incentives*

- Performance Lighting ($1.00 per watt per square foot below progra incentive threshold, currently 5% more energy efficient than ASHR/ 2007 for New Construction only.)
- Custom electric and gas equipment incentives (not prescriptive)

*Equipment incentives are calculated based on type, efficiency, size, and ap and are evaluated on a case-by-case basis. Contact us for details.

II. DIRECT INSTALL

COMMERCIAL, INDUSTRIAL AND LOCAL GOVERNMENT

HURRICANE SANDY

PROGRAMS

NJ SMARTSTART BUILDINGS

PAY FOR PERFORMANCE

COMBINED HEAT & POWER AND FUEL CELLS

LOCAL GOVERNMENT ENERGY AUDIT

LARGE ENERGY USERS PROGRAM

ENERGY SAVINGS IMPROVEMENT PROGRAM

DIRECT INSTALL

PARTICIPATION STEPS

PARTICIPATING CONTRACTORS

SUSTAINABLE JERSEY

ENERGY BENCHMARKING

OIL, PROPANE & MUNICIPAL ELECTRIC CUSTOMERS

EDA PROGRAMS

SBC CREDIT PROGRAM

Direct Install

NEW JERSEY'S CLEAN ENERGY PROGRAM
DIRECT Install

Let us pay up to 70% of your energy efficiency upgrade.

Sometimes, the biggest challenge to improving energy efficiency is knowing where t and how to get through the process. Created specifically for existing small to mediun facilities, Direct Install is a turnkey solution that makes it easy and affordable to upgr high efficiency equipment. Direct Install is designed to cut your facility's energy costs replacing lighting, HVAC and other outdated operational equipment with energy effic alternatives. The program pays up to 70% of retrofit costs, dramatically improving yo payback on the project. There is a $125,000 incentive cap on each project.

ELIGIBILITY

Existing small to mid-sized commercial and industrial f with a peak electric demand that did not exceed 200 k any of the preceding 12 months are eligible to participa Direct Install. Applicants will submit the last 12 months electric utility bills indicating that they are below the de threshold and have occupied the building during that ti Buildings must be located in New Jersey and served b the state's public, regulated electric or natural gas utilit companies.

SYSTEMS & EQUIPMENT ADDRESSED BY THE PROGRAM

- Lighting
- Heating, Cooling & Ventilation (HVAC)
- Refrigeration
- Motors
- Natural Gas
- Variable Frequency Drives

Measures eligible for Direct Install are limited to specific equipment categories, type capacities. Boilers may not exceed 500,000 Btuh and furnaces may not exceed 140,

III. PAY FOR PERFORMANCE (P4P)

COMMERCIAL, INDUSTRIAL AND LOCAL GOVERNMENT

HURRICANE SANDY

PROGRAMS

NJ SMARTSTART BUILDINGS

PAY FOR PERFORMANCE

EXISTING BUILDINGS

PARTICIPATION STEPS

APPLICATIONS AND FORMS

APPROVED PARTNERS

NEW CONSTRUCTION

FAQS

BECOME A PARTNER

COMBINED HEAT & POWER AND FUEL CELLS

LOCAL GOVERNMENT ENERGY AUDIT

LARGE ENERGY USERS PROGRAM

ENERGY SAVINGS IMPROVEMENT PROGRAM

DIRECT INSTALL

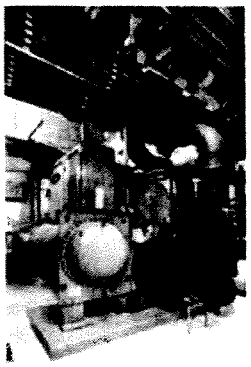
ENERGY BENCHMARKING

Pay for Performance - Existing Buildings

Download program applications and incentive forms.

The Greater the Savings, the Greater Your Incentives

Take a comprehensive, whole-building approach to saving energy in your existing facilit earn incentives that are directly linked to your savings. Pay for Performance relies on a program partners who provide technical services under direct you. Acting as your energy expert, your partner will develop a reduction plan for each project with a whole-building technica component of a traditional energy audit, a financial plan for fu energy efficient measures and a construction schedule for ins



Eligibility

Existing commercial, industrial and institutional buildings with demand over 100 kW for any of the preceding twelve months to participate including hotels and casinos, large office buildir family buildings, supermarkets, manufacturing facilities, scho shopping malls and restaurants. Buildings that fall into the fol customer classes are not required to meet the 100 kW dema to participate in the program: hospitals, public colleges and universities, 501(c)(3) non-p affordable multifamily housing, and local governmental entities. Your energy reduction p define a comprehensive package of measures capable of reducing the existing energy consumption of your building by 15% or more.

Exceptions to the 15% threshold requirement may be made for certain industrial, manuf water treatment and datacenter building types whose annual energy consumption is hea weighted on process loads. Details are available in the high energy intensity section of t page.

ENERGY STAR Portfolio Manager

Pay for Performance takes advantage of the ENERGY STAR Program with Portfolio Manager, EPA's interactive tool that allows facility managers to track and evaluate energy and water consumption across all of their buildings. The tool provides the opportunity to load in the characteristics and energy usage of your buildings and determine an energy performance benchmark score. You can then assess energy management goals over time, identify strategic opportunities for savings, and receive EPA recognition for superior energy performance.

This rating system assesses building performance by tracking and scoring energy use ir facilities and comparing it to similar buildings. That can be a big help in locating opportu cost-justified energy efficiency upgrades. And, based on our findings, you may be invite participate in the Building Performance with ENERGY STAR initiative and receive speci recognition as an industry leader in energy efficiency.

Incentives

OIL, PROPANE & MUNICIPAL ELECTRIC CUSTOMERS

EDA PROGRAMS

SBC CREDIT PROGRAM

PAST PROGRAMS

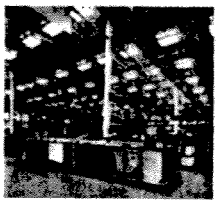
TOOLS AND RESOURCES

PROGRAM UPDATES

CONTACT US

Pay for Performance incentives are awarded upon the satisfactory completion of three p milestones:

Incentive #1 - Submittal of complete energy reduction plan prepared by an app program partner - Contingent on moving forward, incentives will be between $5 $50,000 based on approximately $.10 per square foot, not to exceed 50% of th annual energy expense.



Incentive #2 - Installation of recommended measures - Incentives are based on the projected level of electricity and natural gas savings resulting from the installation of comprehensive energy-efficiency measures.

Incentive #3 - Completion of Post-Construction Benchmarking Report - A completed report verifying energy reductions based on one year of post-implementation results. Incentives for electricity and natural gas savings will be based on actual savings, provided that the minimum performance threshold of savings has been achieved.

A detailed Incentive Structure document is available on the applications and form

Steps to Participation

Click here for a step-by-step description of the program.

Home | Residential | Commercial & Industrial | Renewable Energy
About Us | Press Room | Library | FAQs | Calendar | Newsletters | Contact Us | Site

New Jersey's Clean Energy PROGRAM
Your Power to Save
njcleanenergy.com

BPU New Jersey Board of Public Utilities

PAY FOR PERFORMANCE APPLICATION FORM

July 1, 2014 – June 30, 2015

Utility Serving Applicant: ☐ Atlantic City Electric ☐ Jersey Central Power & Light ☐ PSE&G
☐ New Jersey Natural Gas ☐ Elizabethtown Gas ☐ Rockland Electric Co. ☐ South Jersey Gas
☐ Other Electric Service Provider (please specify): _____
☐ Other Fuel Provider: _____ ☐ Oil: _____ ☐ Other (Please specify): _____

Instructions

1. Read the program material to determine project qualification.
2. Read the Participation Agreement and sign where indicated.
3. Fill out all applicable spaces on this form.
4. Provide a copy of the customer's company W-9 form.
5. Provide the most recent consecutive 12 month period of utility bills for the project for all accounts, organized in chronological order and separated by account. Utilize Utility Tool for applications with multiple accounts to organize data.
6. Provide brief description of facility, noting any special or unusual circumstances and/or site conditions.
7. Partner must submit the application package via e-mail, mail or fax DIRECTLY to the Market Manager – see back of this form.

Approval of this Application is not an approval of the project's scope of work. Scope of work is only approved upon approval of the Energy Reduction Plan. See application and program guidelines for more information.

Customer/Owner Information (payment will be made to entity entered here)

Company Name		Project Contact/Title	
Company Address	City	State	Zip
Phone/Fax	E-mail	Federal ID/SSN	

Partner Information

Company Name		Project Contact/Title	
Company Address	City	State	Zip
Phone	Fax	E-mail	

Project Information

Project Name			
Building Address	City	State	Zip
Utility Account Number(s): Electric		Gas	
* Note: Please use the back of this page for additional utility accounts if quantity exceeds space allotment.			
Annual Peak kW Demand	Building Type		Number of Buildings
Size of Building(s) (gross sq/ft)	Direct, Master or Sub Metered		

Funding

☐ Check the box if an Energy Savings Improvement Program (ESIP) will be a source of funding. ESIP allows government agencies to pay for energy related improvements using the value of the resulting energy savings.

Do you expect to receive funding under any other efficiency programs? ☐ No ☐ Yes If Yes, please specify below:

Utility Program #1 – Utility: _____ Program Name: _____
Utility Program #2 – Utility: _____ Program Name: _____
Federal Program #1 – Organization: _____ Program Name: _____
Federal Program #2 – Organization: _____ Program Name: _____
Other Program – Organization: _____ Program Name: _____

Additional Project information

Additional Utility Account(s)

Account type	Account number
Account type	Account number
Account type	Account number
Account type	Account number
Account type	Account number
Account type	Account number
Account type	Account number
Account type	Account number
Account type	Account number
Account type	Account number
Account type	Account number
Account type	Account number

Additional Comments:

Complete this application form and send it directly to the Commercial/Industrial Market Manager by e-mail, mail or fax.

New Jersey's Clean Energy Program
c/o TRC Energy Services-P4P
900 Route 9 North, Suite 404 • Woodbridge, NJ 07095

Phone: 866-657-6278 • Fax: 732-855-0422
E-mail: P4P@NJCleanEnergy.com

Visit our website: NJCleanEnergy.com/P4P

*Incentives/Requirements subject to change.

Pay For Performance-Existing Buildings

Participation Agreement

Definitions:

ADMINISTRATOR – New Jersey Board of Public Utilities (NJBPU)

APPLICATION PROCESS – The Program pays incentives in phases upon satisfactory completion of each of three Program milestones - approval of a complete Energy Reduction Plan, installation of all recommended measures per the Energy Reduction Plan, completion of Post-Construction Benchmarking Report (for incentive amounts, please refer to Incentive Amounts). In order to be eligible for Program Incentives,a Participating Customer or an agent authorized by a Customer, must submit to the Market Manager a properly completed application package – application form, Participating Customer's company W-9, twelve consecutive months of the project's utility bills and executed Participation Agreement. All components of the application package must be filled out completely, truthfully and accurately. This application package must be received on or before June 30, 2015 in order to be eligible for the Fiscal Year 2015 Incentives. The Market Manager will review the application package to determine if the project is eligible for a Program Incentive. When approved, the Participating Customer will receive an approval letter from their Case Manager with the estimated authorized first incentive amount and the date by which the Energy Reduction Plan must be submitted. Upon receipt of the approval letter, the Participating Customer and Partner may proceed with work on the Energy Reduction Plan. The Market Manager or agent thereof reserves the right to conduct a pre-inspection of the facility prior to the installation of equipment. This will be done prior to the issuance of the Energy Reduction Plan approval letter. Approval of this Application is not an approval of the project's scope of work. Scope of work is only approved upon approval of the Energy Reduction Plan. See application and program guidelines for more information.

CHANGES TO THE PROGRAM – The Program and Participation Agreements may be changed by the Market Manager at any time without notice. Approved applications, however, will be processed to completion under the agreements in effect at the time of the Market Manager's approval.

ELIGIBILITY - Program Incentives are available to existing commercial, industrial and certain multifamily buildings with peak kilowatt demand usage of more than 100 kW in any of the most recent preceding twelve months of utility bills and a customer of the New Jersey Utilities. Market Manager has the discretion to approve applications that fall below the 100 kW minimum by no more than 10%. If the Participant is a municipal electric company customer, and a customer of an investor-owned gas New Jersey Utility, only gas measures will be eligible for incentives under the Program. Similarly, if the Participant is an oil/propane customer and a customer of an investor-owned electric New Jersey Utility, only electricity measures will be eligible for incentives under the Program.

Equipment procured by participating Customer through another program offered by the New Jersey Utilities, as applicable, is not eligible for incentives through this Program. Customers who, from July 1, 2013 – June 30, 2014, have not contributed to the Societal benefits Charge of the applicable New Jersey Utility may not be eligible for incentives offered through this program.

ENDORSEMENT – The Market Manager and Administrator do not endorse, support or recommend any particular manufacturer, product or system design in promoting this Program.

ENERGY-EFFICIENT MEASURES – Any device eligible to receive a Program Incentive payment through the New Jersey's Clean Energy Commercial and Industrial Program. The total package of measures as presented in the Energy Reduction Plan must have at least a 10% internal rate of return (IRR).

ENERGY REDUCTION PLAN – A document created by the Participating Customer's selected Partner that defines several key aspects of the project including (but not limited to) existing conditions as a result of a whole-building technical analysis, benchmarking summaries, recommended measures, financing plan and implementation schedule.

ENERGY REDUCTION PLAN APPROVAL – After application approval, the Participating Customer and Partner must work together to finalize and submit an Energy Reduction Plan which incorporates a work scope that will achieve the minimum 15% reduction in source energy performance target in accordance with the Program rules and policies along with the Benchmarking Tool, modeling software file, a copy of the executed Partner and Participating Customer contract, an original copy of the executed Installation Agreement and a Request for Incentive #1 Payment form. All components of the submittal package must be filled out completely, truthfully and accurately. The Market Manager, agents thereof and/or the selected Partner must be provided reasonable access to the Participating Customer's facility, staff, tenants and/or others necessary to develop an Energy Reduction Plan that will achieve the minimum 15% performance target as well as the necessary utility billing data as dictated by the Program. The Energy Reduction Plan submittal package will be reviewed and must be approved by the Market Manager prior to payment of Incentive #1. Upon approval of the submittal package, the Customer will receive an Incentive #1 approval letter indicating the date by which all measures in the Energy Reduction Plan must be installed (no later than twelve months following the Energy Reduction Plan submittal approval date).

INCENTIVE AMOUNTS – Incentive #1 - $0.10 per square foot of the project with a maximum amount of $50,000 and minimum of $5,000, not to exceed 50% of the project's annual energy cost and contingent on installation of measures in the Energy Reduction Plan and receipt of a signed Installation Agreement. If installation does not commence within the required timeframe, Incentive #1 may be required to be returned to the program. In the event the project is cancelled and Incentive #1 is not returned, the project may reapply to the program in the future but another Incentive #1 will not be paid. Incentive #2 – 50% of the total performance-based incentive (combination of Incentives #2 and #3) calculated per Program's incentive structure; Incentive #3 – remaining amount based on the realized energy savings of the project. For customers that have successfully participated in the Local Government Energy Audit Program, Incentive #1 will be reduced by 50% to $0.05 per square foot up to $25,000. Actual Incentive #1 paid shall not be higher than 5% over the committed amount. Actual Incentive #2 paid shall not be higher than the committed amount, unless the Energy Reduction Plan has been resubmitted due to changes in the work scope. Actual Incentive #3 paid shall be higher or lower than the committed amount based on actual energy savings but shall not be greater than program Incentive Caps.

The Market Manager will provide incentives according to those described in this section or as modified upon notice to Participating Customer. All incentive payments are paid directly to the Participating Customer or the Participating Customer's designee as indicated on the application form. The Program is not bound to pay any incentive unless the submittal package associated with the incentive payment is approved by the Market Manager who reserves the sole discretion of approving or disapproving the submittal packages.

INCENTIVE CAP – Program Incentives #2 and #3 will be capped not to exceed 50% of the total actual project cost. Incentive #1 will be capped not to exceed 50% of the project's annual energy cost. The Market Manager reserves the right to limit the amount of the Program Incentives (Incentive #1, #2 and #3) to $1M per gas and electric account (limited to $2M per project) in a program year. Campus style facilities, which are mastered-metered, are subject to the annual incentive cap of $1 million per gas and electric account. The Participating Customer will also be subject to an annual Entity Cap of $4M (Definition of an Entity can be found in the Board Order Docket No. EO07030203).

INSTALLATION AGREEMENT – The Participating Customer must submit an executed Installation Agreement as part of the Request for Incentive #1 Form. By executing the Installation Agreement, the Customer agrees to install all of the measures in the Energy Reduction Plan, which are estimated to result in meeting or exceeding the minimum 15% performance target. The Customer agrees to the performance-based incentives (Incentives #2 & #3) as indicated in the document which are based on the results of the Energy Reduction Plan. Implementation of the measures must commence in the time period twelve months following the approval date of the Energy Reduction Plan. Failure to complete the installation of the measures in the Energy Reduction Plan may result in the repayment of Incentive #1. In the event the project is cancelled and Incentive #1 is not returned, the project may reapply to the program in the future but another Incentive #1 will not be paid.

LIMITATION OF LIABILITY – By virtue of participating in this Program, Participating Customers agree to waive any and all claims or damages against TRC Energy Services, the Market Manager, and the Administrator, except the receipt of the Program Incentive. Participating Customers agree that the Market Manager's and Administrator's liability, in connection with this Program, is limited to paying the Program Incentive specified. Under no circumstances shall the Market Manager, its representatives, or subcontractors, or the Administrator be liable for any lost profits, special, punitive, consequential or incidental damages or for any other damages or claims connected with or resulting from participation in this Program. Further, any liability attributed to the Market Manager under this Program shall be individual, and not joint and/or several.

The Market Manager's review and approval of the Energy Reduction Plan cannot be construed to be a determination as to performance, applicability, dollar savings, energy savings, or any other aspect of the proposed project. The Market Manager and Administrator offer no guarantee or warranty of performance of the project's equipment or system. The participant assumes full responsibility and liability for the installation of all equipment, including but not limited to design, specification, all permits, installation, maintenance, performance and financing. By participating in the program and accepting incentive dollars, you agree to hold harmless the Market Manager and Administrator and their respective staffs with respect to the Project

MARKET MANAGER – TRC Energy Services is responsible for managing the New Jersey Clean Energy Commercial & Industrial Programs.

MEASUREMENT & VERIFICATION APPROVAL – Twelve months subsequent to the Incentive #2 Payment Submittal package submission date, measurement and verification of the projected energy reduction will be conducted by the Participating Customer's Partner using the project's post-installation utility data (supplied by the Customer). The Participating Customer must work with their Partner to submit the Incentive #3 Payment Submittal, consisting of the Post-Construction Benchmarking Pay For Performance-Existing Buildings Report, Benchmarking Tool, and Request for Incentive #3 form. All components of the submittal package must be filled out

completely, truthfully and accurately. Upon review of the submittal package (by the Market Manager or agent thereof), the remaining 50% of the total performance-based incentive (Incentives #2 & #3) will be released to the Participating Customer. If the Post-Construction Benchmarking Report indicates that the project did not meet the minimum performance target, the post-installation completion period may be extended to up to twenty-four months subsequent to the Incentive Payment #2 package submission date. Upon approval of the submittal package, the Customer will receive an Incentive #3 Submittal approval letter indicating successful completion of the program.

NEW JERSEY UTILITIES – The investor-owned electric and/or gas utilities in the State of New Jersey. They are: Atlantic City Electric, Jersey Central Power & Light, Rockland Electric Company, New Jersey Natural Gas, Elizabethtown Gas, PSE&G, and South Jersey Gas.

PARTICIPATING CUSTOMERS – Those non-residential electric and/or gas service customers of the New Jersey Utilities who participate in this Program.

PARTICIPATING CUSTOMER'S CERTIFICATION – Participating Customer agrees that all information is true and that he/she has conformed to all of the Program and equipment requirements per the Program Guidelines. Participating Customer certifies that he/she purchased and installed the equipment listed in the Energy Reduction Plan at their defined New Jersey project location.

PARTNER– An approved professional who provides technical building performance services to Participating Customers, acting as their "energy efficiency expert". Participating Customers are required to hire an approved Pay for Performance Partner to develop the Energy Reduction Plan and facilitate installation of the recommended package of Energy-Efficient Measures. Participants are required to enter into a contractual agreement with a selected Partner which outlines the set of minimum services the Partner will provide to the Participating Customer throughout the life of the project. It is strongly recommended that Participating Customers perform due diligence in selecting a Pay for Performance Partner. Fees charged by the Partner are not regulated by the Program and could vary between Partners.

PERFORMANCE-BASED INCENTIVES – The combination of Incentives #2 and #3, which are based on the projected and actual energy reduction performance of the project.

PERFORMANCE TARGET – A minimum of a 15% annual source energy savings performance target must be achieved in order to participate. The performance target is based on reducing the total energy consumption for the facility. No more than 50% of the total source energy savings may be derived from lighting measures. The total energy savings may not come from a single measure. A 4% performance target may be offered to customers whose annual energy consumption is heavily weighted to manufacturing and process loads. This approach will be reviewed on a case-by-case basis and must be pre-approved by the Market Manager. In order to be considered, the project must involve: A manufacturing facility, including such industries as plastics and packaging, chemicals, petrochemicals, metals, paper and pulp, transportation, biotechnology, pharmaceutical, food and beverage, mining and mineral processing, general manufacturing, equipment manufacturers and data centers; and manufacturing and/or process-related loads, including data center consumption, consume 50% or more of total facility energy consumption. No more than 50% of the total source energy savings may be derived from non-investor owned utilities or fuels.

POST-INSTALLATION APPROVAL – After the complete installation of all measures in the Energy Reduction Plan, the Customer and their Partner must finalize and submit the Incentive #2 Payment Submittal, consisting of the Installation Report, invoices, and Request for Incentive #2 Payment form. All components of the submittal package must be filled out completely, truthfully and accurately. Upon review of the submittal package and verification of the complete installation of all measures in the Energy Reduction Plan (via inspection by the Market Manager or agent thereof), 50% of the total performancebased incentive (Incentives #2 & #3) will be released to the Participating Customer. Upon approval of the submittal package, the Customer will receive an Incentive #2 approval letter indicating the date by which the post-installation Measurement & Verification phase began and will end (twelve months in length).

The Market Manager reserves the right to verify sales transactions and to have reasonable access to Participating Customer's facility to inspect both pre-existing products or equipment (if applicable) and the Energy-Efficient Measures installed under this Program, either prior to issuing incentives or at a later time. Energy-Efficient Measures must be installed in buildings located within the service territory of one of the New Jersey Utilities (as defined by the Program) as designated on the Participating Customer's Pay for Performance application. Program Incentives are available for qualified Energy-Efficient Measures as listed and described in the Program Guidelines. The Participating Customer must ultimately own the equipment, either through an up-front purchase or at the end of a short-term lease.

PRE-INSTALLED MEASURES - An Energy Reduction Plan must be approved by the program and an approval letter sent to the customer in order for incentives to be committed. Upon receipt of an Energy Reduction Plan, all project facilities must be preinspected. Measures installed prior to pre-inspection of the facility shall not be included as part of the ERP scope of work and will not be eligible for incentives. Measure installation undertaken prior to ERP approval, but after pre-inspection, is done at the customer's own risk. In the event that an Energy Reduction Plan is rejected by the program, the customer will not receive any incentives.

PRODUCT INSTALLATION OR EQUIPMENT INSTALLATION – Installation of the Energy-Efficient Measures.

Projects with a contract threshold of $15,444 are required to pay no less than prevailing wage rate to workers employed in the performance of any construction undertaken in connection with Board of Public Utilities financial assistance, or undertaken to fulfill any condition of receiving Board of Public Utilities financial assistance, including the performance of any contract to construct, renovate or otherwise prepare a facility, the operations of which are necessary for the receipt of Board of Public Utilities financial assistance. By submitting an application, or accepting program incentives, applicant agrees to adhere to New Jersey Prevailing Wage requirements, as applicable.

PROGRAM – New Jersey's Clean Energy Pay for Performance Program offered herein by the New Jersey Board of Public Utilities pursuant to state regulatory approval under the New Jersey Electric Discount and Energy Competition Act, NJSA 48:3-49, et seq.

PROGRAM GUIDELINES – See Pay for Performance Program Guidelines available from your Partner.

PROGRAM INCENTIVES – Refers to the amount or level of incentive that the Program provides to participating customers pursuant to the Program offered herein (see the description under "Incentive Amount" heading).

PROGRAM OFFER – The Program covers products purchased and/or services rendered on or after July 1, 2014. Program Incentives are available to non-residential retail electric and/or gas service customers of the New Jersey Utilities.

PROJECT – A commercial, industrial or multifamily existing building with peak demand in excess of 100 kW in any of the most recent preceding twelve months of electric usage. Multifamily building(s) must be four (4) stories or greater or three (3) stories and under having central heating, cooling, or metering serving more than one building. The 100 kW requirement is waived for the following customer classes: hospitals, non-profits (as defined by section 501(c)(3) of the Internal Revenue Code), public colleges and universities, local government entities, including K-12 schools, and affordable multifamily customers (defined as low income, subsidized, HUD, etc.)

TAX CLEARANCE CERTIFICATION – Businesses must apply for and receive a Tax Clearance Certificate from the New Jersey Division of Taxation before they can receive any incentive, grant or other financial assistance from the Program.

TAX LIABILITY – The Market Manager will not be responsible for any tax liability that may be imposed on any Participating Customer as a result of the payment of Program Incentives. All Participating Customers must supply their federal tax identification number or social security number on the application form in addition to providing a copy of their W-9 form as part of the application package in order to receive a Program Incentive.

TERMINATION – New Jersey's Clean Energy Program reserves the right to extend, modify (this includes modification of Program Incentive levels) or terminate this Program without prior or further notice.

WARRANTIES – THE MARKET MANAGER AND ADMINISTRATOR DO NOT WARRANT THE PERFORMANCE OF INSTALLED EQUIPMENT, AND/OR SERVICES RENDERED AS PART OF THIS PROGRAM, EITHER EXPRESSLY OR IMPLICITY. NO WARRANTIES OR REPRESENTATIONS OF ANY KIND, WHETHER STATUTORY, EXPRESSED, OR IMPLIED, INCLUDING, WITHOUT LIMITATIONS, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE REGARDING EQUIPMENT OR SERVICES PROVIDED BY A MANUFACTURER OR VENDOR. CONTACT YOUR VENDOR/ SERVICES PROVIDER FOR DETAILS REGARDING PERFORMANCE AND WARRANTIES.

ACKNOWLEDGEMENT – I have read, understood and am in compliance with all rules and regulations concerning this incentive program. I certify that all information provided is correct to the best of my knowledge, and I give the Market Manager permission to share my records with the New Jersey Board of Public Utilities, and contractors it selects to manage, coordinate or evaluate the Pay For Performance Program, including the release of electric and natural gas utility billing information, as well as make available to the public non-sensitive information. I allow reasonable access to my property to inspect the installation and performance of the technologies and installations that are eligible for incentives under the guidelines of New Jersey's Clean Energy Program. This arrangement supersedes all other communications and representations.

CUSTOMER'S SIGNATURE
PARTNER SIGNATURE
By signing, I certify that I have read, understand and agree to the Participation Agreement listed above.

IV. ENERGY SAVINGS IMPROVEMENT PLAN (ESIP)

COMMERCIAL, INDUSTRIAL AND LOCAL GOVERNMENT

HURRICANE SANDY

PROGRAMS

NJ SMARTSTART BUILDINGS

PAY FOR PERFORMANCE

COMBINED HEAT & POWER AND FUEL CELLS

LOCAL GOVERNMENT ENERGY AUDIT

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OIL, PROPANE & MUNICIPAL ELECTRIC CUSTOMERS

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TOOLS AND RESOURCES

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CONTACT US

Home » Commercial & Industrial » Programs

Energy Savings Improvement Program

A new State law allows government agencies to make energy related improvements to t facilities and pay for the costs using the value of energy savings that result from the imp Under Chapter 4 of the Laws of 2009 (the law), the "Energy Savings Improvement Program" (ESIP), provides all government agencies in New Jersey with a flexible tool to and reduce energy usage with minimal expenditure of new financial resources.

This Local Finance Notice outlines how local governments can develop and implement a their facilities. Below are two sample RFPs:

Local Government
School Districts (K-12)

All RFPs must be submitted to the Board for approval at ESIP@bpu.state.nj.us.

The Board also adopted protocols to measure energy savings:

Measuring Energy Savings
Procedures for Implementation

The ESIP approach may not be appropriate for all energy conservation and energy effic improvements. Local units should carefully consider all alternatives to develop an appro best meets their needs. Local units considering an ESIP should carefully review the Loc Notice, the law, and consult with qualified professionals to determine how they should a task.

The NJ Board of Public Utilities sponsored Sustainable Jersey in the creation of an ESIF Guidebook that explains how to implement the program. The guidebook also includes ca of successful projects and a list of helpful resources.

FIRST STEP – ENERGY AUDIT

For local governments interested in pursuing an ESIP, the first step is to perform an ene as prescribed in P.L.2012 c.55.

ENERGY REDUCTION PLANS

If you have an ESIP plan that needs to be submitted to the Board of Public Utilities, plea to ESIP@bpu.state.nj.us. Please limit the file size to 3MB (or break it into smaller files).

Frankford Township School District
Northern Hunterdon-Voorhees Regional High School
Manalapan Township *(**180 MB** - Right Click, Save As)*

ESIP PROGRAM

Final version 42413

BPU RULES

1. Public Entity must decide if they will use an ESCO or DIY method or Hybrid thereof prior to issuing the RFP and the RFP must state the intended method. A change in the project procurement model after the RFP closing date will be cause for immediate rejection and disqualification of potential Clean Energy program incentives.

2. RFP procedures shall be adhered to as per the legislation, including the use of BPU approved forms. Any alteration of the forms, without prior approval from the BPU shall be grounds for rejection.

3. RFP must include copy of an audit (ASHRAE Level II w/Level III for lighting) and audit must be prepared by a firm classified by DPMC in the 036 discipline.

4. All firms, including professional services, whether using ESCO or DIY model, must be DPMC classified.

5. If an Architect is engaged by the public entity, the architectural fees are the responsibility of the public entity and must be paid directly to the firm. These fees may be included in the energy cost savings analysis and payback.

   ESCO's may contract directly with an architectural firm, in which case the architectural firm serves as a subcontractor to the ESCO and the project related service costs may be included within the project's economic model.

6. Public entity shall conduct pre-bid meetings and site visits per existing statutes.

   In the interest of open public bidding transparency, it is a requirement of the BPU that all proposers must attend the pre-proposal bid meeting.

7. There shall be no negative cash flow in any year of the program.
   section 7 (1)(a)
   > "the energy savings resulting from the program will be sufficient to cover the cost of the program's energy conservation measures."

8. SREC values are not permitted to be used in the energy cost savings calculations.

9. Capital cost avoidance values are not to be used in the energy savings calculations.

10. Operational and Maintenance (O&M) cost savings may be permitted in the cost savings calculations, but only with supporting documentation.

11. Blended utility rates shall not be permitted. Use the actual utility tariff or local contracted rates if there is a third party supplier.

    For the RFP proposals, the public entity shall define the utility rates in the RFP

12. Contracted third party utility rates may only be used for the term of the contract (5 yr. maximum) Subsequent years are to be projected at the utility tariff rates plus the annual BPU escalation rates.

13. Public entity shall conduct M&V (measurement and verification) at the one (1) year operational date and shall provide a copy of the M&V report to the Board of Public Utilities.

    For the RFP proposals, the ESCO shall provide the cost for the one (1) year M&V only. For comparative purposes, the one year M&V pricing shall be indicated on the proposal Form VI, under the "Annual Service Costs" column. Additional M&V costs are at the discretion of the local unit and are not to be included in the proposal.

14. The decisions made by BPU staff regarding compliance or other issues that arise in connection with the RFP procurement process shall be considered a final decision of the BPU. Any appeal will need to be through the New Jersey Superior Court, Appellate Division.

15. For the RFP proposals only, Demand Response (DR) revenues claimed by ESCO's can only be projected for a maximum period of three (3) years. DR revenue projections beyond three years will not be permitted. DR revenues must be included and presented under the "Energy Rebates/Incentives" column of FORM VI.

16. ESCO "fees" proposed during the RFP phase of the project cannot increase post-award. ESCO's are required to maintain the fee percentages through final contract negotiations and construction of the Board approved Energy Savings Plan

17. Public Bid openings shall be held on the due date of the proposal submissions. The public entity shall announce the name of the bidder and the total dollar amount. After award of a contract, all proposals received will be made available by the owner for public inspection

18. Rejection of bids by the public entity shall be conducted in accordance with the appropriate sections of the applicable legislation, as stated in Title 40A:11-13.2. Additionally all proposals must be returned to the respective ESCO's upon rejection.

19. Field changes that exceed 5% of the project cost require BPU approval.

20. Energy Savings Plans (ESP) that is dependent upon incentives from the Clean Energy Program must review the current program requirements, at the time of application, for each incentive to insure eligibility. If any program incentive is denied, resubmission of all ESIP related forms will be necessary to remain ESIP qualified.

APPENDIX E

Photovoltaic Analysis

PVWatts® Calculator

NREL NATIONAL RENEWABLE ENERGY LABORATORY

My Location | 120 Grove Ave, West Deptford NJ 08086 » Change Location | Release Notice (?) | HELP | ALL NREL SOLAR TOOLS

RESOURCE DATA | SYSTEM INFO | RESULTS

Go to system info

39,684 kWh per Year *

RESULTS

Print Results

Month	Solar Radiation (kWh / m^2 / day)	AC Energy (kWh)	Energy Value ($)
January	2.68	2,228	164
February	3.58	2,676	197
March	4.49	3,553	262
April	5.11	3,829	283
May	5.55	4,160	307
June	5.95	4,185	309
July	5.98	4,277	316
August	5.89	4,220	311
September	4.88	3,463	256
October	4.07	3,096	228
November	2.84	2,182	161
December	2.21	1,815	134
Annual	4.44	39,684	$ 2,928

User Comments

Download Results: Monthly | Hourly

Find A Local Installer

* **Caution:** Photovoltaic system performance predictions calculated by PVWatts® include many inherent assumptions and uncertainties and do not reflect variations between PV technologies nor site-specific characteristics except as represented by PVWatts® inputs. For example, PV modules with better performance are not differentiated within PVWatts® from lesser performing modules. Similarly, the "Energy Value" column simply multiplies the utility-average electricity price by production. Complex utility rates and financing can significantly impact the energy value. See Help for additional guidance.

Location and Station Identification

Requested Location	**120 Grove Ave, West Deptford NJ 08086**
Weather Data Source	**(TMY2) PHILADELPHIA, PA 2.7 mi**
Latitude	**39.88° N**
Longitude	**75.25° W**

PV System Specifications *(Commercial)*

DC System Size	**31 kW**
Module Type	**Standard**
Array Type	**Fixed (roof mount)**
Array Tilt	**20°**
Array Azimuth	**200°**
System Losses	**14%**
Inverter Efficiency	**96%**
DC to AC Size Ratio	**1.1**

Initial Economic Comparison

Average Cost of Electricity Purchased from Utility	**0.07 $/kWh**
Initial Cost	**2.60 $/Wdc**
Cost of Electricity Generated by System	**0.13 $/kWh**

These values can be compared to get an idea of the cost-effectiveness of this system. However, system costs, system financing options (including 3rd party ownership) and complex utility rates can significantly change the relative value of the PV system.

NREL is a national laboratory of the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, operated by the Alliance for Sustainable Energy, LLC.

West Deptford Township
Municipal Garage

Cost of Electricity	$0.155	/kWh
Electricity Usage	56,136	kWh/yr
System Unit Cost	$4,000	/kW

Photovoltaic (PV) Solar Power Generation - Screening Assessment

Budgetary Cost	Annual Utility Savings				Estimated Maintenance Savings	Total Savings	Federal Tax Credit	New Jersey Renewable ** SREC	Payback (without incentive)	Payback (with incentive)
$	kW	kWh	therms	$	$	$	$	$	Years	Years
$124,000	**31.0**	**39,684**	**0**	**$6,151**	**0**	**$6,151**	**$0**	**$8,532**	**20.2**	**8.4**

** Estimated Solar Renewable Energy Certificate Program (SREC) SREC for 15 Years= $215 /1000kWh

Area Output*
210 m2
2,260 ft2

Perimeter Output*
148 m
486 ft

Available Roof Space for PV:
(Area Output - 10 ft x Perimeter) x 85%
-2,208 ft2

Approximate System Size: Is the roof flat? (Yes/No) No

11.5 watt/ft2
-25,391 DC watts
31 kW Enter into PV Watts

PV Watts Inputs***

Array Tilt Angle	15	Enter into PV Watts (always 20 if flat, if pitched - enter estimated roof angle)
Array Azimuth	200	Enter into PV Watts (default)
Zip Code	07470	Enter into PV Watts
DC/AC Derate Factor	0.83	Enter info PV Watts

PV Watts Output
39,684 annual kWh calculated in PV Watts program

% Offset Calc

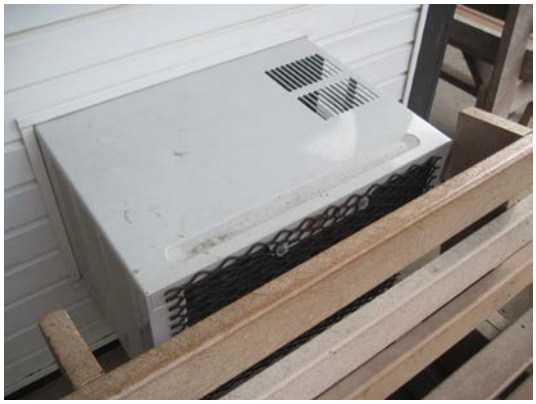
Usage	56,136	(from utilities)
PV Generation	39,684	(generated using PV Watts)
% offset	71%	

* http://www.freemaptools.com/area-calculator.htm
** http://www.flettexchange.com
*** http://gisatnrel.nrel.gov/PVWatts_Viewer/index.html

APPENDIX F

Photos

Existing Garage Doors



Existing Window AC Units

Existing Thermostat

APPENDIX G

EPA Benchmarking Report

ENERGY STAR® Statement of Energy Performance

N/A

ENERGY STAR® Score[1]

Municipal Garage Building

Primary Property Function: Repair Services (Vehicle, Shoe, Locksmith, etc.)
Gross Floor Area (ft²): 14,960
Built: 1971

For Year Ending: October 31, 2014
Date Generated: January 14, 2015

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address	Property Owner	Primary Contact
Municipal Garage Building 120 Grove Ave, West Deptford, New Jersey 08086	_____ , (____)____-_____	____ _____ , (____)____-_____ _____

Property ID: 4305844

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
41.7 kBtu/ft²

Source EUI
69.3 kBtu/ft²

Annual Energy by Fuel

Electric - Grid (kBtu)	191,536 (31%)
Fuel Oil (No. 2) (kBtu)	431,664 (69%)

National Median Comparison

National Median Site EUI (kBtu/ft²)	60.3
National Median Source EUI (kBtu/ft²)	100.4
% Diff from National Median Source EUI	-31%

Annual Emissions

Greenhouse Gas Emissions (Metric Tons CO2e/year)	58

Signature & Stamp of Verifying Professional

I _____ (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: _____Date: _____

Licensed Professional

____ _____
,
(____)____-_____
_____

Professional Engineer Stamp (if applicable)