THE NEWARK PUBLIC SCHOOLS

Group 3 Buildings

SPEEDWAY SCHOOL

701 South Orange Ave, Newark, NJ 07106

LOCAL GOVERNMENT ENERGY AUDIT PROGRAM

FOR

NEW JERSEY

BOARD OF PUBLIC UTILITIES

May 2014

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CHA PROJECT NO. 27999

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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 Newark Public Schools (NPS), 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 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
Speedway School	701 S. Orange Ave, Newark NJ, 07106	127,530	2010

The 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)
Speedway School	279,930	3,233	45,115	7.7

Each individual measure's annual savings are dependent on that measure alone, there are no interactive effects calculated. There are three options shown for Lighting ECM savings; only one option can be chosen. 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
1	Controls Upgrade/Retro-Commissioning	44,203	13,520	3.3	0	3.3	Y
2	Install Vending Machine Controls	840	1,079	0.8	0	0.8	Y
L1**	Lighting Replacements / Upgrades	281,781	28,021	10.1	7,400	9.8	N
L2**	Install Lighting Controls (Add Occupancy Sensors)	19,440	4,962	3.9	2,520	3.4	N
L3	Lighting Replacements with Controls (Occupancy Sensors)	301,221	30,516	9.9	9,920	9.5	Y
	Total**	**346,265**	**45,115**	**7.7**	**9,920**	**7.5**	
	Total (Recommended)	**346,265**	**45,115**	**7.7**	**9,920**	**7.5**	

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

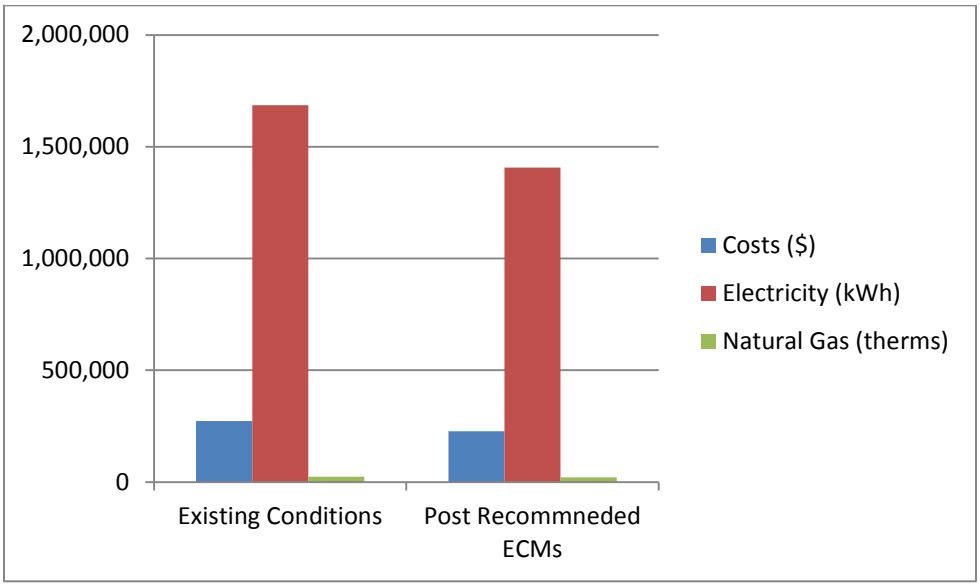
Note: The 'Total' and 'Total (Recommended)' rows in the table above have the same values because there are no alternate ECMs provided in this report. Alternate ECMs are normally listed with 'A' and 'B' options; in other reports for NPS.

The following alternative energy measures are also recommended for further study:

- Photovoltaic (PV) Rooftop Solar Power Generation – 140 kW System

If NPS implements the recommended ECMs, energy savings would be as follows:

	Existing Conditions	Post Recommended ECMs	Percent Savings
Costs ($)	272,568	227,453	17%
Electricity (kWh)	1,686,000	1,406,070	17%
Natural Gas (therms)	24,280	21,047	13%
Site EUI (kbtu/SF/Yr)	64.1	54.1	



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: Speedway School (Index No. 71)
Address: 701 S. Orange Ave, Newark NJ 07106
Gross Floor Area: 127,530 Square Feet
Number of Floors: 3
Year Built: 2010
Additions: N/A

Description of Spaces: Classrooms, offices, cafeteria, auditorium, gymnasium, stage, media center (library), computer labs, storage rooms, toilet rooms and mechanical rooms.
Description of Occupancy: The school serves 453 students from Pre-K to 8th grade. There are 60 school faculty and staff members.
Number of Computers: The school has approximately 60 desktop and laptop computers.
Building Usage: Hours of operation are 7:30 AM – 3:00 PM Monday through Friday, with various after-school activities until 6:00 PM. Custodians are in the building until 11:00 each night. In general the occupied hours are considered 80 hours per week, 10 months per year

Construction Materials: The building is constructed of concrete masonry units (CMU) with structural steel framing. The interior walls are a mix of concrete, drywall and CMU.
Façade: A mix of concrete panel, brick and glass curtain wall
Roof: The roof is flat with built up system with a rubber membrane above steel decking. Due to the construction age of the building there is insulation in the roof according to 2006 building code.
Windows: Windows throughout the building are thermally sealed double pane windows with aluminum frames. The windows are in good condition; there are no ECMs associated with the windows.

Exterior Doors: The majority of exterior doors around the building are FRP. The main entrance doors to the building are double pane glass storefront type doors with aluminum frames. The doors and door seals are in good condition; there are no ECMs associated with the doors.

Heating Ventilation & Air Conditioning (HVAC) Systems

Heating: This building uses two separate HVAC system types. The first system uses water source heat pumps for heating and cooling of classroom spaces. Supplemental heat pump loop heating is provided by three (3) Fulton PHW-1400 natural gas fired hot water (HW) boilers which offer an input capacity of 1,400 MBH each and efficiencies of up to 99% depending on the return water temperature in the system. The heat pump condenser water HPCW is circulated throughout the building by two (2) 40 HP motors controlled by VFDs. The water source heat pumps reject heat to this loop that used at other locations for heating or rejected to the outdoors using cooling towers. The individual room heat pumps are located above the ceilings in hallways. In general there is one heat pump used for every classroom, although some classrooms may have two.

The second system consists of packaged HVAC units that serve larger areas including the cafeteria, auditorium, gymnasium and media center. These York roof top units (RTU) are equipped with energy recovery ventilators (ERV) that recover sensible and latent heat to pre-condition OA. Each unit has a natural gas fired furnace for supplementing the tempered air.

The heating system is in good condition and facility personnel indicated it is working well with no major issues; there are no ECMs associated with improving the heating system.

Cooling: 100% of the building is cooled. The heat pumps for the classrooms supply cooling by working in reverse and rejecting warm air from inside and replacing it with cooled air. The warm air heats up water in the building loop which is rejected to the outside through the use of two (2) Evapco cooling towers.

The same HVAC RTUs which supply heating for the cafeteria, auditorium, gymnasium, and media center also provide cooling with packaged direct expansion (DX) systems.

The cooling system is in good condition and is working well; there are no ECMs associated with the cooling system equipment.

Ventilation: Ventilation air is ducted to the classroom heat pumps from Semco energy recovery units (ERU) located on the roof. There are approximately eight (8) ERUs of various sizes which supply 100% outdoor air (OA) and exhaust 100% from the spaces, including the toilet rooms. The ERUs recover both sensible and latent heat and use it to pre-condition the OA before final conditioning occurs at the heat pumps.

The York RTUs supply a minimum of 20% OA, but have the ability to operate in economizer mode if the outdoor air conditions permit.

The kitchen is equipped with a make-up air unit (MUA) which supplies heat and ventilation air to the kitchen when the exhaust fan is operation in order to maintain the pressurization in the kitchen. There are no ECMs associated with the ventilation system.

Exhaust: 100% of the building air is exhaust through the use of the Semco ERUs, York RTUs, toilet room exhaust or the kitchen exhaust fan. The toilet room exhaust fans are likely to be

fractional horsepower. There is An estimated 2 HP Captive Aire kitchen exhaust hood which is approximately 4' x 20' located above all of the cooking equipment. The exhaust fan operation is monitored by the BMS system. There are no ECMs associated with the exhaust system

Controls Systems

The boilers are controlled by a Modsync boiler control system which provides sequencing, outdoor air reset and general configuration of the boilers and boiler system. The three (3) boilers presently operate in lead/lag to share the HW load and allow the boilers to operate at the greatest possible efficiency, only achievable at lower firing rates.

The remainder of the equipment in the building is controlled by an Andover DDC building management system (BMS) which has a computer front-end which can control, monitor and trend a variety of inputs. In general the daytime heating and cooling set points are 75F and 78F respectively with setback to 60F and 86F at night. The software appeared to have sensors to monitor CO_2, however it is not known if the RTUs allow for demand control ventilation.

Based on staff interviews it appears that the control system is not used to the fullest extent with some equipment being manually operated. Additionally ,sensors which relay data to the BMS system can lose calibration which will cause the system to run at less than maximum efficiency. In general, the system should be re-commissioned every few years. As it has been some time since the system was installed; and ECM has been included which evaluates the benefit to retro-commissioning the BMS system.

Domestic Hot Water Systems

Domestic hot water (DHW) is generated by one (1) Lochinvar high efficiency DHW heater with an input capacity of 999,999 btu/h. DHW is stored in a 504 gallon Lochinvar storage tank before it is circulated throughout the building by one of three fractional horsepower re-circulation pumps. DHW is used in toilet rooms, mop sinks and kitchen scullery sinks. The DHW heater is high efficiency and therefore not recommended for replacement.

Kitchen Equipment

The kitchen in this building cooks meals for this school as well as prepares meals for other schools in the area which do not have full kitchens. The kitchen equipment includes several double door convection ovens, two (2) warming ovens and a vegetable steamer. All cooking equipment is natural gas fired. There is also one (1) walk-in cooler and one (1) walk-in freezer as well as two (2) reach-in coolers and two (2) reach-in freezers.

The cooking and refrigeration equipment appears to be new and therefore no kitchen equipment upgrades are being considered.

Plumbing Systems

There are many boy's and girl's as well as faculty men's and women's group style toilet rooms throughout the school which contain modern low flow plumbing fixtures. Lavatory faucets have sensors which turn on and off depending on if an occupant is using the fixture. Modern electric water coolers are provided in corridors. No water savings ECMs are being considered.

Plug Load

This school has computers, copiers, smart boards, residential appliances (microwave, refrigerator), printers and vending machines which contribute to the plug load in the building. The installation of vending machine occupancy sensors has been evaluated in an effort to reduce the plug load in the building.

Lighting Systems

The majority of the lighting in the building consists of 4' 32W linear fluorescent T8 lamps in a variety of different fixture types including recessed troffer and flush mounted wraparound fixtures. Lighting in the gymnasium includes mainly 400W metal halide fixtures with some 100W spiral compact fluorescent (CFL) can-type light fixtures scattered around for additional lighting. The cafeteria has 2-lamp 26W CFL can-type fixtures as well as a handful of 42W CFL chandelier fixtures. The auditorium has a variety of different lighting fixtures; however the main source of lighting is from par38 halogen lamps with a few 400W MH. Many of the interior lighting fixtures are automatically controlled by either wall or ceiling mounted occupancy sensors including those in restrooms, classrooms and offices; although there are many places that have lights which are manually controlled by switches.

Three lighting ECMs have been included which include adding occupancy sensors to the existing lighting, replacement of the T-8 lighting with LED lighting and a third ECM that evaluates the effect of occupancy sensors used with the LED lighting upgrades.

3.0 UTILITIES

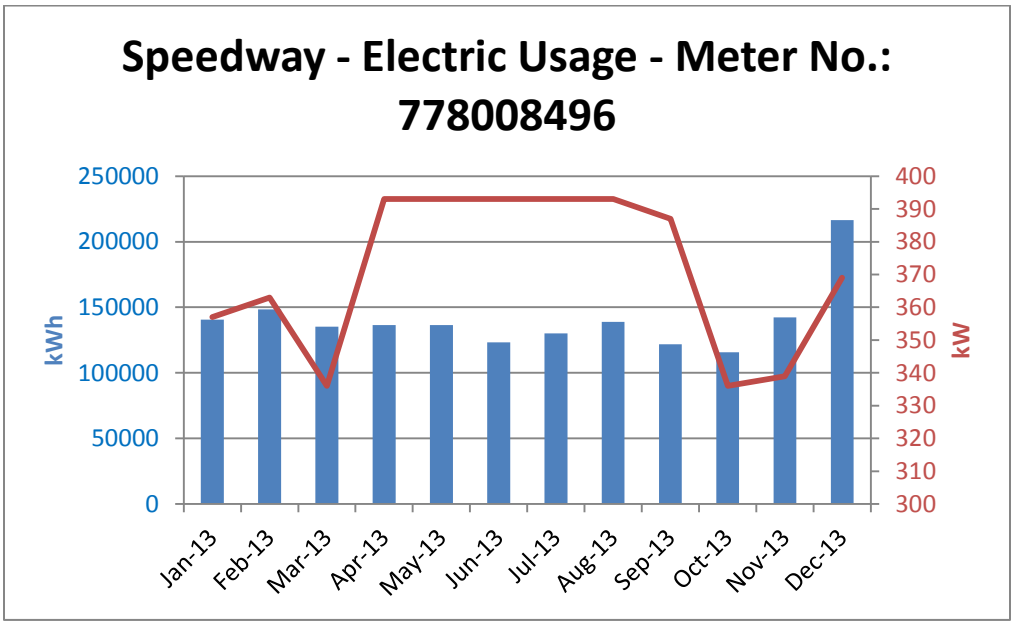
Utilities used by the building are delivered and supplied by the following utility companies:

	Electric	Natural Gas
Deliverer	PSEG	PSEG
Supplier	Nextera Energy Services	PSEG

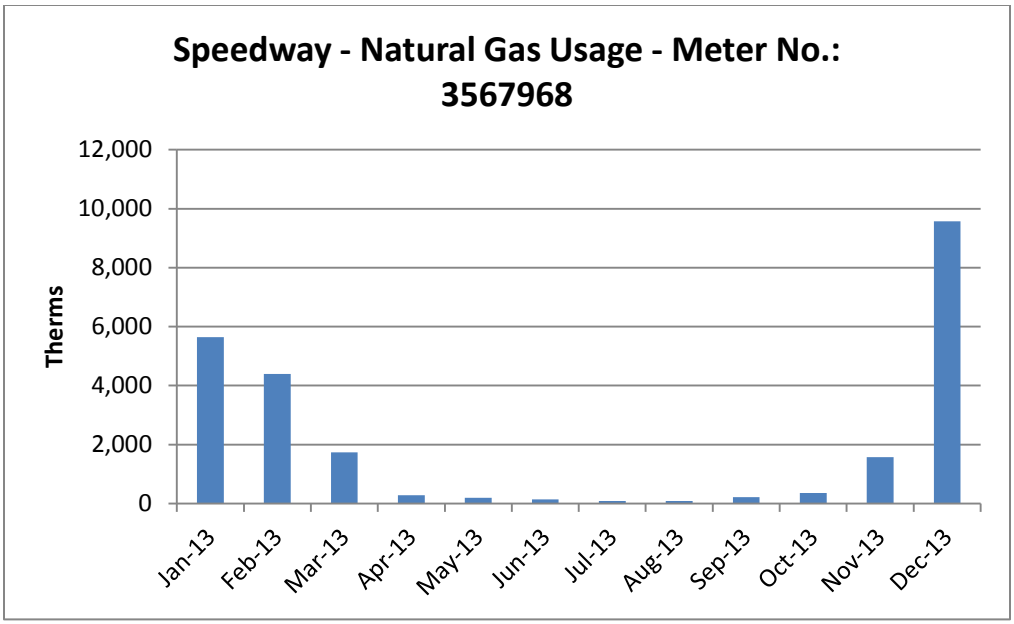
For the 12-month period ending in December 2013, the utilities usages and costs for the building were as follows:

Electric		
Annual Consumption	1,686,000	kWh
Annual Cost	247,094	$
Blended Unit Rate	0.15	$/kWh
Supply Rate	0.14	$/kWh
Demand Rate	4.44	$/kW
Peak Demand	393	kW
Natural Gas		
Annual Consumption	24,280	Therms
Annual Cost	25,474	$
Unit Rate	1.05	$/therm

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 most recent electric bill)



Monthly electricity usage is constant all year round due to the heat pump system in the building, however electrical demand peaks in the summer due to DX cooling used for RTUs. It is not known why electricity usage peaks in December.



The natural gas usage peaks during the winter months for boiler operation generating supplemental heating for the heat pump loop. The baseline natural gas usage in the summer is for domestic hot water generation and some kitchen equipment usage.

In addition, domestic water and sewer services are provided by City of Newark Division of Water at $7.55/1000 gal.

See Appendix A for a 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	School Average Rate	NJ Average Rate	
Electricity	$/kWh	$0.14	$0.12	Y
Natural Gas	$/Therm	$1.05	$0.95	Y

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

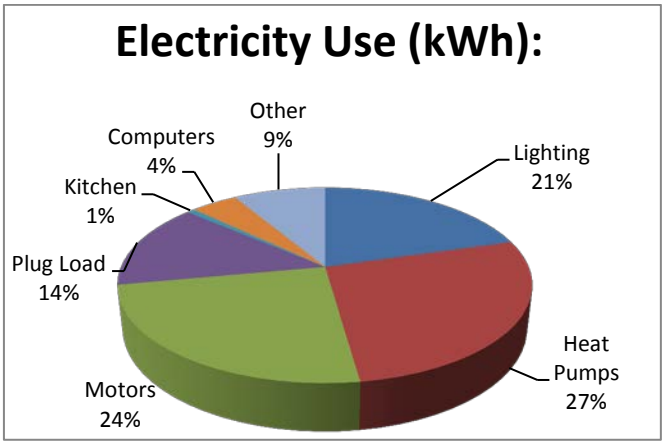
Additional information on selecting a third party energy supplier is available here:

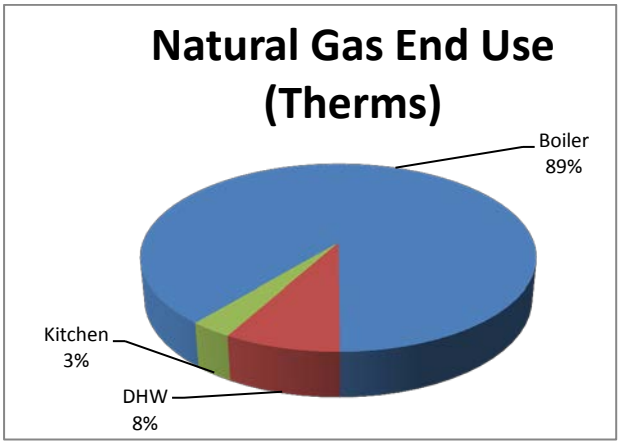
http://www.state.nj.us/bpu/commercial/shopping.html.

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.

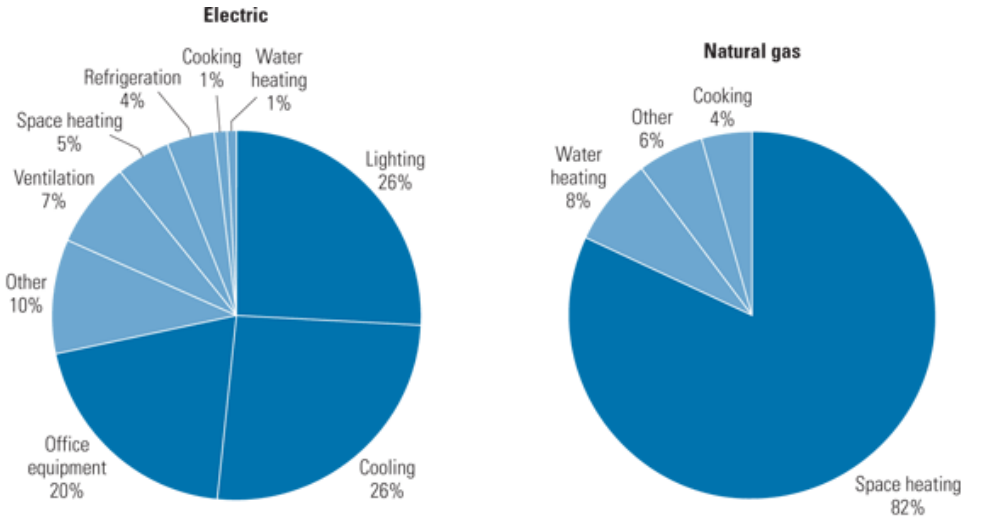
Site End-Use Utility Profile





Most of the electricity consumed by educational facilities is used to for lighting, cooling, and plug loads such as computers and copiers; most of the natural gas is used for space heating. Each school's energy profile is different, and the following charts represent typical utility profiles for K-12 schools per U.S. Department of Energy.

Typical End-Use Utility Profile for Educational Facilities



Courtesy: E SOURCE; from Commercial Building Energy Consumption Survey, 1999 data

4.0 BENCHMARKING

TRC has previously benchmarked this building, the results of which have been provided to NPS. The results are summarized below. Copies of the benchmarking report are available in Appendix G.

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/ft^2/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.

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.

Site EUI kBtu/ft^2/yr	Energy Star Rating (1-100)
64.1*	16**

* Calculated by CHA using Utility Data provided by NPS
** Provided by TRC

The school has a below average Energy Star Rating Score (50 being the median score), and as such by implementing the measures discussed in this report, it is expected that the EUI can be further reduced and the Energy Star Rating further increased.

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 Retro-Commission Existing DDC Controls

The building is equipped with an Andover DDC controls system. As observed during the site visit, however, the integration and functionality of the system with respect to building systems could be improved.

Commissioning is the process of verifying that systems are designed, installed, functionally tested, and capable of being operated and maintained according to the owner's operational needs. Retro-commissioning is the same systematic process applied to existing buildings.

Both controls and components of the heating and cooling systems present saving opportunities during the retro-commissioning process. The DDC system and controls within a building play a crucial role in providing a comfortable building environment. Over time, temperature sensors or thermostats may drift out of synch. Poorly calibrated sensors can increase heating and cooling loads and lead to occupant discomfort. The following procedure is recommended:

- Calibrate the indoor and outdoor building sensors. Calibration of room thermostats, duct thermostats, humidistats, and pressure and temperature sensors should be in accordance with the original design specifications. Calibrating these controls may require specialized skills or equipment and may require outside expertise.
- Inspect damper and valve controls to verify proper functioning. Dampers should also be examined for proper opening and closing. Stiff dampers can cause improper modulation of the amount of outside air being used in the supply airstream. In some cases, dampers may be wired in a single position or disconnected, violating minimum outside air requirements.
- Review building operating schedules. HVAC controls must be adjusted to heat and cool the building properly during occupied hours. Occupancy schedules can change frequently over the life of a building, and control schedules should be adjusted accordingly. When the building is unoccupied, the temperature should be set back to save heating or cooling energy; however, minimal heating and cooling may be required when the building is unoccupied. In cold climates, for example, heating may be needed to keep water pipes from freezing.

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

ECM-1 Retro- commission existing DDC Controls

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total				
$	kW	kWh	Therms	$		$	Years	Years
44,203	0	68,879	3,233	13,520	3.6	-	3.3	3.3

* 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 Install Vending Misers

The building presently has two (2) cold beverage and one (1) snack-type vending machine in the building.

These vending machines operate continuously 24 hours per day, seven (7) days a week. Installing controls such as timers or occupancy sensors allow the machines to turn on only when a customer is present or when the compressor must run to maintain the product at the desired temperature. By implementing this measure electrical energy savings could be realized.

The calculation uses electrical consumption and annual electrical cost as the baseline, vs. the reduced electrical consumption and cost for the proposed case. The difference between the two values is the energy savings.

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

ECM-2 Install Vending Misers

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total				
$	kW	kWh	Therms	$		$	Years	Years
840	0	7,343	0	1,079	18.3	-	0.8	0.8

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

This measure is recommended.

5.3.1 ECM-L1 Lighting Replacement / Upgrades

The existing lighting system consists of mostly T8 linear fluorescent fixtures which until recently represented the most efficient lighting technology available. 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
281,781	57	185,223	0	28,021	0.1	7,400	10.1	9.8

* 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.

5.3.2 ECM-L2 Install Lighting Controls (Occupancy Sensors)

Presently, all interior lighting fixtures are controlled my 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 5.3.1, 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
19,440	0	36,756	0	4,962	1.8	2,520	3.9	3.4

* 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.

5.3.3 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
301,221	57	203,709	0	30,516	0.1	9,920	9.9	9.5

* 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.

5.4 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:

- Set computers monitors to turn off and computers to sleep mode when not in use
- Look for the ENERGY STAR® label when purchasing Window AC units or Kitchen Appliances
- Disconnect unnecessary or unused small appliances and electronics when not in use to reduce phantom loads
- Train custodians to turn off lights and set HVAC temperatures to minimum levels when rooms are unoccupied
- Develop an Energy Master Plan to measure and track energy performance
- Educate students and staff about how their behavior affects energy use. Create student energy patrols to monitor and inform administration when energy is being wasted.
- During the winter, Custodians should ensure all windows are closed as part of cleaning routine

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 School District 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 not qualify for this program because its electrical demand is more 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)
18,020	140

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 (school) 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 $155/SREC for 2013 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 – 140 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
560,000	140	174,855	0	26,228	27,103	21.4	10.5	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 school district 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.

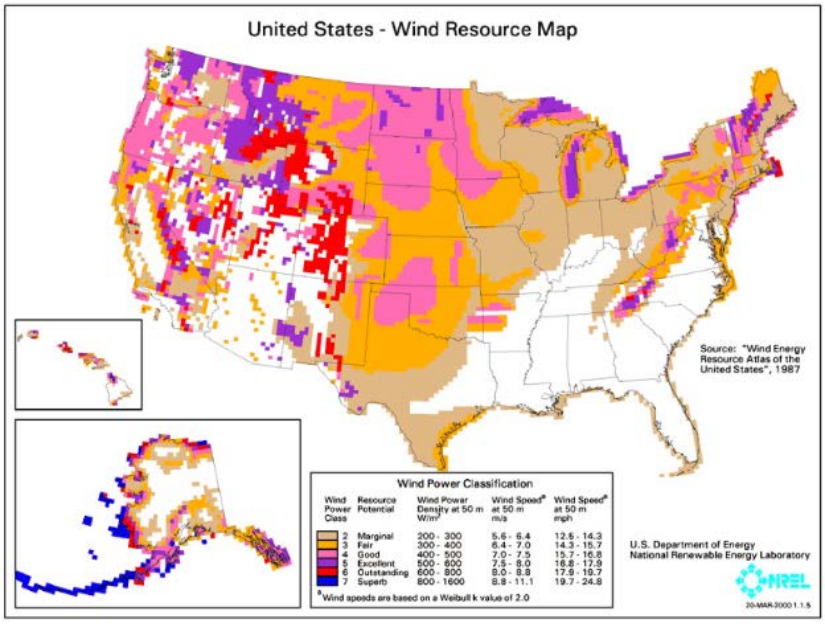
Several options exist for using active solar thermal systems for space heating. The most common method is called a passive solar hot water system involves using glazed collectors to heat a liquid held in a storage tank (similar to an active solar hot water system described above which requires pumping). 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 school 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 school.

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.

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 January 2013 through December 2013 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
393.0	336.0	371.0	N	Y

This measure is not recommended because the building does not have any onsite generation to cover minimum required load reduction to be eligible for curtailment and cannot shut down equipment while students are present.

8.0 CONCLUSIONS & RECOMMENDATIONS

The LGEA energy audit conducted by CHA for the building identified potential annual savings of $45,115/yr with an overall payback of 7.7 years, if the recommended ECMs are implemented.

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)
279,930	3,233	45,115	7.7

The following projects should be considered for implementation:

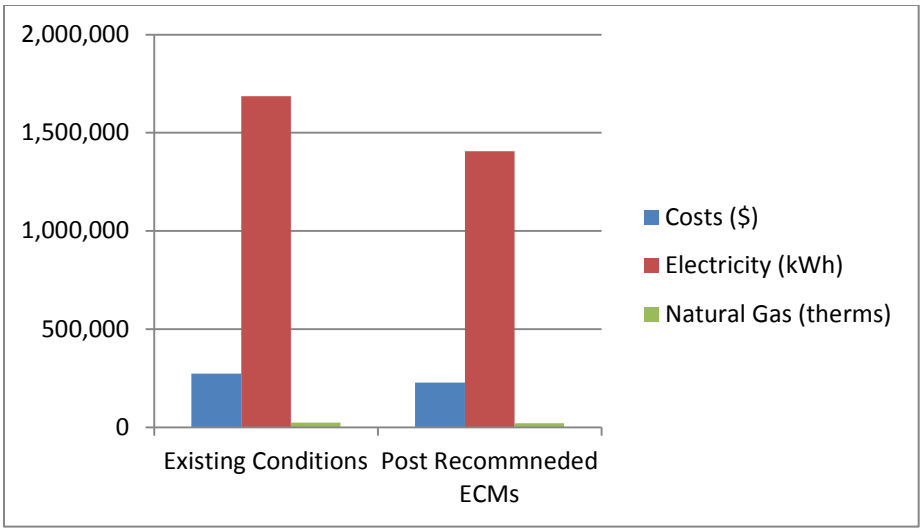
- Controls Upgrade/Retro-Commissioning
- Install Vending Machine Controls
- Lighting Replacements with Controls (Occupancy Sensors)

The following alternative energy measures are recommended for further study:

- Photovoltaic (PV) Rooftop Solar Power Generation – 140 kW System

If NPS implements the recommended ECMs, energy savings would be as follows:

	Existing Conditions	Post Recommended ECMs	Percent Savings
Costs ($)	272,568	227,453	17%
Electricity (kWh)	1,686,000	1,406,070	17%
Natural Gas (therms)	24,280	21,047	13%
Site EUI (kbtu/SF/Yr)	64.1	54.1	



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

APPENDIX A

Utility Usage Analysis and Alternate Utility Suppliers

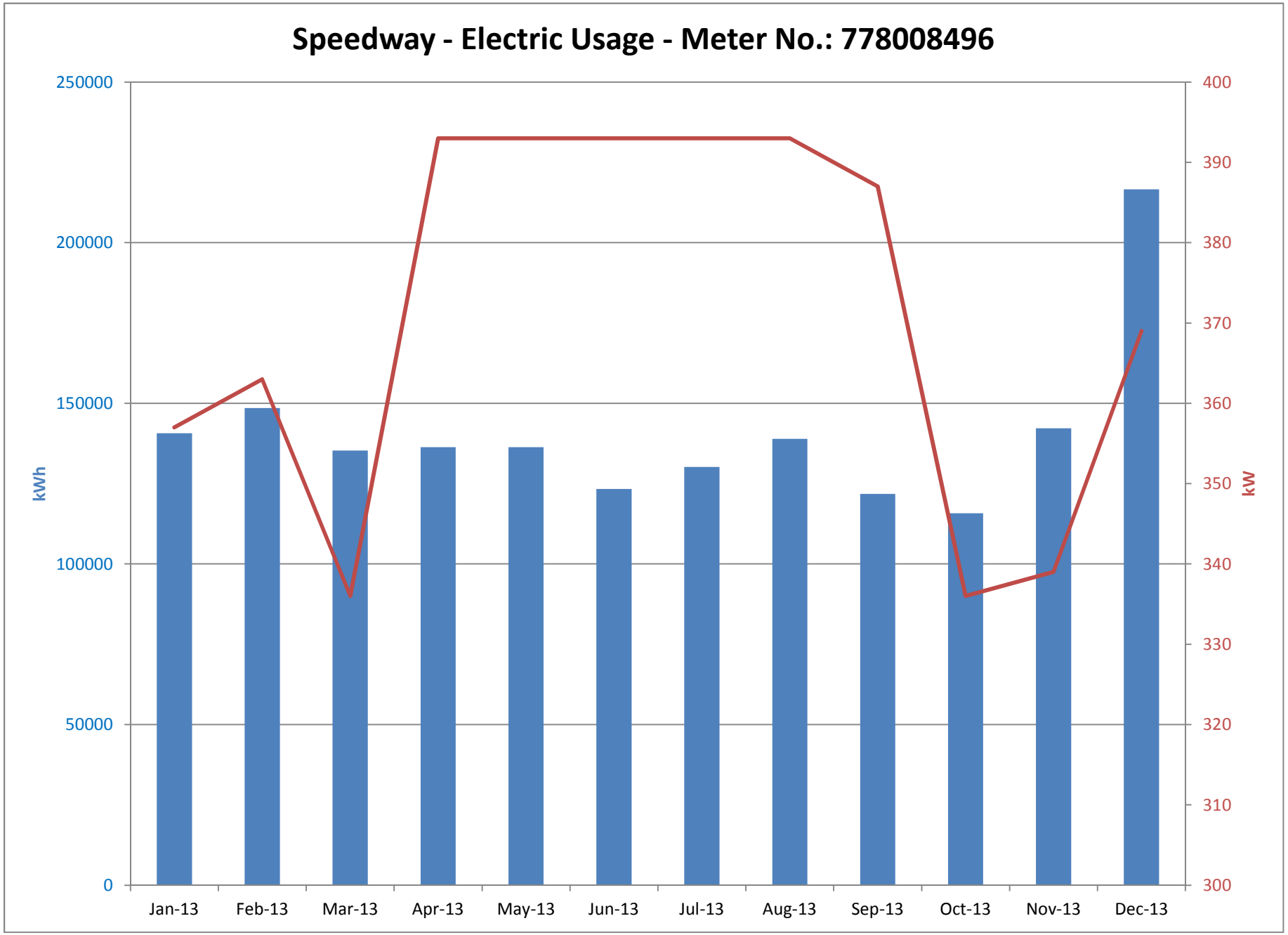
Speedway - Electric Usage

Start Date	End Date	kWh	Demand Usage (KW)	Total Charge	Supply Charge	Delivery Charge	Demand Charge	Consumption ($)	Blended Rate ($/kWh)	Consumption Rate ($/kWh)	Demand Rate ($/kW)
1/5/2012	2/2/2012	127800	357	19,961.89	14,744.44	3,972.73	1,244.72	18,717.17	$ 0.16	$ 0.15	$ 3.49
2/3/2012	3/5/2012	137100	357	21,223.40	15,744.84	4,233.84	1,244.72	19978.68	$ 0.15	$ 0.15	$ 3.49
3/6/2012	4/3/2012	122400	363	18,922.47	13,835.72	3,821.11	1,265.64	17656.83	$ 0.15	$ 0.14	$ 3.49
4/4/2012	5/3/2012	44100	174	10,018.07	7,788.63	1,622.77	606.67	9411.4	$ 0.23	$ 0.21	$ 3.49
5/4/2012	6/4/2012	206700	360	30,571.05	20,141.82	9,174.05	1,255.18	29315.87	$ 0.15	$ 0.14	$ 3.49
6/5/2012	7/3/2012	117000	351	20,232.33	12,248.52	6,760.01	1,223.80	19008.53	$ 0.17	$ 0.16	$ 3.49
7/4/2012	8/1/2012	138900	390	23,223.99	14,130.98	7,733.24	1,359.77	21,864.22	$ 0.17	$ 0.16	$ 3.49
8/2/2012	8/30/2012	132300	363	21,900.44	13,313.03	7,321.77	1,265.64	20634.8	$ 0.17	$ 0.16	$ 3.49
8/31/2012	10/2/2012	141300	372	19,793.73	13,919.57	4,577.14	1,297.02	18496.71	$ 0.14	$ 0.13	$ 3.49
10/3/2012	12/3/2012	257100	339	36,348.52	25,637.61	8,347.00	2,363.91	33984.61	$ 0.14	$ 0.13	$ 6.97
12/4/2012	1/3/2013	149100	333	20,104.17	14,178.77	4,762.50	1,162.90	18941.27	$ 0.13	$ 0.13	$ 3.49
1/4/2013	2/1/2013	140700	357	19,389.44	13,519.94	4,604.15	1,265.35	18124.09	$ 0.14	$ 0.13	$ 3.54
2/2/2013	3/5/2013	148500	363	20,226.44	14,383.42	4,556.40	1,286.62	18939.82	$ 0.14	$ 0.13	$ 3.54
3/6/2013	4/4/2013	135300	336	19,027.53	13,651.93	4,184.68	1,190.92	17836.61	$ 0.14	$ 0.13	$ 3.54
4/5/2013	5/5/2013	136350	393	21,492.29	14,155.16	5,944.19	1,392.95	20099.34	$ 0.16	$ 0.15	$ 3.54
5/6/2013	6/5/2013	136350	393	21,492.29	14,155.16	5,944.19	1,392.95	20099.34	$ 0.16	$ 0.15	$ 3.54
6/6/2013	7/3/2013	123300	393	21,964.48	13,162.89	7,408.64	1,392.95	20571.53	$ 0.18	$ 0.17	$ 3.54
7/3/2013	8/2/2013	130200	393	22,387.72	13,377.94	4,303.01	4,706.77	17680.95	$ 0.17	$ 0.14	$ 11.98
8/3/2013	9/3/2013	138900	393	21,814.97	12,542.67	7,879.35	1,392.95	20422.02	$ 0.16	$ 0.15	$ 3.54
9/4/2013	10/2/2013	121800	387	16,421.21	10,998.54	4,050.99	1,371.68	15049.53	$ 0.13	$ 0.12	$ 3.54
10/3/2013	11/1/2013	115800	336	15,528.11	10,456.74	3,880.45	1,190.92	14337.19	$ 0.13	$ 0.12	$ 3.54
11/2/2013	12/3/2013	142200	339	18,721.95	12,840.66	4,679.74	1,201.55	17520.4	$ 0.13	$ 0.12	$ 3.54
12/4/2013	1/17/2014	216600	369	28,627.84	19,558.98	7,107.04	1,961.82	26666.02	$ 0.13	$ 0.12	$ 5.32

Speedway School		Start Date	End Date	Months
701 S. Orange Ave. , 07103		1/5/2012	1/17/2014	24
Account Number	2147483647			
Meter Number	778008496			

ELECTRIC USAGE - MOST RECENT 12 MONTHS, PERIOD ENDING: 1/17/2014

Total Usage	1,686,000	**kwh**
Total Charges	$247,094	
Blended Rate	$0.147	**$/kWh**
Consumption Rate	$0.135	**$/kWh**
Demand Rate	$4.44	**$/kW**
Max Demand	393.0	**kW**
Min Demand	336.0	**kW**
Avg Demand	371.0	**kW**


Speedway - Electric Usage - Meter No.: 778008496
250000
200000
150000
100000
50000
0
kWh
400
390
380
370
360
350
340
330
320
310
300
kW
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13

Newark Public Schools LGEA
CHA Project# 27999

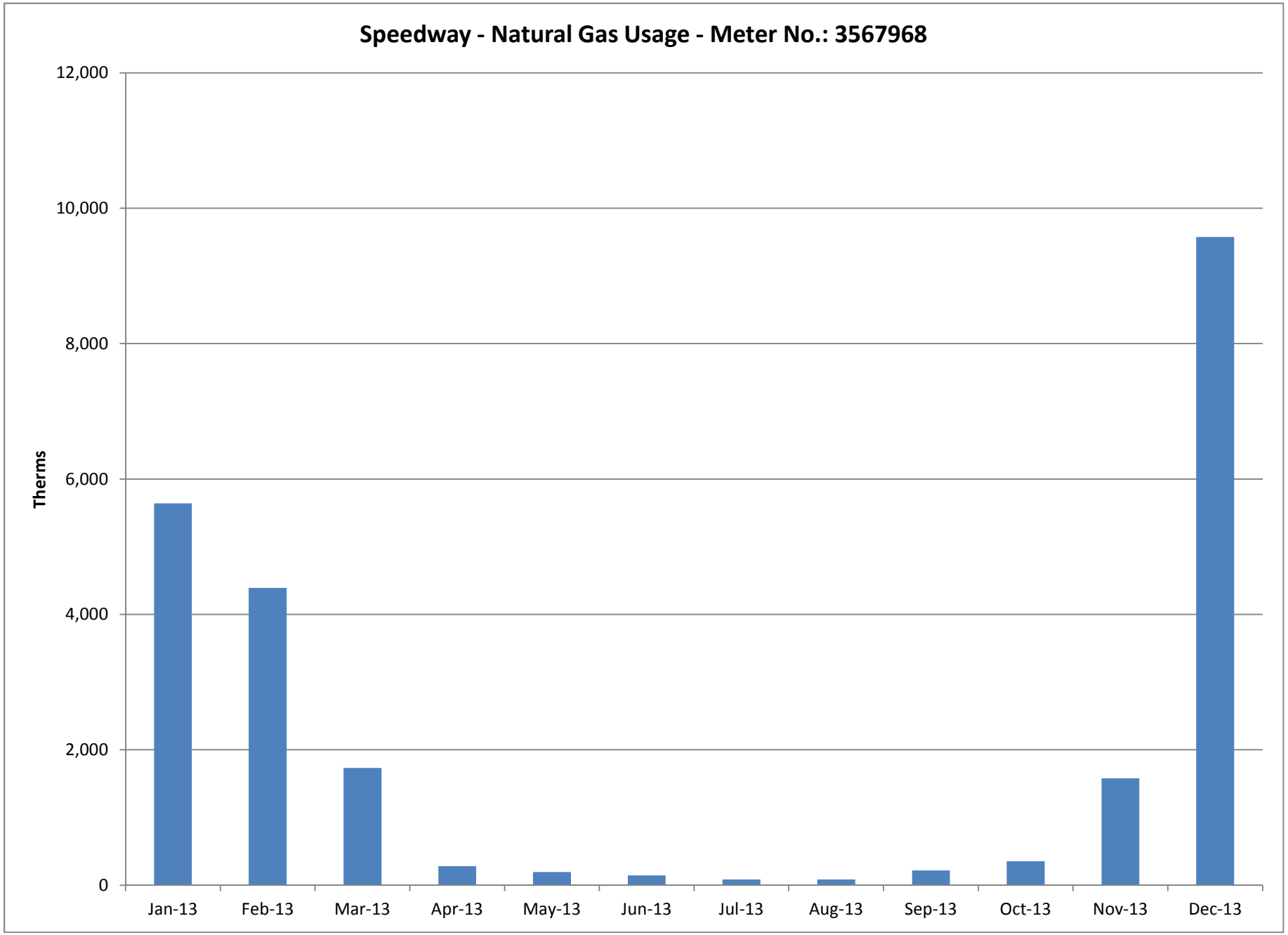
Speedway - Natural Gas Usage

Index No	Current Name	Acct	Meter	Start Date	End Date	Therms	Total Charge	$/therm
71	Speedway School	4207852700	3567968	1/5/2012	2/2/2012	4,949.12	4,962.09	1.00
71	Speedway School	4207852700	3567968	2/3/2012	3/5/2012	3,644.49	3,723.72	1.02
71	Speedway School	4207852700	3567968	3/6/2012	4/3/2012	1,344.16	935.41	0.70
71	Speedway School	4207852700	3567968	4/4/2012	5/3/2012	1,430.83	956.75	0.67
71	Speedway School	4207852700	3567968	5/4/2012	6/4/2012	217.88	229.32	1.05
71	Speedway School	4207852700	3567968	6/5/2012	7/3/2012	144.04	191.68	1.33
71	Speedway School	4207852700	3567968	7/4/2012	8/1/2012	88	159.28	1.81
71	Speedway School	4207852700	3567968	8/2/2012	8/30/2012	95.42	166.73	1.75
71	Speedway School	4207852700	3567968	8/31/2012	10/2/2012	223.01	247.29	1.11
71	Speedway School	4207852700	3567968	10/3/2012	12/3/2012	7,294.71	8,331.73	1.14
71	Speedway School	4207852700	3567968	12/4/2012	1/3/2013	7,644.25	7,482.94	0.98
71	Speedway School	4207852700	3567968	1/4/2013	2/1/2013	5,641.95	5,621.33	1.00
71	Speedway School	4207852700	3567968	2/2/2013	3/5/2013	4,391.07	4,652.69	1.06
71	Speedway School	4207852700	3567968	3/6/2013	4/4/2013	1,731.16	1,345.74	0.78
71	Speedway School	4207852700	3567968	4/5/2013	5/3/2013	280.1	319.88	1.14
71	Speedway School	4207852700	3567968	5/4/2013	6/5/2013	194.81	257.77	1.32
71	Speedway School	4207852700	3567968	6/6/2013	7/3/2013	144.04	191.68	1.33
71	Speedway School	4207852700	3567968	7/4/2013	8/2/2013	84.68	166.79	1.97
71	Speedway School	4207852700	3567968	8/3/2013	9/3/2013	83.75	163.24	1.95
71	Speedway School	4207852700	3567968	9/4/2013	10/2/2013	218.62	260.58	1.19
71	Speedway School	4207852700	3567968	10/3/2013	11/1/2013	355.18	1,360.74	3.83
71	Speedway School	4207852700	3567968	11/2/2013	12/3/2013	1,577.85	2,328.19	1.48
71	Speedway School	4207852700	3567968	12/4/2013	1/3/2014	9,576.32	8,805.31	0.92

Speedway School		Start Date	End Date	# Months
Account Number	4207852700	1/5/2012	1/3/2014	23
Meter Number	3567968			

NATURAL GAS USAGE - MOST RECENT 12 MONTHS, PERIOD ENDING: 1/3/2014

Annual Usage	24,280	**Therms**
Annual Cost	$25,474	
Rate	$1.05	**$/Therm**


Speedway - Natural Gas Usage - Meter No.: 3567968
Therms
12,000
10,000
8,000
6,000
4,000
2,000
0
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13

PSE&G ELECTRIC SERVICE TERRITORY
Last Updated: 10/24/12

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

Supplier	Telephone & Web Site	*Customer Class
AEP Energy, Inc. 309 Fellowship Road, Fl. 2 Mount Laurel, NJ 08054	(866) 258-3782 www.aepenergy.com	**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 103 Carnegie Center Suite 300 Princeton, NJ 08540	(877)-30-AMBIT (877) 302-6248 www.ambitenergy.com	**R/C** **ACTIVE**
American Powernet Management, LP 437 North Grove St. Berlin, NJ 08009	(877) 977-2636 www.americanpowernet.com	**C** **ACTIVE**
Amerigreen Energy, Inc. 1463 Lamberton Road Trenton, NJ 08611	888-423-8357 www.amerigreen.com	**R/C** **ACTIVE**
AP Gas & Electric, LLC 10 North Park Place, Suite 420 Morristown, NJ 07960	(855) 544-4895 www.apge.com	**R/C/I** **ACTIVE**
Astral Energy LLC 16 Tyson Place Bergenfield, NJ 07621	(201) 384-5552 www.astralenergyllc.com	**R/C/I** **ACTIVE**
Barclays Capital Services, Inc. 70 Hudson Street Jersey City, NJ 07302-4585	(888) 978-9974 www.group.barclays.com	**C** **ACTIVE**
BBPC, LLC d/b/a Great Eastern Energy 116 Village Blvd. Suite 200 Princeton, NJ 08540	(888) 651-4121 www.greateasternenergy.com	**C/I** **ACTIVE**
Champion Energy Services, LLC 72 Avenue L Newark, NJ 07105	(877) 653-5090 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. 505 Park Drive Woodbury, NJ 08096	(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** **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**
Constellation NewEnergy, Inc. 900A Lake Street, Suite 2 Ramsey, NJ 07446	(866) 237-7693 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 www.directenergybusiness.com	**C/I** **ACTIVE**
Direct Energy Services, LLC 120 Wood Avenue, Suite 611 Iselin, NJ 08830	(866) 348-4193 www.directenergy.com	**R** **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**
FirstEnergy Solutions 300 Madison Avenue Morristown, NJ 07962	(800) 977-0500 www.fes.com	**C/I** **ACTIVE**
Gateway Energy Services Corp. 44 Whispering Pines Lane Lakewood, NJ 08701	(800) 805-8586 www.gesc.com	**R/C/I** **ACTIVE**
GDF SUEZ Energy Resources NA, Inc. 333 Thornall Street Sixth Floor Edison, NJ 08837	(866) 999-8374 www.gdfsuezenergyresources.com	**C/I** **ACTIVE**
Glacial Energy of New Jersey, Inc. 75 Route 15 Building E Lafayette, NJ 07848	(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	**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**

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** **ACTIVE**
HOP Energy, LLC d/b/a Metro Energy, HOP Fleet Fueling, HOP Energy Fleet Fueling 1011 Hudson Avenue Ridgefield, NJ 07657	(877) 390-7155 www.hopenergy.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 3711 Market Street, 10th Fl. Philadelphia, PA 19104	(877) 235-6708 www.chooseindependence.com	**R/C** **ACTIVE**
Integrys Energy Services, Inc. 99 Wood Ave, South, Suite 802 Iselin, NJ 08830	(877) 763-9977 www.integrysenergy.com	**C/I** **ACTIVE**
Keil & Sons, Inc. **d/b/a Systrum Energy** 1 Bergen Blvd. Fairview, NJ 07022	(877) 797-8786 www.systrumenergy.com	**R/C/I** **ACTIVE**
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	**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**
MXenergy Electric Inc. 900 Lake Street Ramsey, NJ 07446	(800) 785-4374 www.mxenergy.com	**R/C/I** **ACTIVE**
NATGASCO, Inc. 532 Freeman St. Orange, NJ 07050	(973) 678-1800 x. 251 www.supremeenergyinc.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**
New Jersey Gas & Electric 1 Bridge Plaza fl. 2 Fort Lee, NJ 07024	(866) 568-0290 www.NJGandE.com	**R/C** **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**
North American Power and Gas, LLC 222 Ridgedale Avenue Cedar Knolls, NJ 07927	(888) 313-9086 www.napower.com	**R/C/I** **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**
Pepco Energy Services, Inc. 112 Main St. Lebanon, NJ 08833	(800) ENERGY-9 (363-7499) www.pepco-services.com	**C/I** **ACTIVE**
Plymouth Rock Energy, LLC 338 Maitland Avenue Teaneck, NJ 07666	(855) 32-POWER (76937) www.plymouthenergy.com	**R/C/I** **ACTIVE**

PPL Energy Plus, LLC 811 Church Road Cherry Hill, NJ 08002	(800) 281-2000 www.pplenergyplus.com	**C/I** **ACTIVE**
Public Power & Utility of New Jersey, LLC 39 Old Ridgebury Rd. Suite 14 Danbury, CT 06810	(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/pjm	**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**
Respond Power LLC 10 Regency CT Lakewood, NJ 08701	(877) 973-7763 www.respondpower.com	**R/C/I** **ACTIVE**
South Jersey Energy Company 1 South Jersey Plaza, Route 54 Folsom, NJ 08037	(800) 266-6020 www.southjerseyenergy.com	**C/I** **ACTIVE**
Sperian Energy Corp. 1200 Route 22 East, Suite 2000 Bridgewater, NJ 08807	(888) 682-8082	**R/C/I** **ACTIVE**
S.J. Energy Partners, Inc. 208 White Horse Pike, Suite 4 Barrington, N.J. 08007	(800) 695-0666 www.sjnaturalgas.com	**R/C** **ACTIVE**
Spark Energy, L.P. 2105 CityWest Blvd., Ste 100 Houston, Texas 77042	(800) 441-7514 www.sparkenergy.com	**R/C/I** **ACTIVE**
Sprague Energy Corp. 12 Ridge Road Chatham Township, NJ 07928	(800) 225-1560 www.spragueenergy.com	**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 309 Fellowship Rd., Suite 200 Mt. Laurel, NJ 08054	(877) 39-8150 www.streamenergy.net	**R** **ACTIVE**

UGI Energy Services, Inc. d/b/a GASMARK 224 Strawbridge Drive Suite 107 Moorestown, NJ 08057	(856) 273-9995 www.ugienergyservices.com	**C/I** **ACTIVE**
Verde Energy USA, Inc. 50 East Palisades Avenue Englewood, NJ 07631	(800) 388-3862 www.lowcostpower.com	**R/C/I** **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 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**

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PSE&G GAS SERVICE TERRITORY
Last Updated: 10/24/12

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

Supplier	Telephone & Web Site	*Customer Class
Ambit Northeast, LLC 103 Carnegie Center Suite 300 Princeton, NJ 08540	(877)-30-AMBIT (877) 302-6248 www.ambitenergy.com	**R/C** **ACTIVE**
Astral Energy LLC 16 Tyson Place Bergenfield, NJ 07621	888-850-1872 www.astralenergyllc.com	**R/C/I** **ACTIVE**
BBPC, LLC Great Eastern Energy 116 Village Blvd. Suite 200 Princeton, NJ 08540	888-651-4121 www.greateasternenergy.com	**C/I** **ACTIVE**
Clearview Electric Inc. **d/b/a Clearview Gas** 1744 Lexington Ave. Pennsauken, NJ 08110	800-746-4720 www.clearviewenergy.com	**R/C** **ACTIVE**
Colonial Energy, Inc. 83 Harding Road Wyckoff, NJ 07481	845-429-3229 www.colonialgroupinc.com	**C/I** **ACTIVE**
Commerce Energy, Inc. 7 Cedar Terrace Ramsey, NJ 07746	(888) 817-8572 www.commerceenergy.com	**R** **ACTIVE**
Compass Energy Services, Inc. 1085 Morris Avenue, Suite 150 Union, NJ 07083	866-867-8328 908-638-6605 www.compassenergy.net	**C/I** **ACTIVE**
ConocoPhillips Company 224 Strawbridge Drive, Suite 107 Moorestown, NJ 08057	800-646-4427 www.conocophillips.com	**C/I** **ACTIVE**
Consolidated Edison Energy, Inc. **d/b/a Con Edison Solutions** 535 State Highway 38, Suite 140 Cherry Hill, NJ 08002	888-686-1383 x2130 www.conedenergy.com	

Consolidated Edison Solutions, Inc. Cherry Tree Corporate Center 535 State Highway 38, Suite 140 Cherry Hill, NJ 08002	888-665-0955 www.conedsolutions.com	**C/I** **ACTIVE**
Constellation NewEnergy-Gas Division, LLC 900A Lake Street, Suite 2 Ramsey, NJ 07466	(800) 900-1982 www.constellation.com	**C/I** **ACTIVE**
Direct Energy Business, LLC 120 Wood Avenue, Suite 611 Iselin, NJ 08830	888-925-9115 www.directenergy.com	**C/I** **ACTIVE**
Direct Energy Services, LLP 120 Wood Avenue, Suite 611 Iselin, NJ 08830	866-348-4193 www.directenergy.com	**R** **ACTIVE**
Gateway Energy Services Corp. 44 Whispering Pines Lane Lakewood, NJ 08701	800-805-8586 www.gesc.com	**R/C/I** **ACTIVE**
UGI Energy Services, Inc. d/b/a GASMARK 224 Strawbridge Drive, Suite 107 Moorestown, NJ 08057	856-273-9995 www.ugienergyservices.com	**C/I** **ACTIVE**
Global Energy Marketing, LLC 129 Wentz Avenue Springfield, NJ 07081	800-542-0778 www.globalp.com	**C/I** **ACTIVE**
Great Eastern Energy 116 Village Blvd., Suite 200 Princeton, NJ 08540	888-651-4121 www.greateastern.com	**C/I** **ACTIVE**
Greenlight Energy 330 Hudson Street, Suite 4 Hoboken, NJ 07030	718-204-7467 www.greenlightenergy.us	**C** **ACTIVE**
Hess Energy, Inc. One Hess Plaza Woodbridge, NJ 07095	800-437-7872 www.hess.com	**C/I** **ACTIVE**
Hess Small Business Services, LLC One Hess Plaza Woodbridge, NJ 07095	888-494-4377 www.hessenergy.com	**C/I** **ACTIVE**
HIKO Energy, LLC 655 Suffern Road Teaneck, NJ 07666	(888) 264-4908 www.hikoenergy.com	**R/C** **ACTIVE**

Hudson Energy Services, LLC 7 Cedar Street Ramsey, NJ 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**
Integrys Energy Services – Natural Gas, LLC 99 Wood Avenue South Suite #802 Iselin, NJ 08830	800-536-0151 www.integrysenergy.com	**C/I** **ACTIVE**
Intelligent Energy 2050 Center Avenue, Suite 500 Fort Lee, NJ 07024	800-927-9794 www.intelligentenergy.org	**R/C/I** **ACTIVE**
Keil & Sons, Inc. **d/b/a Systrum Energy** 1 Bergen Blvd. Fairview, NJ 07022	1-877-797-8786 www.systrumenergy.com	**R/C/I** **ACTIVE**
Major Energy Services, LLC 10 Regency CT Lakewood, NJ 08701	888-625-6760 www.majorenergy.com	**R/C/I** **ACTIVE**
Marathon Power LLC 302 Main Street Paterson, NJ 07505	888-779-7255 www.mecny.com	**R/C/I** **ACTIVE**
Metromedia Energy, Inc. 6 Industrial Way Eatontown, NJ 07724	800-828-9427 www.metromediaenergy.com	**C** **ACTIVE**
Metro Energy Group, LLC 14 Washington Place Hackensack, NJ 07601	888-53-Metro www.metroenergy.com	**R/C** **ACTIVE**
MxEnergy, Inc. 900 Lake Street Ramsey, NJ 07446	800-758-4374 www.mxenergy.com	**R/C/I** **ACTIVE**
NATGASCO (Mitchell Supreme) 532 Freeman Street Orange, NJ 07050	800-840-4GAS www.natgasco.com	**C** **ACTIVE**
New Energy Services LLC 101 Neptune Avenue Deal, New Jersey 07723	800-660-3643 www.newenergyservicesllc.com	**R/C/I** **ACTIVE**

New Jersey Gas & Electric 1 Bridge Plaza, Fl. 2 Fort Lee, NJ 07024	866-568-0290 www.NJGandE.com	**R/C** **ACTIVE**
Noble Americas Energy Solutions The Mac-Cali Building 581 Main Street, 8th fl. Woodbridge, NJ 07095	877-273-6772 www.noblesolutions.com	**C/I** **ACTIVE**
North American Power & Gas, LLC d/b/a North American Power 197 Route 18 South Ste. 3000 East Brunswick, NJ 08816	(888) 313-9086 www.napower.com	**R/C/I** **ACTIVE**
Palmco Energy 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**
Pepco Energy Services, Inc. 112 Main Street Lebanon, NJ 08833	800-363-7499 www.pepco-services.com	**C/I** **ACTIVE**
Plymouth Rock Energy, LLC 338 Maitland Avenue Teaneck, NJ 07666	855-32-POWER (76937) www.plymouthenergy.com	**R/C/I** **ACTIVE**
PPL EnergyPlus, LLC 811 Church Road - Office 105 Cherry Hill, NJ 08002	800-281-2000 www.pplenergyplus.com	**C/I** **ACTIVE**
Respond Power LLC 10 Regency CT Lakewood, NJ 08701	(877) 973-7763 www.respondpower.com	**R/C/I** **ACTIVE**
South Jersey Energy Company 1 South Jersey Plaza, Route 54 Folsom, NJ 08037	800-266-6020 www.southjerseyenergy.com	**C/I** **ACTIVE**
S.J. Energy Partners, Inc. 208 White Horse Pike, Suite 4 Barrington, NJ 08007	800-695-0666 www.sjnaturalgas.com	**R/C** **ACTIVE**
Spark Energy Gas, L.P. 2105 CityWest Blvd, Ste 100 Houston, Texas 77042	800-411-7514 www.sparkenergy.com	**R/C/I** **ACTIVE**
Sprague Energy Corp. 12 Ridge Road Chatham Township, NJ 07928	855-466-2842 www.spragueenergy.com	**C/I** **ACTIVE**

Stuyvesant Energy LLC 10 West Ivy Lane, Suite 4 Englewood, NJ 07631	800-640-6457 www.stuyfuel.com	**C** **ACTIVE**
Stream Energy New Jersey, LLC 309 Fellowship Road Suite 200 Mt. Laurel, NJ 08054	(973) 494-8097 www.streamenergy.net	**R/C** **ACTIVE**
Systrum Energy 1 Bergen Blvd. Fairview, NJ 07022	877-797-8786 www.systrumenergy.com	**R/C/I** **ACTIVE**
Woodruff Energy 73 Water Street Bridgeton, NJ 08302	800-557-1121 www.woodruffenergy.com	**R/C/I** **ACTIVE**
Woodruff Energy US LLC 73 Water Street, P.O. Box 777 Bridgeton, NJ 08302	856-455-1111 800-557-1121 www.woodruffenergy.com	**C/I** **ACTIVE**
Xoom Energy New Jersey, LLC 744 Broad Street Newark, NJ 07102	888-997-8979 www.xoomenergy.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**

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APPENDIX B

Equipment Inventory

Newark Schools
CHA Project# 27999
Speedway School

Description	QTY	Manufacturer Name	Model No.	Serial No.	Equipment Type / Utility	Capacity/Size /Efficiency	Location	Areas/Equipment Served	Date Installed	Remaining Useful Life (years)
Boilers	3	Fulton Pulse	PWH-1400	010 307 087	Steam Boiler - Gas	1400 MBH, 90% Eff	Boiler Room	Building	2010	21
HP loop Pumps	2	Baldor	EM2539T	42F056W388	Pump - electric	40 HP, 94.5% Eff	Boiler Room	HP Loop	2010	16
DHW Boiler	1	Lochinvar	PFN1002PM	E09H00218809	DHW Boiler - Gas	999 MBH, 84% Eff	Boiler Room	TR Sinks	2010	21
DHW Tank	1	Lochinvar	RGA0504-90000	D09J00038826	DHW Stor Tank	504 Gallon	Boiler Room	TR Sinks	2010	11
Heat Pumps	1/class or office	*Unknown*	*Unknown*	*Unknown*	Electric Heat Pump	*Unknown*	Various - Hallways in Ceiling	Classrooms, offices, ect	2010	11
DHW Recirculating Pumps	3	Bell & Gossett	M74794	M10711-1-1-09	Electric motor	1/6 HP	Boiler Room	DHW System	2010	11
RTU-*	1	Johnson Controls	J07DRN10B4VZZ30002E	N0B9606994	Electric HVAC unit with NG Furnace and DX	7.5 Ton, 11.2 EER 120 MBH, 80%	Roof	Lobby	2010	16
Condensing Unit (Refrigeration)	1	Bally	BEHA 010H2-HT3B-B	82305133	Refrigeration Condensing Unit	208-230 V, 3 Ph, 5.8 A	Roof	Walk-in Cooler	2010	16
Condensing Unit (Freezer)	1	Bally	BEHA 020L6-HT3B-F	92105361	Refrigeration Condensing Unit	208-230 V, 3 Ph, 8.4 A	Roof	Walk-in Freezer	2010	16
RTU-*	1	Johnson Controls	J20DRN24P4VZZ20006D	N0B9610967	Electric HVAC unit with NG Furnace and DX	20 Ton, 11.2 EER 300 MBH, 80%	Roof	Auditorium	2010	16
ERV	1	York	VR028A25H4AM21	2009 14 00075	Energy Recovery Ventilator	Intake: 1.5 HP, Exhaust: 1.5 HP	Roof	Auditorium RTU	2009	15
ERU6	1	Semco	FV3000V-6RN4AB	48355/MO46154-01	Energy Recovery Unit	SF: 3 HP, EF: 3HP	Roof	Auditorium	2008	14
RTU-*	1	Johnson Controls	J20DRN24P4VZZ20006D		Electric HVAC unit with NG Furnace and DX	20 Ton, 11.2 EER 300 MBH, 80%	Roof	Auditorium	2010	16
ERV	1	York	VR028A25H4AM21	2009 14 00073	Energy Recovery Ventilator	Intake: 1.5 HP, Exhaust: 1.5 HP	Roof	Auditorium RTU	2009	15
Cooling Tower	2	Evapco	LRW-68-0-2	7-326322	Closed Loop cooling Tower	70 Ton	Roof	Heat Pump Loop	2010	16
ERU7	1	Semco	FV2000V-6RN4AB	48355/MO46155-01	Energy Recovery Unit	SF: 1.5 HP, EF: 2.0 HP	Roof	Nurses Office	2008	14
MUA	1	Modine	*No Tag*	*No Tag*	*No Tag*	*No Tag*	Roof	*Unknown*	2010	16
RTU-3	1	Johnson Controls	J20DRN24P4VZZ20006D	N0B9610966	Electric HVAC unit with NG Furnace and DX	20 Ton, 11.2 EER 300 MBH, 80%	Roof	Cafeteria	2010	16
ERV	1	York	VR036A25H4AM21	2009 14 00082	Energy Recovery Ventilator	Intake: 1.5 HP, Exhaust: 1.5 HP	Roof	Cafeteria RTU	2010	16
ERU8	1	Semco	FV1000V-6RN4AB	48355/MO46156-01	Energy Recovery Unit	SF: 0.5 HP, EF: 0.5 HP	Roof	Cafeteria	2010	16
RTU-2	1	Johnson Controls	J20DRN24P4VZZ20006D		Electric HVAC unit with NG Furnace and DX	20 Ton, 11.2 EER 300 MBH, 80%	Roof	Classrooms	2010	16
ERV	1	York	VR036A25H4AM21		Energy Recovery Ventilator	Intake: 1.5 HP, Exhaust: 1.5 HP	Roof	Classroom RTU	2010	16
RTU-1	1	Johnson Controls	J20DRN24P4VZZ20006D		Electric HVAC unit with NG Furnace and DX	20 Ton, 11.2 EER 300 MBH, 80%	Roof	Locker Rooms	2010	16
ERV	1	York	VR036A25H4AM21		Energy Recovery Ventilator	Intake: 1.5 HP, Exhaust: 1.5 HP	Roof	Lockerroom RTU	2010	16
ERU1	1	Semco	FV5000H-6RN4AB	48355/MO46149-01	Energy Recovery Unit	SF: 5.0 HP, EF: 5.0 HP	Roof	Heat Pump System	2010	16
ERU2	1	Semco	FV5000H-6RN4AB	48355/MO46150-01	Energy Recovery Unit	SF: 5.0 HP, EF: 5.0 HP	Roof	Heat Pump System	2010	16
ERU3	1	Semco	FV3000H-6RN4AB	48355/MO46151-01	Energy Recovery Unit	SF: 2.0 HP, EF: 3.0 HP	Roof	Heat Pump System	2010	16
ERU4	1	Semco	FV5000H-6RN4AB	48355/MO46152-01	Energy Recovery Unit	SF: 5.0 HP, EF: 5.0 HP	Roof	Heat Pump System	2010	16
ERU5	1	Semco	FV7500H-6RN4AB	48355/MO46153-01	Energy Recovery Unit	SF: 5.0 HP, EF: 5.0 HP	Roof	Heat Pump System	2010	16

Energy Audit of Newark Public Schools - Mount Vernon School
CHA Project No.27999
Existing Lighting & Audit Input

Cost of Electricity: **$0.135** **$/kWh**
$4.44 **$/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
50LED	Boiler Room 1023	Boiler Room	12	W 32 W F 2 (ELE)	F42LL	60	0.72	SW	1600	1,152		NONE	
50LED	Fire Pump Room	Boiler Room	2	W 32 W F 2 (ELE)	F42LL	60	0.12	SW	1600	192		NONE	
50LED	Boiler Room Hall	Boiler Room	2	W 32 W F 2 (ELE)	F42LL	60	0.12	SW	1600	192		NONE	
50LED	Stair #1	Hallways	2	W 32 W F 2 (ELE)	F42LL	60	0.12	SW	6240	749		NONE	
201LED	Stair #1	Hallways	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	6240	1,685		NONE	
196LED	Stair #1	Hallways	10	W 32 P F 4 (ELE)	F44ILL	112	1.12	SW	6240	6,989		NONE	
196LED	2nd Floor Gym Lobby	Hallways	12	W 32 P F 4 (ELE)	F44ILL	112	1.34	SW	6240	8,387		NONE	
50LED	Gym Storage 2014	Storage	10	W 32 W F 2 (ELE)	F42LL	60	0.60	SW	1200	720		NONE	
50LED	Gym Storage 2014A	Storage	1	W 32 W F 2 (ELE)	F42LL	60	0.06	SW	1200	72		NONE	
32LED	Gym Hall	Hallways	8	1T 32 R F 2 (ELE)	F42LL	60	0.48	SW	6240	2,995		NONE	
X1	Gymnasium	Gymnasium	10	X 1.5 W LED	ELED1.5/1	1.5	0.02	SW	1600	24		NONE	
146LED	Gymnasium	Gymnasium	24	High Bay MH 400	MH400/1	458	10.99	SW	1600	17,587		NONE	
258	Gymnasium	Gymnasium	14	CFS100	CFS100/1	100	1.40	SW	1600	2,240		NONE	
50LED	Stair #2	Hallways	2	W 32 W F 2 (ELE)	F42LL	60	0.12	SW	6240	749		NONE	
201LED	Stair #2	Hallways	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	6240	1,685		NONE	
196LED	Stair #2	Hallways	10	W 32 P F 4 (ELE)	F44ILL	112	1.12	SW	6240	6,989		NONE	
254LED	3rd Floor Lobby	Hallways	8	CFQ26/2	CFQ26/2	66	0.53	SW	6240	3,295		NONE	
201LED	3001 Class	Classrooms	18	T 32 R F 3 (ELE)	F43ILL/2	90	1.62	SW	2400	3,888		C-OCC	
X1	3001 Class	Classrooms	2	X 1.5 W LED	ELED1.5/1	1.5	0.00	SW	2400	7		C-OCC	
X1	3rd Floor Hallway	Hallways	4	X 1.5 W LED	ELED1.5/1	1.5	0.01	SW	6240	37		NONE	
50LED	3rd Floor Hallway	Hallways	62	W 32 W F 2 (ELE)	F42LL	60	3.72	SW	6240	23,213		NONE	
201LED	3007 Class	Classrooms	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.44	SW	2400	3,456		C-OCC	
X1	3007 Class	Classrooms	2	X 1.5 W LED	ELED1.5/1	1.5	0.00	SW	2400	7		C-OCC	
201LED	3008 Office	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432		NONE	
201LED	3012	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592		C-OCC	
201LED	3017	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592		C-OCC	
254LED	Boys Room	Restroom	1	CFQ26/2	CFQ26/2	66	0.07	SW	4300	284		NONE	
32LED	Boys Room	Restroom	5	1T 32 R F 2 (ELE)	F42LL	60	0.30	SW	4300	1,290		NONE	
254LED	Girls Room	Restroom	1	CFQ26/2	CFQ26/2	66	0.07	SW	4300	284		NONE	
32LED	Girls Room	Restroom	5	1T 32 R F 2 (ELE)	F42LL	60	0.30	SW	4300	1,290		NONE	
218LED	3013	Classrooms	9	W 32 P F 3 (ELE)	F43ILL/2	90	0.81	SW	2400	1,944		C-OCC	
201LED	3009 Lab	Classrooms	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.35	SW	2400	3,240		C-OCC	
X1	3009 Lab	Classrooms	2	X 1.5 W LED	ELED1.5/1	1.5	0.00	SW	2400	7		C-OCC	
218LED	3004 Computer Lab	Classrooms	20	W 32 P F 3 (ELE)	F43ILL/2	90	1.80	SW	2400	4,320		C-OCC	
201LED	3005 Storage	Storage	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	1200	216		NONE	
201LED	3006 Office	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432		NONE	
201LED	3018	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592		C-OCC	
201LED	3019	Classrooms	5	T 32 R F 3 (ELE)	F43ILL/2	90	0.45	SW	2400	1,080		C-OCC	
201LED	3020	Classrooms	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432		C-OCC	
201LED	3023	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592		C-OCC	
201LED	3024	Classrooms	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.81	SW	2400	1,944		C-OCC	
50LED	3021	Classrooms	2	W 32 W F 2 (ELE)	F42LL	60	0.12	SW	2400	288		C-OCC	
201LED	3026	Classrooms	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.81	SW	2400	1,944		C-OCC	
201LED	3031	Classrooms	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.81	SW	2400	1,944		C-OCC	
32LED	Restroom	Restroom	2	1T 32 R F 2 (ELE)	F42LL	60	0.12	SW	4300	516		NONE	
50LED	3029 Closet	Storage	1	W 32 W F 2 (ELE)	F42LL	60	0.06	SW	1200	72		NONE	
201LED	3030	Classrooms	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.90	SW	2400	2,160		C-OCC	
218LED	3032	Classrooms	9	W 32 P F 3 (ELE)	F43ILL/2	90	0.81	SW	2400	1,944		C-OCC	
201LED	3033	Classrooms	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.81	SW	2400	1,944		C-OCC	
201LED	3034	Classrooms	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.54	SW	2400	1,296		C-OCC	
201LED	3035	Classrooms	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.90	SW	2400	2,160		C-OCC	
50LED	Stair #5	Hallways	2	W 32 W F 2 (ELE)	F42LL	60	0.12	SW	6240	749		NONE	
201LED	Stair #5	Hallways	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	6240	1,685		NONE	
196LED	Stair #5	Hallways	10	W 32 P F 4 (ELE)	F44ILL	112	1.12	SW	6240	6,989		NONE	
201LED	2063	Classrooms	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.90	SW	2400	2,160		C-OCC	
201LED	2062	Classrooms	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.54	SW	2400	1,296		C-OCC	
201LED	2061	Classrooms	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.81	SW	2400	1,944		C-OCC	
201LED	2060	Classrooms	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.81	SW	2400	1,944		C-OCC	
201LED	Restroom	Restroom	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	4300	774		C-OCC	
201LED	2059	Classrooms	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.90	SW	2400	2,160		C-OCC	
201LED	2058	Classrooms	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.81	SW	2400	1,944		C-OCC	
201LED	2054	Classrooms	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.81	SW	2400	1,944		C-OCC	
32LED	2054	Classrooms	3	1T 32 R F 2 (ELE)	F42LL	60	0.18	SW	2400	432		C-OCC	
201LED	2051	Classrooms	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.81	SW	2400	1,944		C-OCC	
32LED	2051	Classrooms	3	1T 32 R F 2 (ELE)	F42LL	60	0.18	SW	2400	432		C-OCC	
32LED	2051 Restroom	Restroom	2	1T 32 R F 2 (ELE)	F42LL	60	0.12	SW	4300	516		NONE	
201LED	2045	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592		C-OCC	
201LED	2044	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592		C-OCC	
50LED	Stair #4	Hallways	2	W 32 W F 2 (ELE)	F42LL	60	0.12	SW	6240	749		NONE	
201LED	Stair #4	Hallways	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	6240	1,685		NONE	
196LED	Stair #4	Hallways	10	W 32 P F 4 (ELE)	F44ILL	112	1.12	SW	6240	6,989		NONE	

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			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
201LED	2030	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592	C-OCC	
201LED	2029	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592	C-OCC	
201LED	2023	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592	C-OCC	
201LED	2022	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592	C-OCC	
32LED	2019 Restroom	Restroom	1	1T 32 R F 2 (ELE)	F42LL	60	0.06	SW	4300	258	NONE	
218LED	2019 Art	Classrooms	16	W 32 P F 3 (ELE)	F43ILL/2	90	1.44	SW	2400	3,456	C-OCC	
X1	2nd Floor Hall	Hallways	4	X 1.5 W LED	ELED1.5/1	1.5	0.01	SW	6240	37	NONE	
50LED	2nd Floor Hall	Hallways	62	W 32 W F 2 (ELE)	F42LL	60	3.72	SW	6240	23,213	NONE	
201LED	2024	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592	C-OCC	
201LED	2026 Office	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
201LED	2028 Break Room	Offices	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.36	SW	2400	864	C-OCC	
201LED	2027 Vice Principal Office	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
254LED	2nd Floor Stair 3 Lobby	Hallways	10	CFQ26/2	CFQ26/2	66	0.66	SW	6240	4,118	NONE	
201LED	2002 PE Office	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
201LED	2002 PE Office Restroom	Restroom	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.09	SW	4300	387	NONE	
201LED	2008 Office	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
201LED	2008 Restroom	Restroom	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.09	SW	4300	387	NONE	
32LED	Boys Room	Restroom	4	1T 32 R F 2 (ELE)	F42LL	60	0.24	SW	4300	1,032	NONE	
32LED	2011 Boys Locker Room	Restroom	10	1T 32 R F 2 (ELE)	F42LL	60	0.60	SW	4300	2,580	NONE	
50LED	2013 Storage	Storage	1	W 32 W F 2 (ELE)	F42LL	60	0.06	SW	1200	72	NONE	
50LED	Stair #2	Hallways	2	W 32 W F 2 (ELE)	F42LL	60	0.12	SW	6240	749	NONE	
201LED	Stair #2	Hallways	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	6240	1,685	NONE	
196LED	Stair #2	Hallways	6	W 32 P F 4 (ELE)	F44ILL	112	0.67	SW	6240	4,193	NONE	
265	Front Entrance	Hallways	8	Entrance 5L CFL DC	CF42/5-L	222	1.78	SW	6240	11,082	NONE	
50LED	Front Entrance	Hallways	22	W 32 W F 2 (ELE)	F42LL	60	1.32	SW	6240	8,237	NONE	
254LED	Front Entrance	Hallways	10	CFQ26/2	CFQ26/2	66	0.66	SW	6240	4,118	NONE	
231LED	Front Entrance	Hallways	15	WP400MH1	MH400/1	458	6.87	SW	6240	42,869	NONE	
254LED	1004 Nurses Office	Offices	4	CFQ26/2	CFQ26/2	66	0.26	SW	2400	634	C-OCC	
270LED	1005 Nurses Office	Offices	2	2T 40 R CF 2	CFQ40/2	90	0.18	SW	2400	432	C-OCC	
201LED	1004A Exam	Offices	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.36	SW	2400	864	C-OCC	
201LED	1008 Exam	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
32LED	Nurses Restroom	Restroom	1	1T 32 R F 2 (ELE)	F42LL	60	0.06	SW	4300	258	NONE	
254LED	1006 Health Clinic	Offices	6	CFQ26/2	CFQ26/2	66	0.40	SW	2400	950	C-OCC	
50LED	1010 Storage	Storage	1	W 32 W F 2 (ELE)	F42LL	60	0.06	SW	1200	72	NONE	
201LED	1011 Office	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
201LED	1012 Office	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
201LED	1013 Office	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
201LED	1014 Office	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
201LED	1015 Office	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
254LED	1017 Reception	Offices	6	CFQ26/2	CFQ26/2	66	0.40	SW	2400	950	C-OCC	
X1	1006 Hall	Hallways	4	X 1.5 W LED	ELED1.5/1	1.5	0.01	SW	6240	37	NONE	
32LED	1018 Clerical	Offices	3	1T 32 R F 2 (ELE)	F42LL	60	0.18	SW	2400	432	C-OCC	
32LED	1019 Clean Room	Offices	1	1T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2400	144	C-OCC	
32LED	1020 Soil Room	Offices	1	1T 32 R F 2 (ELE)	F42LL	60	0.06	SW	2400	144	C-OCC	
32LED	Restrooms	Restroom	2	1T 32 R F 2 (ELE)	F42LL	60	0.12	SW	4300	516	NONE	
50LED	1024 Storage	Storage	2	W 32 W F 2 (ELE)	F42LL	60	0.12	SW	1200	144	NONE	
50LED	1002 Custodian	Offices	2	W 32 W F 2 (ELE)	F42LL	60	0.12	SW	2400	288	NONE	
201LED	1106 Class	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592	C-OCC	
201LED	1108 Class	Classrooms	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.90	SW	2400	2,160	C-OCC	
218LED	1105	Classrooms	9	W 32 P F 3 (ELE)	F43ILL/2	90	0.81	SW	2400	1,944	C-OCC	
201LED	1101	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	SW	2400	2,592	C-OCC	
201LED	1103	Classrooms	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.81	SW	2400	1,944	C-OCC	
32LED	1103	Classrooms	3	1T 32 R F 2 (ELE)	F42LL	60	0.18	SW	2400	432	C-OCC	
201LED	1099	Classrooms	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.81	SW	2400	1,944	C-OCC	
201LED	1097	Classrooms	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.81	SW	2400	1,944	C-OCC	
32LED	1097	Classrooms	3	1T 32 R F 2 (ELE)	F42LL	60	0.18	SW	2400	432	C-OCC	
275	Cafeteria	Cafeteria	12	CF 42 P 2 Chandelier	CF42/2-I	100	1.20	SW	2400	2,880	NONE	
254LED	Cafeteria	Cafeteria	21	CFQ26/2	CFQ26/2	66	1.39	SW	2400	3,326	NONE	
254LED	Auditorium	Auditorium	3	CFQ26/2	CFQ26/2	66	0.20	SW	1600	317	NONE	
X1	Auditorium	Auditorium	12	X 1.5 W LED	ELED1.5/1	1.5	0.02	SW	1600	29	NONE	
261LED	Auditorium	Auditorium	40	PAR 38 SP	H100/1	100	4.00	SW	1600	6,400	NONE	
146LED	Auditorium	Auditorium	6	High Bay MH 400	MH400/1	458	2.75	SW	1600	4,397	NONE	
254LED	Auditorium	Auditorium	10	CFQ26/2	CFQ26/2	66	0.66	SW	1600	1,056	NONE	
254LED	Auditorium	Auditorium	4	CFQ26/2	CFQ26/2	66	0.26	SW	1600	422	NONE	
218LED	1088	Classrooms	34	W 32 P F 3 (ELE)	F43ILL/2	90	3.06	SW	2400	7,344	C-OCC	
X1	1088	Classrooms	4	X 1.5 W LED	ELED1.5/1	1.5	0.01	SW	2400	14	C-OCC	
50LED	Custodian Office	Offices	10	W 32 W F 2 (ELE)	F42LL	60	0.60	SW	2400	1,440	NONE	
	Total		**1,098**				**104.69**			**345,752**		

APPENDIX C

ECM Calculations

Newark Board of Education - NJBPU
CHA Project Number: 27999

Utility Costs		Yearly Usage	Metric Ton Carbon Dioxide Equivalent	Building Area	Annual Utility Cost		
					Electric	Natural Gas	Fuel Oil
$ 0.147	$/kWh blended		0.000420205	127,530	$ 247,094	$ 25,474	$ -
$ 0.135	$/kWh supply	1,686,000	0.000420205				
$ 4.44	$/kW	393.0	0				
$ 1.05	$/Therm	24,280	0.00533471				
$ 7.55	$/kgals	10,000	0				
$ -	$/Gal #2	0					

Rate of Discount (used for NPV) 3.0%

Speedway School

Recommend? Y or N		Item	Savings kW	kWh	therms	No. 2 Oil gal	Water kgal	$	Cost	Simple Payback	Life Expectancy	Equivalent CO_2 (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	Controls Upgrade/Retro-Commissioning	0.0	68,879	3,233	0	0	13,520	$ 44,203	3.3	15	46.2	$ -	N	3.3	0.0	1,033,181	48,491	0	$ 202,793	3.6	$117,192	30.0%
Y	ECM-2	Install Vending Machine Controls	0.0	7,343	0	0	0	1,079	$ 840	0.8	15	3.1	$ -	N	0.8	0.0	110,138	0	0	$ 16,190	18.3	$12,045	128.4%
N	ECM-L1	Lighting Replacements / Upgrades	56.6	185,223	0	0	0	28,021	$ 281,781	10.1	10	77.8	$ 7,400	N	9.8	566.0	1,852,230	0	0	$ 302,434	0.1	($35,358)	0.4%
N	ECM-L2	Install Lighting Controls (Add Occupancy Sensors)	0.0	36,756	0	0	0	4,962	$ 19,440	3.9	10	15.4	$ 2,520	N	3.4	0.0	367,560	0	0	$ 54,031	1.8	$25,407	26.5%
Y	ECM-L3	Lighting Replacements with Controls (Occupancy Sensors)	56.6	203,709	0	0	0	30,516	$ 301,221	9.9	10	85.6	$ 9,920	N	9.5	566.0	2,037,090	0	0	$ 329,609	0.1	($30,990)	0.9%
		Total (Does Not Include ECM-L1 & ECM-L2)	**56.6**	**279,930**	**3,233**	**0**	**0**	**$ 45,115**	**$ 346,265**	**7.7**	**13.3**	**135**	**$ 9,920**		**7.5**	**566**	**3,180,408**	**48,491**	**-**	**$ 548,592**	**0.6**	**143453.91**	**9.1%**
		Recommended Measures (highlighted green above)	**56.6**	**279,930**	**3,233**	**0**	**0**	**$ 45,115**	**$ 346,265**	**7.7**	**13.3**	**135**	**$ 9,920**		**7.5**	**566**	**3,180,408**	**48,491**	**-**	**$ 548,592**	**0.6**	**143453.91**	**9.1%**
		% of Existing	**14%**	**17%**	**13%**	**-**	**0%**																

	City:	Newark, NJ				
	Occupied Hours/Week	70	70	70	70	50
		Building Operating Hours	Auditorium Occupied Hours	Gymnasium Occupied Hours	Library Occupied Hours	Classrooms Occupied Hours
Temp	Enthalpy h (Btu/lb)	Bin Hours				
102.5						
97.5	35.4	6	3	3	3	2
92.5	37.4	31	13	13	13	9
87.5	35.0	131	55	55	55	39
82.5	33.0	500	208	208	208	149
77.5	31.5	620	258	258	258	185
72.5	29.9	664	277	277	277	198
67.5	27.2	854	356	356	356	254
62.5	24.0	927	386	386	386	276
57.5	20.3	600	250	250	250	179
52.5	18.2	730	304	304	304	217
47.5	16.0	491	205	205	205	146
42.5	14.5	656	273	273	273	195
37.5	12.5	1,023	426	426	426	304
32.5	10.5	734	306	306	306	218
27.5	8.7	334	139	139	139	99
22.5	7.0	252	105	105	105	75
17.5	5.4	125	52	52	52	37
12.5	3.7	47	20	20	20	14
7.5	2.1	34	14	14	14	10
2.5	1.3	1	0	0	0	0
-2.5						
-7.5						

Multipliers	
Material:	1.027
Labor:	1.246
Equipment:	1.124

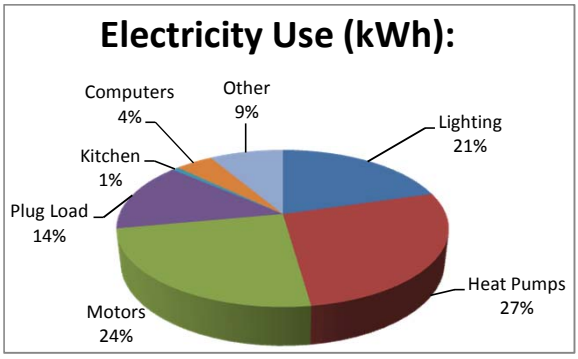
Heating System Efficiency	80%
Cooling Eff (kW/ton)	1.2

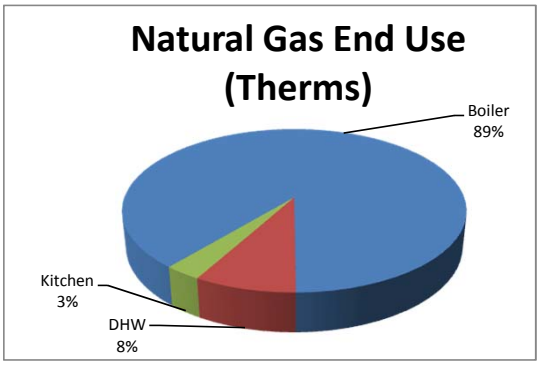
Heating		
Hours	4,427	Hrs
Weighted Avg	40	F
Avg	28	F

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

Newark Board of Education - NJBPU
CHA Project Number: 27999
Speedway School

Utility End Use Analysis			
Electricity Use (kWh):		**Notes/Comments:**	
1,686,000	Total	Based on utility analysis	
345,752	Lighting	From Lighting Calculations	21%
459,191	Heat Pumps	Calculated Based on Design Schedules	27%
410,126	Motors	Estimated	24%
241,032	Plug Load	Estimated	14%
11,865	Kitchen	Estimated	1%
73,500	Computers	Estimated	4%
144,534	Other	Remaining	9%
Natural Gas Use (Therms):		**Notes/Comments:**	
24,280	Total	Based on utility analysis	
21,552	Boiler	Based on utility analysis	89%
2,000	DHW	Therms/SF x Square Feet Served	8%
728	Kitchen	Based on utility analysis	3%





Newark Board of Education - NJBPU
CHA Project Number: 27999
Speedway School

ECM-1: Re-Commission Building Controls System

Summary: The existing controls system has been in place for approximately 8 years and appears to be out of calibration since its original installation. Several energy saving controls algorithms do not appear to be functioning properly including night setback, economizer cooling, demand controlled ventilation and the use of trends and energy metering. There are also several variable frequency drives (VFDs) that originally were intended to operate fan and pump motors that also do not work. It is proposed to retro-commission the entire building to bring the HVAC systems back into the originally designed operating parameters, as well as to make some enhancements where applicable.

Building Information:

127,530	Sq Footage	
$0.15	$/kWh Blended	
$1.05	$/Therm	

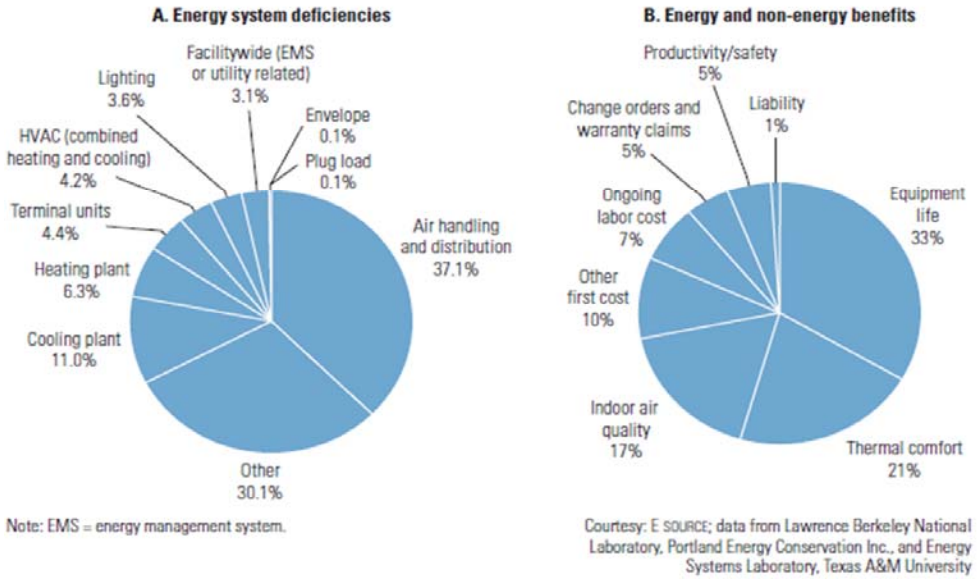
EXISTING CONDITIONS		
Existing Facility Total Electric usage	1,686,000	kWh
Existing Facility Total Gas usage	24,280	Therms
Existing Facility Cooling Electric usage	459,191	kWh[1]
Existing Facility Heating Natural Gas usage	21551.6	Therms[2]
PROPOSED CONDITIONS		
Proposed Facility Cooling Electric Savings	68,879	kWh
Proposed Facility Natural Gas Savings	3232.74	Therms
SAVINGS		
Retro-Commissioning Electric Savings	68,879	**kWh**
Retro-Commissioning Natural Gas Savings	3,233	**Therms**
Total cost savings	$ 13,520	

Assumptions

1 27% of facility total electricity dedicated to Heat Pumps based on Building Utility Analysis
2 89% of facility total natural gas dedicated to Heating based on Building Utility Analysis
3 15% Typical Savings associated with Retro-Commissioning of controls based on EPA Energy Star Report (CH 5 - Retrocommissioning)

Figure 5.2: Retrocommissioning results

Building energy system deficiencies: A recent study of retrocommissioning revealed a wide variety of problems—those related to the overall HVAC system were the most common type (A). Energy and non-energy benefits: Retrocommissioning provided both energy and non-energy benefits—the most common of these, noted in one-third of the buildings surveyed, was the extension of equipment life (B).



Note: EMS = energy management system.

Courtesy: E SOURCE; data from Lawrence Berkeley National Laboratory, Portland Energy Conservation Inc., and Energy Systems Laboratory, Texas A&M University

Newark Board of Education - NJBPU
CHA Project Number: 27999
Speedway School

ECM-1: Re-Commission Building Controls System - 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.		
									$ -	
Controls and Sensors Retro-Commissioning	127530	SF	$ 0.27	INC	INC	$ 35,363	INC	INC	$ 35,363	EPA Estimate
						$ -	$ -	$ -	$ -	

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

$ 35,363	Subtotal
$ 8,841	25% Contingency
$ 44,203	**Total**

Newark Board of Education - NJBPU
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Speedway School

ECM-2: Install Vending Machine Controls

Description : Vending machines generally operate 24/7 regardless of the actual usage. This measure proposes installing vending machine controls to reduce the total run time of these units. Cold beverage machines will cycle on for 15 minutes every two hours in order to keep beverages at a desired temperature. The result is a reduction in total electrical energy usage.

Unit Cost: $0.147 $/kWh blended

Energy Savings Calculations:

	Existing	
Cold Beverage Vending Machine Electric usage	7,008	kWh[1,4,7]
Snack Vending Machine Electric usage	1,752	kWh[2,5,7]
Dual Vending Machine Electric Usage	-	kWh[3,6,7]
Total Vending Machine Electric Usage	8,760	kWh
	Proposed	
Cold Beverage Vending Machine Electric usage	1,103	kWh[8]
Snack Vending Machine Electric usage	315	kWh
Dual Vending Machine Electric Usage	0	kWh
Total Vending Machine Electric Usage	1,418	kWh
Vending Machine Controls Usage Savings	**7,343**	**kWh**
Total cost savings	**$ 1,079**	
Estimated Total Project Cost	**$ 840**	[9]
Simple Payback	**1**	**years**

Assumptions

1	2	Number of cold beverage vending machines
2	1	Number of snack vending machines
3	0	Number of dual snack/beverage vending machines
4	400	Average wattage, typical of cold beverage machines based on prior project experience
5	200	Average wattage, typical of snack machines based on prior project experience
6	300	Average wattage, typical of dual snack/beverage machines based on prior project experience
7	8760	Hours per year vending machine plugged in
8	3150	Building Occupied Hours
9	0.50	Vending Machine Traffic Factor (0.75 for High Traffic, 0.5 for Medium, 0.25 for low)

Newark Board of Education - NJBPU
CHA Project Number: 27999
Speedway School

ECM-2: Install Vending Machine Controls - 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.		
									$ -	
Vending Miser	3	EA	$ 200	$ 15	$ -	$ 616	$ 56	$ -	$ 672	Vendor Estimation
						$ -	$ -	$ -	$ -	

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

$	672	Subtotal
$	168	25% Contingency
$	**840**	**Total**

Newark Board of Education - NJBPU
CHA Project Number: 27999
Speedway School

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)	247,094
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)	$247,094	$25,474
Existing Usage (from utility)	1,686,000	24,280
Proposed Savings	211,052	0
Existing Total MMBtus	8,182	
Proposed Savings MMBtus	720	
% Energy Reduction	**8.8%**	
Proposed Annual Savings	$31,596	

*Does not include savings from Retro-Commissioning

*Does not include savings from Retro-Commissioning

	Min (Savings = 15%)		Increase (Savings > 15%)		Max Incentive		Achieved Incentive	
Incentive #2	$0.09	$0.90	$0.005	$0.05	$0.11	$1.25	$0.00	$0.00
Incentive #3	$0.09	$0.90	$0.005	$0.05	$0.11	$1.25	$0.00	$0.00

	Incentives $		
	Elec	Gas	Total
Incentive #1	$0	$0	$0
Incentive #2	$0	$0	$0
Incentive #3	$0	$0	$0
Total All Incentives	**$0**	**$0**	**$0**

Total Project Cost	$302,061

*Does not include cost of Retro-Commissioning

		Allowable Incentive
% Incentives #1 of Utility Cost*	0.0%	$0
% Incentives #2 of Project Cost**	0.0%	$0
% Incentives #3 of Project Cost**	0.0%	$0
Total Eligible Incentives***	**$0**	
Project Cost w/ Incentives	$302,061	

Project Payback (years)	
w/o Incentives	w/ Incentives
9.6	9.6

* 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 Newark Public Schools - Mount Vernon School
CHA Project No.27999
ECM-L1 Lighting Replacements

		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" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	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 (kWspace) * (Annual Hours)	Number of Fixtures No. of fixtures after the retrofit	Standard Fixture Code "Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w Recess. Floor 2 lamps U shape	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 (kWspace) * (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
50LED	Boiler Room 1023	12	W 32 W F 2 (ELE)	F42LL	60	0.7	SW	1600	1,152	12	4 ft LED Tube	200732x2	30	0.4	SW	1,600	576	576	0.4	$ 96.83	$ 1,960.20	$0	20.2	20.2
50LED	Fire Pump Room	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	1600	192	2	4 ft LED Tube	200732x2	30	0.1	SW	1,600	96	96	0.1	$ 16.14	$ 326.70	$0	20.2	20.2
50LED	Boiler Room Hal	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	1600	192	2	4 ft LED Tube	200732x2	30	0.1	SW	1,600	96	96	0.1	$ 16.14	$ 326.70	$0	20.2	20.2
50LED	Stair #1	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	6240	749	2	4 ft LED Tube	200732x2	30	0.1	SW	6,240	374	374	0.1	$ 53.68	$ 326.70	$0	6.1	6.1
201LED	Stair #1	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	6240	1,685	3	4 ft LED Tube	200732x3	45	0.1	SW	6,240	842	842	0.1	$ 120.78	$ 735.08	$0	6.1	6.1
196LED	Stair #1	10	W 32 P F 4 (ELE)	F44ILL	112	1.1	SW	6240	6,989	10	T 74 R LED	RTLED50	50	0.5	SW	6,240	3,120	3,869	0.6	$ 554.69	$ 2,362.50	$500	4.3	3.4
196LED	2nd Floor Gym Lobby	12	W 32 P F 4 (ELE)	F44ILL	112	1.3	SW	6240	8,387	12	T 74 R LED	RTLED50	50	0.6	SW	6,240	3,744	4,643	0.7	$ 665.62	$ 2,835.00	$600	4.3	3.4
50LED	Gym Storage 2014	10	W 32 W F 2 (ELE)	F42LL	60	0.6	SW	1200	720	10	4 ft LED Tube	200732x2	30	0.3	SW	1,200	360	360	0.3	$ 64.51	$ 1,633.50	$0	25.3	25.3
50LED	Gym Storage 2014	1	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	1200	72	1	4 ft LED Tube	200732x2	30	0.0	SW	1,200	36	36	0.0	$ 6.45	$ 163.35	$0	25.3	25.3
32LED	Gym Hall	8	1T 32 R F 2 (ELE)	F42LL	60	0.5	SW	6240	2,995	8	4 ft LED Tube	200732x2	30	0.2	SW	6,240	1,498	1,498	0.2	$ 214.72	$ 1,306.80	$0	6.1	6.1
X1	Gymnasium	10	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	1600	24	10	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	1,600	24	-	0.0	$ -	$ -	$0		#DIV/0!
146LED	Gymnasium	24	High Bay MH 400	MH400/1	458	11.0	SW	1600	17,587	24	BAYLED78W	BAYLED78W	93	2.2	SW	1,600	3,571	14,016	8.8	$ 2,356.25	$ 20,260.69	$2,400	8.6	7.6
258	Gymnasium	14	CFS100	CFS100/1	100	1.4	SW	1600	2,240	14	CFS100	CFS100/1	100	1.4	SW	1,600	2,240	-	0.0	$ -	$ -	$0		#DIV/0!
50LED	Stair #2	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	6240	749	2	4 ft LED Tube	200732x2	30	0.1	SW	6,240	374	374	0.1	$ 53.68	$ 326.70	$0	6.1	6.1
201LED	Stair #2	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	6240	1,685	3	4 ft LED Tube	200732x3	45	0.1	SW	6,240	842	842	0.1	$ 120.78	$ 735.08	$0	6.1	6.1
196LED	Stair #2	10	W 32 P F 4 (ELE)	F44ILL	112	1.1	SW	6240	6,989	10	T 74 R LED	RTLED50	50	0.5	SW	6,240	3,120	3,869	0.6	$ 554.69	$ 2,362.50	$500	4.3	3.4
254LED	3rd Floor Lobby	8	CFQ26/2	CFQ26/2	66	0.5	SW	6240	3,295	8	EVO35/10	EVO35/10	39	0.3	SW	6,240	1,947	1,348	0.2	$ 193.25	$ 3,510.00	$0	18.2	18.2
201LED	3001 Class	18	T 32 R F 3 (ELE)	F43ILL/2	90	1.6	SW	2400	3,888	18	4 ft LED Tube	200732x3	45	0.8	SW	2,400	1,944	1,944	0.8	$ 305.25	$ 4,410.45	$0	14.4	14.4
X1	3001 Class	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2400	7	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2,400	7	-	0.0	$ -	$ -	$0		#DIV/0!
X1	3rd Floor Hallway	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	6240	37	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	6,240	37	-	0.0	$ -	$ -	$0		#DIV/0!
50LED	3rd Floor Hallway	62	W 32 W F 2 (ELE)	F42LL	60	3.7	SW	6240	23,213	62	4 ft LED Tube	200732x2	30	1.9	SW	6,240	11,606	11,606	1.9	$ 1,664.06	$ 10,127.70	$0	6.1	6.1
201LED	3007 Class	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	SW	2400	3,456	16	4 ft LED Tube	200732x3	45	0.7	SW	2,400	1,728	1,728	0.7	$ 271.33	$ 3,920.40	$0	14.4	14.4
X1	3007 Class	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2400	7	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2,400	7	-	0.0	$ -	$ -	$0		#DIV/0!
201LED	3008 Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	4 ft LED Tube	200732x3	45	0.1	SW	2,400	216	216	0.1	$ 33.92	$ 490.05	$0	14.4	14.4
201LED	3012	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	SW	2,400	1,296	1,296	0.5	$ 203.50	$ 2,940.30	$0	14.4	14.4
201LED	3017	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	SW	2,400	1,296	1,296	0.5	$ 203.50	$ 2,940.30	$0	14.4	14.4
254LED	Boys Room	1	CFQ26/2	CFQ26/2	66	0.1	SW	4300	284	1	EVO35/10	EVO35/10	39	0.0	SW	4,300	168	116	0.0	$ 17.09	$ 438.75	$0	25.7	25.7
32LED	Boys Room	5	1T 32 R F 2 (ELE)	F42LL	60	0.3	SW	4300	1,290	5	4 ft LED Tube	200732x2	30	0.2	SW	4,300	645	645	0.2	$ 94.96	$ 816.75	$0	8.6	8.6
254LED	Girls Room	1	CFQ26/2	CFQ26/2	66	0.1	SW	4300	284	1	EVO35/10	EVO35/10	39	0.0	SW	4,300	168	116	0.0	$ 17.09	$ 438.75	$0	25.7	25.7
32LED	Girls Room	5	1T 32 R F 2 (ELE)	F42LL	60	0.3	SW	4300	1,290	5	4 ft LED Tube	200732x2	30	0.2	SW	4,300	645	645	0.2	$ 94.96	$ 816.75	$0	8.6	8.6
218LED	3013	9	W 32 P F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	SW	2,400	972	972	0.4	$ 152.63	$ 2,205.23	$0	14.4	14.4
201LED	3009 Lab	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	SW	2400	3,240	15	4 ft LED Tube	200732x3	45	0.7	SW	2,400	1,620	1,620	0.7	$ 254.38	$ 3,675.38	$0	14.4	14.4
X1	3009 Lab	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2400	7	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2,400	7	-	0.0	$ -	$ -	$0		#DIV/0!
218LED	3004 Computer Lab	20	W 32 P F 3 (ELE)	F43ILL/2	90	1.8	SW	2400	4,320	20	4 ft LED Tube	200732x3	45	0.9	SW	2,400	2,160	2,160	0.9	$ 339.17	$ 4,900.50	$0	14.4	14.4
201LED	3005 Storage	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	1200	216	2	4 ft LED Tube	200732x3	45	0.1	SW	1,200	108	108	0.1	$ 19.35	$ 490.05	$0	25.3	25.3
201LED	3006 Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	4 ft LED Tube	200732x3	45	0.1	SW	2,400	216	216	0.1	$ 33.92	$ 490.05	$0	14.4	14.4
201LED	3018	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	SW	2,400	1,296	1,296	0.5	$ 203.50	$ 2,940.30	$0	14.4	14.4
201LED	3019	5	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2400	1,080	5	4 ft LED Tube	200732x3	45	0.2	SW	2,400	540	540	0.2	$ 84.79	$ 1,225.13	$0	14.4	14.4
201LED	3020	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	4 ft LED Tube	200732x3	45	0.1	SW	2,400	216	216	0.1	$ 33.92	$ 490.05	$0	14.4	14.4
201LED	3023	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	SW	2,400	1,296	1,296	0.5	$ 203.50	$ 2,940.30	$0	14.4	14.4
201LED	3024	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	SW	2,400	972	972	0.4	$ 152.63	$ 2,205.23	$0	14.4	14.4
50LED	3021	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	4 ft LED Tube	200732x2	30	0.1	SW	2,400	144	144	0.1	$ 22.61	$ 326.70	$0	14.4	14.4
201LED	3026	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	SW	2,400	972	972	0.4	$ 152.63	$ 2,205.23	$0	14.4	14.4
201LED	3031	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	SW	2,400	972	972	0.4	$ 152.63	$ 2,205.23	$0	14.4	14.4
32LED	Restroom	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	4300	516	2	4 ft LED Tube	200732x2	30	0.1	SW	4,300	258	258	0.1	$ 37.98	$ 326.70	$0	8.6	8.6
50LED	3029 Closet	1	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	1200	72	1	4 ft LED Tube	200732x2	30	0.0	SW	1,200	36	36	0.0	$ 6.45	$ 163.35	$0	25.3	25.3
201LED	3030	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	SW	2400	2,160	10	4 ft LED Tube	200732x3	45	0.5	SW	2,400	1,080	1,080	0.5	$ 169.58	$ 2,450.25	$0	14.4	14.4
218LED	3032	9	W 32 P F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	SW	2,400	972	972	0.4	$ 152.63	$ 2,205.23	$0	14.4	14.4
201LED	3033	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	SW	2,400	972	972	0.4	$ 152.63	$ 2,205.23	$0	14.4	14.4
201LED	3034	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2400	1,296	6	4 ft LED Tube	200732x3	45	0.3	SW	2,400	648	648	0.3	$ 101.75	$ 1,470.15	$0	14.4	14.4
201LED	3035	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	SW	2400	2,160	10	4 ft LED Tube	200732x3	45	0.5	SW	2,400	1,080	1,080	0.5	$ 169.58	$ 2,450.25	$0	14.4	14.4
50LED	Stair #5	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	6240	749	2	4 ft LED Tube	200732x2	30	0.1	SW	6,240	374	374	0.1	$ 53.68	$ 326.70	$0	6.1	6.1
201LED	Stair #5	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	6240	1,685	3	4 ft LED Tube	200732x3	45	0.1	SW	6,240	842	842	0.1	$ 120.78	$ 735.08	$0	6.1	6.1
196LED	Stair #5	10	W 32 P F 4 (ELE)	F44ILL	112	1.1	SW	6240	6,989	10	T 74 R LED	RTLED50	50	0.5	SW	6,240	3,120	3,869	0.6	$ 554.69	$ 2,362.50	$500	4.3	3.4
201LED	2063	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	SW	2400	2,160	10	4 ft LED Tube	200732x3	45	0.5	SW	2,400	1,080	1,080	0.5	$ 169.58	$ 2,450.25	$0	14.4	14.4
201LED	2062	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2400	1,296	6	4 ft LED Tube	200732x3	45	0.3	SW	2,400	648	648	0.3	$ 101.75	$ 1,470.15	$0	14.4	14.4
201LED	2061	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	SW	2,400	972	972	0.4	$ 152.63	$ 2,205.23	$0	14.4	14.4
201LED	2060	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	SW	2,400	972	972	0.4	$ 152.63	$ 2,205.23	$0	14.4	14.4
201LED	Restroom	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	4300	774	2	4 ft LED Tube	200732x3	45	0.1	SW	4,300	387	387	0.1	$ 56.98	$ 490.05	$0	8.6	8.6
201LED	2059	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	SW	2400	2,160	10	4 ft LED Tube	200732x3	45	0.5	SW	2,400	1,080	1,080	0.5	$ 169.58	$ 2,450.25	$0	14.4	14.4
201LED	2058	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	SW	2,400	972	972	0.4	$ 152.63	$ 2,205.23	$0	14.4	14.4
201LED	2054	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	SW	2,400	972	972	0.4	$ 152.63	$ 2,205.23	$0	14.4	14.4
32LED	2054	3	1T 32 R F 2 (ELE)	F42LL	60	0.2	SW	2400	432	3	4 ft LED Tube	200732x2	30	0.1	SW	2,400	216	216	0.1	$ 33.92	$ 490.05	$0	14.4	14.4
201LED	2051	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	SW	2,400	972	972	0.4	$ 152.63	$ 2,205.23	$0	14.4	14.4
32LED	2051	3	1T 32 R F 2 (ELE)	F42LL	60	0.2	SW	2400	432	3	4 ft LED Tube	200732x2	30	0.1	SW	2,400	216	216	0.1	$ 33.92	$ 490.05	$0	14.4	14.4
32LED	2051 Restroom	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	4300	516	2	4 ft LED Tube	200732x2	30	0.1	SW	4,300	258	258	0.1	$ 37.98	$ 326.70	$0	8.6	8.6
201LED	2045	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	SW	2,400	1,296	1,296	0.5	$ 203.50	$ 2,940.30	$0	14.4	14.4
201LED	2044	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	SW	2,400	1,296	1,296	0.5	$ 203.50	$ 2,940.30	$0	14.4	14.4
50LED	Stair #4	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	6240	749	2	4 ft LED Tube	200732x2	30	0.1	SW	6,240	374	374	0.1	$ 53.68	$ 326.70	$0	6.1	6.1
201LED	Stair #4	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	6240	1,685	3	4 ft LED Tube	200732x3	45	0.1	SW	6,240	842	842	0.1	$ 120.78	$ 735.08	$0	6.1	6.1
196LED	Stair #4	10	W 32 P F 4 (ELE)	F44ILL	112	1.1	SW	6240	6,989	10	T 74 R LED	RTLED50	50	0.5	SW	6,240	3,120	3,869	0.6	$ 554.69	$ 2,362.50	$500	4.3	3.4
201LED	2030	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	SW	2,400	1,296	1,296	0.5	$ 203.50	$ 2,940.30	$0	14.4	14.4
201LED	2029	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	SW	2,400	1,296	1,296	0.5	$ 203.50	$ 2,940.30	$0	14.4	14.4
201LED	2023	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	SW	2,400	1,296	1,296	0.5	$ 203.50	$ 2,940.30	$0	14.4	14.4
201LED	2022	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	SW	2,400	1,296	1,296	0.5	$ 203.50	$ 2,940.30	$0	14.4	14.4
32LED	2019 Restroom	1	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	4300	258	1	4 ft LED Tube	200732x2	30	0.0	SW	4,300	129	129	0.0	$ 18.99	$ 163.35	$0	8.6	8.6
218LED	2019 Art	16	W 32 P F 3 (ELE)	F43ILL/2	90	1.4	SW	2400	3,456	16	4 ft LED Tube	200732x3	45	0.7	SW	2,400	1,728	1,728	0.7	$ 271.33	$ 3,920.40	$0	14.4	14.4
X1	2nd Floor Hal	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	6240	37	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	6,240	37	-	0.0	$ -	$ -	$0		#DIV/0!
50LED	2nd Floor Hal	62	W 32 W F 2 (ELE)	F42LL	60	3.7	SW	6240	23,213	62	4 ft LED Tube	200732x2	30	1.9	SW	6,240	11,606	11,606	1.9	$ 1,664.06	$ 10,127.70	$0	6.1	6.1
201LED	2024	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	SW	2,400	1,296	1,296	0.5	$ 203.50	$ 2,940.30	$0	14.4	14.4
201LED	2026 Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	4 ft LED Tube	200732x3	45	0.1	SW	2,400	216	216	0.1	$ 33.92	$ 490.05	$0	14.4	14.4
201LED	2028 Break Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	2400	864	4	4 ft LED Tube	200732x3	45	0.2	SW	2,400	432	432	0.2	$ 67.83	$ 980.10	$0	14.4	14.4
201LED	2027 Vice Principal Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	4 ft LED Tube	200732x3	45	0.1	SW	2,400	216	216	0.1	$ 33.92	$ 490.05	$0	14.4	14.4
254LED	2nd Floor Stair 3 Lobby	10	CFQ26/2	CFQ26/2	66	0.7	SW	6240	4,118	10	EVO35/10	EVO35/10	39	0.4	SW	6,240	2,434	1,685	0.3	$ 241.56	$ 4,387.50	$0	18.2	18.2
201LED	2002 PE Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	4 ft LED Tube	200732x3	45	0.1	SW	2,400	216	216	0.1	$ 33.92	$ 490.05	$0	14.4	14.4
201LED	2002 PE Office Restroom	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	4300	387	1	4 ft LED Tube	200732x3	45	0.0	SW	4,300	194	194	0.0	$ 28.49	$ 245.03	$0	8.6	8.6
201LED	2008 Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	4 ft LED Tube	200732x3	45	0.1	SW	2,400	216	216	0.1	$ 33.92	$ 490.05	$0	14.4	14.4
201LED	2008 Restroom	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	4300	387	1	4 ft LED Tube	200732x3	45	0.0	SW	4,300	194	194	0.0	$ 28.49	$ 245.03	$0	8.6	8.6
32LED	Boys Room	4	1T 32 R F 2 (ELE)	F42LL	60	0.2	SW	4300	1,032	4	4 ft LED Tube	200732x2	30	0.1	SW	4,300	516	516	0.1	$ 75.97	$ 653.40	$0	8.6	8.6
32LED	2011 Boys Locker Room	10	1T 32 R F 2 (ELE)	F42LL	60	0.6	SW	4300	2,580	10	4 ft LED Tube	200732x2	30	0.3	SW	4,300	1,290	1,290	0.3	$ 189.92	$ 1,633.50	$0	8.6	8.6
50LED	2013 Storage	1	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	1200	72	1	4 ft LED Tube	200732x2	30	0.0	SW	1,200	36	36	0.0	$ 6.45	$ 163.35	$0	25.3	25.3
50LED	Stair #2	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	6240	749	2	4 ft LED Tube	200732x2	30	0.1	SW	6,240	374	374	0.1	$ 53.68	$ 326.70	$0	6.1	6.1
201LED	Stair #2	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	6240	1,685	3	4 ft LED Tube	200732x3	45	0.1	SW	6,240	842	842	0.1	$ 120.78	$ 735.08	$0	6.1	6.1
196LED	Stair #2	6	W 32 P F 4 (ELE)	F44ILL	112	0.7	SW	6240	4,193	6	T 74 R LED	RTLED50	50	0.3	SW	6,240	1,872	2,321	0.4	$ 332.81	$ 1,417.50	$300	4.3	3.4
265	Front Entrance	8	Entrance 5L CFL DC	CF42/5-L	222	1.8	SW	6240	11,082	8	Entrance 5L CFL DC	CF42/5-L	222	1.8	SW	6,240	11,082	-	0.0	$ -	$ -	$0		#DIV/0!
50LED	Front Entrance	22	W 32 W F 2 (ELE)	F42LL	60	1.3	SW	6240	8,237	22	4 ft LED Tube	200732x2	30	0.7	SW	6,240	4,118	4,118	0.7	$ 590.47	$ 3,593.70	$0	6.1	6.1
254LED	Front Entrance	10	CFQ26/2	CFQ26/2	66	0.7	SW	6240	4,118	10	EVO35/10	EVO35/10	39	0.4	SW	6,240	4,118	1,685	0.3	$ 241.56	$ 4,387.50	$0	18.2	18.2
231LED	Front Entrance	15	WP400MH1	MH400/1	458	6.9	SW	6240	42,869	15	WPLED2T78	WPLED2T78	91	1.4	SW	6,240	8,518	34,351	5.5	$ 4,925.07	$ 15,362.87	$1,500	3.1	2.8
254LED	1004 Nurses Office	4	CFQ26/2	CFQ26/2	66	0.3	SW	2400	634	4	EVO35/10	EVO35/10	39	0.2	SW	2,400	374	259	0.1	$ 40.70	$ 1,755.00	$0	43.1	43.1
270LED	1005 Nurses Office	2

Energy Audit of Newark Public Schools - Mount Vernon School
CHA Project No.27999
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 Saved) * ($/kWh)	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
201LED	1103	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	SW	2,400	972	972	0.4	$ 152.63	$ 2,205.23	$0	14.4	14.4
32LED	1103	3	1T 32 R F 2 (ELE)	F42LL	60	0.2	SW	2400	432	3	4 ft LED Tube	200732x2	30	0.1	SW	2,400	216	216	0.1	$ 33.92	$ 490.05	$0	14.4	14.4
201LED	1099	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	SW	2,400	972	972	0.4	$ 152.63	$ 2,205.23	$0	14.4	14.4
201LED	1097	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	SW	2,400	972	972	0.4	$ 152.63	$ 2,205.23	$0	14.4	14.4
32LED	1097	3	1T 32 R F 2 (ELE)	F42LL	60	0.2	SW	2400	432	3	4 ft LED Tube	200732x2	30	0.1	SW	2,400	216	216	0.1	$ 33.92	$ 490.05	$0	14.4	14.4
275	Cafeteria	12	CF42 P 2 Chandelier	CF42/2-I	100	1.2	SW	2400	2,880	12	CF 42 P 2 Chandelier	CF42/2-I	100	1.2	SW	2,400	2,880	-	0.0	$ -	$ -	$0		#DIV/0!
254LED	Cafeteria	21	CFQ26/2	CFQ26/2	66	1.4	SW	2400	3,326	21	EVO35/10	EVO35/10	39	0.8	SW	2,400	1,966	1,361	0.6	$ 213.68	$ 9,213.75	$0	43.1	43.1
254LED	Auditorium	3	CFQ26/2	CFQ26/2	66	0.2	SW	1600	317	3	EVO35/10	EVO35/10	39	0.1	SW	1,600	187	130	0.1	$ 21.79	$ 1,316.25	$0	60.4	60.4
X1	Auditorium	12	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	1600	29	12	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	1,600	29	-	0.0	$ -	$ -	$0		#DIV/0!
261LED	Auditorium	40	PAR 38 SP	H100/1	100	4.0	SW	1600	6,400	40	EVO35/10	EVO35/10	39	1.6	SW	1,600	2,496	3,904	2.4	$ 656.31	$ 17,550.00	$0	26.7	26.7
146LED	Auditorium	6	High Bay MH 400	MH400/1	458	2.7	SW	1600	4,397	6	BAYLED78W	BAYLED78W	93	0.6	SW	1,600	893	3,504	2.2	$ 589.06	$ 5,065.17	$600	8.6	7.6
254LED	Auditorium	10	CFQ26/2	CFQ26/2	66	0.7	SW	1600	1,056	10	EVO35/10	EVO35/10	39	0.4	SW	1,600	624	432	0.3	$ 72.62	$ 4,387.50	$0	60.4	60.4
254LED	Auditorium	4	CFQ26/2	CFQ26/2	66	0.3	SW	1600	422	4	EVO35/10	EVO35/10	39	0.2	SW	1,600	250	173	0.1	$ 29.05	$ 1,755.00	$0	60.4	60.4
218LED	1088	34	W 32 P F 3 (ELE)	F43ILL/2	90	3.1	SW	2400	7,344	34	4 ft LED Tube	200732x3	45	1.5	SW	2,400	3,672	3,672	1.5	$ 576.59	$ 8,330.85	$0	14.4	14.4
X1	1088	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2400	14	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2,400	14	-	0.0	$ -	$ -	$0		#DIV/0!
50LED	Custodian Office	10	W 32 W F 2 (ELE)	F42LL	60	0.6	SW	2400	1,440	10	4 ft LED Tube	200732x2	30	0.3	SW	2,400	720	720	0.3	$ 113.06	$ 1,633.50	$0	14.4	14.4
	Total	**1,098**				**104.7**			**345,752**	**1,098**			**5,640**	**48.1**			**160,529**	**185,223**	**56.6**	**$27,987**	**$281,781**	**$7,400**		
																	Demand Savings			**56.6**	**$3,011**			
																	kWh Savings			**185,223**	**$24,976**			
																	Total savings				**$27,987**		**10.1**	**9.8**

Energy Audit of Newark Public Schools - Mount Vernon School
CHA Project No.27999
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	(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)	($/kW) * (kW Saved)	Cost for renovations to lighting system	Incentive	Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered
50LED	Boiler Room 1023	12	W 32 W F 2 (ELE)	F42LL	60	0.7	SW	1600	1,152.0	12	W 32 W F 2 (ELE)	F42LL	60	0.7	NONE	1600	1,152.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	Fire Pump Room	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	1600	192.0	2	W 32 W F 2 (ELE)	F42LL	60	0.1	NONE	1600	192.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	Boiler Room Hal	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	1600	192.0	2	W 32 W F 2 (ELE)	F42LL	60	0.1	NONE	1600	192.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	Stair #1	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	6240	748.8	2	W 32 W F 2 (ELE)	F42LL	60	0.1	NONE	6240	748.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
201LED	Stair #1	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	6240	1,684.8	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	NONE	6240	1,684.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
196LED	Stair #1	10	W 32 P F 4 (ELE)	F44ILL	112	1.1	SW	6240	6,988.8	10	W 32 P F 4 (ELE)	F44ILL	112	1.1	NONE	6240	6,988.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
196LED	2nd Floor Gym Lobby	12	W 32 P F 4 (ELE)	F44ILL	112	1.3	SW	6240	8,386.6	12	W 32 P F 4 (ELE)	F44ILL	112	1.3	NONE	6240	8,386.6	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	Gym Storage 2014	10	W 32 W F 2 (ELE)	F42LL	60	0.6	SW	1200	720.0	10	W 32 W F 2 (ELE)	F42LL	60	0.6	NONE	1200	720.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	Gym Storage 2014	1	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	1200	72.0	1	W 32 W F 2 (ELE)	F42LL	60	0.1	NONE	1200	72.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
32LED	Gym Hall	8	1T 32 R F 2 (ELE)	F42LL	60	0.5	SW	6240	2,995.2	8	1T 32 R F 2 (ELE)	F42LL	60	0.5	NONE	6240	2,995.2	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	Gymnasium	10	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	1600	24.0	10	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	1600	24.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
146LED	Gymnasium	24	High Bay MH 400	MH400/1	458	11.0	SW	1600	17,587.2	24	High Bay MH 400	MH400/1	458	11.0	NONE	1600	17,587.2	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
258	Gymnasium	14	CFS100	CFS100/1	100	1.4	SW	1600	2,240.0	14	CFS100	CFS100/1	100	1.4	NONE	1600	2,240.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	Stair #2	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	6240	748.8	2	W 32 W F 2 (ELE)	F42LL	60	0.1	NONE	6240	748.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
201LED	Stair #2	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	6240	1,684.8	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	NONE	6240	1,684.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
196LED	Stair #2	10	W 32 P F 4 (ELE)	F44ILL	112	1.1	SW	6240	6,988.8	10	W 32 P F 4 (ELE)	F44ILL	112	1.1	NONE	6240	6,988.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
254LED	3rd Floor Lobby	8	CFQ26/2	CFQ26/2	66	0.5	SW	6240	3,294.7	8	CFQ26/2	CFQ26/2	66	0.5	NONE	6240	3,294.7	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
201LED	3001 Class	18	T 32 R F 3 (ELE)	F43ILL/2	90	1.6	SW	2400	3,888.0	18	T 32 R F 3 (ELE)	F43ILL/2	90	1.6	C-OCC	1680	2,721.6	1,166.4	0.0	$157.28	$270.00	$35.00	1.7	1.5
X1	3001 Class	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2400	7.2	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	C-OCC	1680	5.0	2.2	0.0	$0.29	$270.00	$35.00	927.0	806.8
X1	3rd Floor Hallway	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	6240	37.4	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	6240	37.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	3rd Floor Hallway	62	W 32 W F 2 (ELE)	F42LL	60	3.7	SW	6240	23,212.8	62	W 32 W F 2 (ELE)	F42LL	60	3.7	NONE	6240	23,212.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
201LED	3007 Class	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	SW	2400	3,456.0	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	C-OCC	1680	2,419.2	1,036.8	0.0	$139.81	$270.00	$35.00	1.9	1.7
X1	3007 Class	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2400	7.2	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	C-OCC	1680	5.0	2.2	0.0	$0.29	$270.00	$35.00	927.0	806.8
201LED	3008 Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432.0	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	NONE	2400	432.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
201LED	3012	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	1680	1,814.4	777.6	0.0	$104.85	$270.00	$35.00	2.6	2.2
201LED	3017	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	1680	1,814.4	777.6	0.0	$104.85	$270.00	$35.00	2.6	2.2
254LED	Boys Room	1	CFQ26/2	CFQ26/2	66	0.1	SW	4300	283.8	1	CFQ26/2	CFQ26/2	66	0.1	NONE	4300	283.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
32LED	Boys Room	5	1T 32 R F 2 (ELE)	F42LL	60	0.3	SW	4300	1,290.0	5	1T 32 R F 2 (ELE)	F42LL	60	0.3	NONE	4300	1,290.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
254LED	Girls Room	1	CFQ26/2	CFQ26/2	66	0.1	SW	4300	283.8	1	CFQ26/2	CFQ26/2	66	0.1	NONE	4300	283.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
32LED	Girls Room	5	1T 32 R F 2 (ELE)	F42LL	60	0.3	SW	4300	1,290.0	5	1T 32 R F 2 (ELE)	F42LL	60	0.3	NONE	4300	1,290.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
218LED	3013	9	W 32 P F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944.0	9	W 32 P F 3 (ELE)	F43ILL/2	90	0.8	C-OCC	1680	1,360.8	583.2	0.0	$78.64	$270.00	$35.00	3.4	3.0
201LED	3009 Lab	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	SW	2400	3,240.0	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	C-OCC	1680	2,268.0	972.0	0.0	$131.07	$270.00	$35.00	2.1	1.8
X1	3009 Lab	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2400	7.2	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	C-OCC	1680	5.0	2.2	0.0	$0.29	$270.00	$35.00	927.0	806.8
218LED	3004 Computer Lab	20	W 32 P F 3 (ELE)	F43ILL/2	90	1.8	SW	2400	4,320.0	20	W 32 P F 3 (ELE)	F43ILL/2	90	1.8	C-OCC	1680	3,024.0	1,296.0	0.0	$174.76	$270.00	$35.00	1.5	1.3
201LED	3005 Storage	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	1200	216.0	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	NONE	1200	216.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
201LED	3006 Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432.0	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	NONE	2400	432.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
201LED	3018	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	1680	1,814.4	777.6	0.0	$104.85	$270.00	$35.00	2.6	2.2
201LED	3019	5	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2400	1,080.0	5	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	1680	756.0	324.0	0.0	$43.69	$270.00	$35.00	6.2	5.4
201LED	3020	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432.0	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	1680	302.4	129.6	0.0	$17.48	$270.00	$35.00	15.4	13.4
201LED	3023	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	1680	1,814.4	777.6	0.0	$104.85	$270.00	$35.00	2.6	2.2
201LED	3024	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944.0	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	C-OCC	1680	1,360.8	583.2	0.0	$78.64	$270.00	$35.00	3.4	3.0
50LED	3021	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	W 32 W F 2 (ELE)	F42LL	60	0.1	C-OCC	1680	201.6	86.4	0.0	$11.65	$270.00	$35.00	23.2	20.2
201LED	3026	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944.0	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	C-OCC	1680	1,360.8	583.2	0.0	$78.64	$270.00	$35.00	3.4	3.0
201LED	3031	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944.0	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	C-OCC	1680	1,360.8	583.2	0.0	$78.64	$270.00	$35.00	3.4	3.0
32LED	Restroom	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	4300	516.0	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	NONE	4300	516.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	3029 Closet	1	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	1200	72.0	1	W 32 W F 2 (ELE)	F42LL	60	0.1	NONE	1200	72.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
201LED	3030	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	SW	2400	2,160.0	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	C-OCC	1680	1,512.0	648.0	0.0	$87.38	$270.00	$35.00	3.1	2.7
218LED	3032	9	W 32 P F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944.0	9	W 32 P F 3 (ELE)	F43ILL/2	90	0.8	C-OCC	1680	1,360.8	583.2	0.0	$78.64	$270.00	$35.00	3.4	3.0
201LED	3033	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944.0	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	C-OCC	1680	1,360.8	583.2	0.0	$78.64	$270.00	$35.00	3.4	3.0
201LED	3034	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2400	1,296.0	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	1680	907.2	388.8	0.0	$52.43	$270.00	$35.00	5.1	4.5
201LED	3035	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	SW	2400	2,160.0	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	C-OCC	1680	1,512.0	648.0	0.0	$87.38	$270.00	$35.00	3.1	2.7
50LED	Stair #5	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	6240	748.8	2	W 32 W F 2 (ELE)	F42LL	60	0.1	NONE	6240	748.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
201LED	Stair #5	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	6240	1,684.8	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	NONE	6240	1,684.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
196LED	Stair #5	10	W 32 P F 4 (ELE)	F44ILL	112	1.1	SW	6240	6,988.8	10	W 32 P F 4 (ELE)	F44ILL	112	1.1	NONE	6240	6,988.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
201LED	2063	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	SW	2400	2,160.0	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	C-OCC	1680	1,512.0	90	0.0	$87.38	$270.00	$35.00	3.1	2.7
201LED	2062	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2400	1,296.0	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	1680	907.2	388.8	0.0	$52.43	$270.00	$35.00	5.1	4.5
201LED	2061	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944.0	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	C-OCC	1680	1,360.8	583.2	0.0	$78.64	$270.00	$35.00	3.4	3.0
201LED	2060	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944.0	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	C-OCC	1680	1,360.8	583.2	0.0	$78.64	$270.00	$35.00	3.4	3.0
201LED	Restroom	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	4300	774.0	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	3000	540.0	234.0	0.0	$31.55	$270.00	$35.00	8.6	7.4
201LED	2059	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	SW	2400	2,160.0	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	C-OCC	1680	1,512.0	648.0	0.0	$87.38	$270.00	$35.00	3.1	2.7
201LED	2058	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944.0	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	C-OCC	1680	1,360.8	583.2	0.0	$78.64	$270.00	$35.00	3.4	3.0
201LED	2054	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944.0	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	C-OCC	1680	1,360.8	583.2	0.0	$78.64	$270.00	$35.00	3.4	3.0
32LED	2054	3	1T 32 R F 2 (ELE)	F42LL	60	0.2	SW	2400	432.0	3	1T 32 R F 2 (ELE)	F42LL	60	0.2	C-OCC	1680	302.4	129.6	0.0	$17.48	$270.00	$35.00	15.4	13.4
201LED	2051	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944.0	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	C-OCC	1680	1,360.8	583.2	0.0	$78.64	$270.00	$35.00	3.4	3.0
32LED	2051	3	1T 32 R F 2 (ELE)	F42LL	60	0.2	SW	2400	432.0	3	1T 32 R F 2 (ELE)	F42LL	60	0.2	C-OCC	1680	302.4	129.6	0.0	$17.48	$270.00	$35.00	15.4	13.4
32LED	2051 Restroom	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	4300	516.0	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	NONE	4300	516.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
201LED	2045	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	1680	1,814.4	777.6	0.0	$104.85	$270.00	$35.00	2.6	2.2
201LED	2044	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	1680	1,814.4	777.6	0.0	$104.85	$270.00	$35.00	2.6	2.2
50LED	Stair #4	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	6240	748.8	2	W 32 W F 2 (ELE)	F42LL	60	0.1	NONE	6240	748.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
201LED	Stair #4	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	6240	1,684.8	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	NONE	6240	1,684.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
196LED	Stair #4	10	W 32 P F 4 (ELE)	F44ILL	112	1.1	SW	6240	6,988.8	10	W 32 P F 4 (ELE)	F44ILL	112	1.1	NONE	6240	6,988.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
201LED	2030	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	1680	1,814.4	777.6	0.0	$104.85	$270.00	$35.00	2.6	2.2
201LED	2029	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	1680	1,814.4	777.6	0.0	$104.85	$270.00	$35.00	2.6	2.2
201LED	2023	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	1680	1,814.4	777.6	0.0	$104.85	$270.00	$35.00	2.6	2.2
201LED	2022	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	1680	1,814.4	777.6	0.0	$104.85	$270.00	$35.00	2.6	2.2
32LED	2010 Restroom	1	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	4300	258.0	1	1T 32 R F 2 (ELE)	F42LL	60	0.1	NONE	4300	258.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
218LED	2019 Art	16	W 32 P F 3 (ELE)	F43ILL/2	90	1.4	SW	2400	3,456.0	16	W 32 P F 3 (ELE)	F43ILL/2	90	1.4	C-OCC	1680	2,419.2	1,036.8	0.0	$139.81	$270.00	$35.00	1.9	1.7
X1	2nd Floor Hal	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	6240	37.4	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	6240	37.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	2nd Floor Hal	62	W 32 W F 2 (ELE)	F42LL	60	3.7	SW	6240	23,212.8	62	W 32 W F 2 (ELE)	F42LL	60	3.7	NONE	6240	23,212.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
201LED	2024	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	1680	1,814.4	777.6	0.0	$104.85	$270.00	$35.00	2.6	2.2
201LED	2026 Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432.0	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	1200	216.0	216.0	0.0	$29.13	$270.00	$35.00	9.3	8.1
201LED	2028 Break Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	2400	864.0	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	1200	432.0	432.0	0.0	$58.25	$270.00	$35.00	4.6	4.0
201LED	2027 Vice Principal Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432.0	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	1200	216.0	216.0	0.0	$29.13	$270.00	$35.00	9.3	8.1
254LED	2nd Floor Stair 3 Lobby	10	CFQ26/2	CFQ26/2	66	0.7	SW	6240	4,118.4	10	CFQ26/2	CFQ26/2	66	0.7	NONE	6240	4,118.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
201LED	2002 PE Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432.0	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	1200	216.0	216.0	0.0	$29.13	$270.00	$35.00	9.3	8.1
201LED	2002 PE Office Restroom	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	4300	387.0	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	NONE	4300	387.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
201LED	2008 Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432.0	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	1200	216.0	216.0	0.0	$29.13	$270.00	$35.00	9.3	8.1
201LED	2008 Restroom	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	4300	387.0	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	NONE	4300	387.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
32LED	Boys Room	4	1T 32 R F 2 (ELE)	F42LL	60	0.2	SW	4300	1,032.0	4	1T 32 R F 2 (ELE)	F42LL	60	0.2	NONE	4300	1,032.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
32LED	2011 Boys Locker Room	10	1T 32 R F 2 (ELE)	F42LL	60	0.6	SW	4300	2,580.0	10	1T 32 R F 2 (ELE)	F42LL	60	0.6	NONE	4300	2,580.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	2013 Storage	1	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	1200	72.0	1	W 32 W F 2 (ELE)	F42LL	60	0.1	NONE	1200	72.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	Stair #2	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	6240	748.8	2	W 32 W F 2 (ELE)	F42LL	60	0.1	NONE	6240	748.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
201LED	Stair #2	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	6240	1,684.8	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	NONE	6240	1,684.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
196LED	Stair #2	6	W 32 P F 4 (ELE)	F44ILL	112	0.7	SW	6240	4,193.3	6	W 32 P F 4 (ELE)	F44ILL	112	0.7	NONE	6240	4,193.3	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
265	Front Entrance	8	Entrance 5L CFL DC	CF42/5-L	222	1.8	SW	6240	11,082.2	8	Entrance 5L CFL DC	CF42/5-L	222	1.8	NONE	6240	11,082.2	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!

Energy Audit of Newark Public Schools - Mount Vernon School
CHA Project No.27999
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	(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) * (kW Saved)	Cost for renovations to lighting system		Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered
201LED	1103	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944.0	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	C-OCC	1680	1,360.8	583.2	0.0	$78.64	$270.00	$35.00	3.4	3.0
32LED	1103	3	1T 32 R F 2 (ELE)	F42LL	60	0.2	SW	2400	432.0	3	1T 32 R F 2 (ELE)	F42LL	60	0.2	C-OCC	1680	302.4	129.6	0.0	$17.48	$270.00	$35.00	15.4	13.4
201LED	1099	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944.0	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	C-OCC	1680	1,360.8	583.2	0.0	$78.64	$270.00	$35.00	3.4	3.0
201LED	1097	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944.0	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	C-OCC	1680	1,360.8	583.2	0.0	$78.64	$270.00	$35.00	3.4	3.0
32LED	1097	3	1T 32 R F 2 (ELE)	F42LL	60	0.2	SW	2400	432.0	3	1T 32 R F 2 (ELE)	F42LL	60	0.2	C-OCC	1680	302.4	129.6	0.0	$17.48	$270.00	$35.00	15.4	13.4
275	Cafeteria	12	CF 42 P 2 Chandelier	CF42/2-I	100	1.2	SW	2400	2,880.0	12	CF 42 P 2 Chandelier	CF42/2-I	100	1.2	NONE	2400	2,880.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
254LED	Cafeteria	21	CFQ26/2	CFQ26/2	66	1.4	SW	2400	3,326.4	21	CFQ26/2	CFQ26/2	66	1.4	NONE	2400	3,326.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
254LED	Auditorium	3	CFQ26/2	CFQ26/2	66	0.2	SW	1600	316.8	3	CFQ26/2	CFQ26/2	66	0.2	NONE	1600	316.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	Auditorium	12	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	1600	28.8	12	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	1600	28.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
261LED	Auditorium	40	PAR 38 SP	H100/1	100	4.0	SW	1600	6,400.0	40	PAR 38 SP	H100/1	100	4.0	NONE	1600	6,400.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
146LED	Auditorium	6	High Bay MH 400	MH400/1	458	2.7	SW	1600	4,396.8	6	High Bay MH 400	MH400/1	458	2.7	NONE	1600	4,396.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
254LED	Auditorium	10	CFQ26/2	CFQ26/2	66	0.7	SW	1600	1,056.0	10	CFQ26/2	CFQ26/2	66	0.7	NONE	1600	1,056.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
254LED	Auditorium	4	CFQ26/2	CFQ26/2	66	0.3	SW	1600	422.4	4	CFQ26/2	CFQ26/2	66	0.3	NONE	1600	422.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
218LED	1088	34	W 32 P F 3 (ELE)	F43ILL/2	90	3.1	SW	2400	7,344.0	34	W 32 P F 3 (ELE)	F43ILL/2	90	3.1	C-OCC	1680	5,140.8	2,203.2	0.0	$297.09	$270.00	$35.00	0.9	0.8
X1	1088	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2400	14.4	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	C-OCC	1680	10.1	4.3	0.0	$0.58	$270.00	$35.00	463.5	403.4
50LED	Custodian Office	10	W 32 W F 2 (ELE)	F42LL	60	0.6	SW	2400	1,440.0	10	W 32 W F 2 (ELE)	F42LL	60	0.6	NONE	2400	1,440.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
	Total	**1,098**				**104.7**			**345751.9**	**1098.0**				**104.7**				**308995.9**	**36756.0**	**4956.3**	**19440.0**	**2520.0**			
																	Demand Savings		**0.0**	**4956.3**	**$0**			
																	kWh Savings		**36,756**		**$4,956**			
																	Total Savings				**$4,956**		**3.9**	**3.4**

Energy Audit of Newark Public Schools - Mount Vernon School
CHA Project No.27999
ECM-L3 Lighting Replacements with 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 daily hours for the usage group	(kWh/space) * (Annual Hours)	No. of fixtures after the retrofit	Lighting Fixture Code	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 Saved) * ($/kWh)	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
50LED	Boiler Room 1023	12	W 32 W F 2 (ELE)	F42LL	60	0.7	SW	1600	1,152	12	4 ft LED Tube	200732x2	30	0.4	NONE	1,600	576	576	0.4	$ 96.83	$ 1,960.20	$ -	20.2	20.2
50LED	Fire Pump Room	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	1600	192	2	4 ft LED Tube	200732x2	30	0.1	NONE	1,600	96	96	0.1	$ 16.14	$ 326.70	$ -	20.2	20.2
50LED	Boiler Room Hal	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	1600	192	2	4 ft LED Tube	200732x2	30	0.1	NONE	1,600	96	96	0.1	$ 16.14	$ 326.70	$ -	20.2	20.2
50LED	Stair #1	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	6240	749	2	4 ft LED Tube	200732x2	30	0.1	NONE	6,240	374	374	0.1	$ 53.68	$ 326.70	$ -	6.1	6.1
201LED	Stair #1	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	6240	1,685	3	4 ft LED Tube	200732x3	45	0.1	NONE	6,240	842	842	0.1	$ 120.78	$ 735.08	$ -	6.1	6.1
196LED	Stair #1	10	W 32 P F 4 (ELE)	F44ILL	112	1.1	SW	6240	6,989	10	T 74 R LED	RTLED50	50	0.5	NONE	6,240	3,120	3,869	0.6	$ 554.69	$ 2,362.50	$ 500	4.3	3.4
196LED	2nd Floor Gym Lobby	12	W 32 P F 4 (ELE)	F44ILL	112	1.3	SW	6240	8,387	12	T 74 R LED	RTLED50	50	0.6	NONE	6,240	3,744	4,643	0.7	$ 665.62	$ 2,835.00	$ 600	4.3	3.4
50LED	Gym Storage 2014	10	W 32 W F 2 (ELE)	F42LL	60	0.6	SW	1200	720	10	4 ft LED Tube	200732x2	30	0.3	NONE	1,200	360	360	0.3	$ 64.51	$ 1,633.50	$ -	25.3	25.3
50LED	Gym Storage 2014	1	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	1200	72	1	4 ft LED Tube	200732x2	30	0.0	NONE	1,200	36	36	0.0	$ 6.45	$ 163.35	$ -	25.3	25.3
32LED	Gym Hall	8	1T 32 R F 2 (ELE)	F42LL	60	0.5	SW	6240	2,995	8	4 ft LED Tube	200732x2	30	0.2	NONE	6,240	1,498	1,498	0.2	$ 214.72	$ 1,306.80	$ -	6.1	6.1
X1	Gymnasium	10	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	1600	24	10	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	1,600	24	-	0.0	$ -	$ -	$ -	-	-
146LED	Gymnasium	24	High Bay MH 400	MH400/1	458	11.0	SW	1600	17,587	24	BAYLED78W	BAYLED78W	93	2.2	NONE	1,600	3,571	14,016	8.8	$ 2,356.25	$ 20,250.69	$ 2,400	8.6	7.6
258	Gymnasium	14	CFS100	CFS100/1	100	1.4	SW	1600	2,240	14	CFS100	CFS100/1	100	1.4	NONE	1,600	2,240	-	0.0	$ -	$ -	$ -	-	-
50LED	Stair #2	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	6240	749	2	4 ft LED Tube	200732x2	30	0.1	NONE	6,240	374	374	0.1	$ 53.68	$ 326.70	$ -	6.1	6.1
201LED	Stair #2	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	6240	1,685	3	4 ft LED Tube	200732x3	45	0.1	NONE	6,240	842	842	0.1	$ 120.78	$ 735.08	$ -	6.1	6.1
196LED	Stair #2	10	W 32 P F 4 (ELE)	F44ILL	112	1.1	SW	6240	6,989	10	T 74 R LED	RTLED50	50	0.5	NONE	6,240	3,120	3,869	0.6	$ 554.69	$ 2,362.50	$ 500	4.3	3.4
254LED	3rd Floor Lobby	8	CFQ26/2	CFQ26/2	66	0.5	SW	6240	3,295	8	EVO35/10	EVO35/10	39	0.3	NONE	6,240	1,947	1,348	0.2	$ 193.25	$ 3,510.00	$ -	18.2	18.2
201LED	3001 Class	18	T 32 R F 3 (ELE)	F43ILL/2	90	1.6	SW	2400	3,888	18	4 ft LED Tube	200732x3	45	0.8	C-OCC	1,680	1,361	2,527	0.8	$ 383.89	$ 4,680.45	$ 35	12.2	12.1
X1	3001 Class	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2400	7	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	C-OCC	1,680	5	2	0.0	$ 0.29	$ 270.00	$ 35	927.0	806.8
X1	3rd Floor Hallway	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	6240	37	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	6,240	37	-	0.0	$ -	$ -	$ -	-	-
50LED	3rd Floor Hallway	62	W 32 W F 2 (ELE)	F42LL	60	3.7	SW	6240	23,213	62	4 ft LED Tube	200732x2	30	1.9	NONE	6,240	11,606	11,606	1.9	$ 1,664.06	$ 10,127.70	$ -	6.1	6.1
201LED	3007 Class	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	SW	2400	3,456	16	4 ft LED Tube	200732x3	45	0.7	C-OCC	1,680	1,210	2,246	0.7	$ 341.24	$ 4,190.40	$ 35	12.3	12.2
X1	3007 Class	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2400	7	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	C-OCC	1,680	5	2	0.0	$ 0.29	$ 270.00	$ 35	927.0	806.8
201LED	3008 Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	4 ft LED Tube	200732x3	45	0.1	NONE	2,400	216	216	0.1	$ 33.92	$ 490.05	$ -	14.4	14.4
201LED	3012	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	C-OCC	1,680	907	1,685	0.5	$ 255.93	$ 3,210.30	$ 35	12.5	12.4
201LED	3017	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	C-OCC	1,680	907	1,685	0.5	$ 255.93	$ 3,210.30	$ 35	12.5	12.4
254LED	Boys Room	1	CFQ26/2	CFQ26/2	66	0.1	SW	4300	284	1	EVO35/10	EVO35/10	39	0.0	NONE	4,300	168	116	0.0	$ 17.09	$ 438.75	$ -	25.7	25.7
32LED	Boys Room	5	1T 32 R F 2 (ELE)	F42LL	60	0.3	SW	4300	1,290	5	4 ft LED Tube	200732x2	30	0.2	NONE	4,300	645	645	0.2	$ 94.96	$ 816.75	$ -	8.6	8.6
254LED	Girls Room	1	CFQ26/2	CFQ26/2	66	0.1	SW	4300	284	1	EVO35/10	EVO35/10	39	0.0	NONE	4,300	168	116	0.0	$ 17.09	$ 438.75	$ -	25.7	25.7
32LED	Girls Room	5	1T 32 R F 2 (ELE)	F42LL	60	0.3	SW	4300	1,290	5	4 ft LED Tube	200732x2	30	0.2	NONE	4,300	645	645	0.2	$ 94.96	$ 816.75	$ -	8.6	8.6
218LED	3013	9	W 32 P F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	C-OCC	1,680	680	1,264	0.4	$ 191.95	$ 2,475.23	$ 35	12.9	12.7
201LED	3009 Lab	15	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	SW	2400	3,240	15	4 ft LED Tube	200732x3	45	0.7	C-OCC	1,680	1,134	2,106	0.7	$ 319.91	$ 3,945.38	$ 35	12.3	12.2
X1	3009 Lab	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2400	7	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	C-OCC	1,680	5	2	0.0	$ 0.29	$ 270.00	$ 35	927.0	806.8
218LED	3004 Computer Lab	20	W 32 P F 3 (ELE)	F43ILL/2	90	1.8	SW	2400	4,320	20	4 ft LED Tube	200732x3	45	0.9	C-OCC	1,680	1,512	2,808	0.9	$ 426.55	$ 5,170.50	$ 35	12.1	12.0
201LED	3005 Storage	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	1200	216	2	4 ft LED Tube	200732x3	45	0.1	NONE	1,200	108	108	0.1	$ 19.35	$ 490.05	$ -	25.3	25.3
201LED	3006 Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	4 ft LED Tube	200732x3	45	0.1	NONE	2,400	216	216	0.1	$ 33.92	$ 490.05	$ -	14.4	14.4
201LED	3018	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	C-OCC	1,680	907	1,685	0.5	$ 255.93	$ 3,210.30	$ 35	12.5	12.4
201LED	3019	5	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2400	1,080	5	4 ft LED Tube	200732x3	45	0.2	C-OCC	1,680	378	702	0.2	$ 106.64	$ 1,495.13	$ 35	14.0	13.7
201LED	3020	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	4 ft LED Tube	200732x3	45	0.1	C-OCC	1,680	151	281	0.1	$ 42.65	$ 760.05	$ 35	17.8	17.0
201LED	3023	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	C-OCC	1,680	907	1,685	0.5	$ 255.93	$ 3,210.30	$ 35	12.5	12.4
201LED	3024	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	C-OCC	1,680	680	1,264	0.4	$ 191.95	$ 2,475.23	$ 35	12.9	12.7
50LED	3021	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	4 ft LED Tube	200732x2	30	0.1	C-OCC	1,680	101	187	0.1	$ 28.44	$ 596.70	$ 35	21.0	19.8
201LED	3026	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	C-OCC	1,680	680	1,264	0.4	$ 191.95	$ 2,475.23	$ 35	12.9	12.7
201LED	3031	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	C-OCC	1,680	680	1,264	0.4	$ 191.95	$ 2,475.23	$ 35	12.9	12.7
32LED	Restroom	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	4300	516	2	4 ft LED Tube	200732x2	30	0.1	NONE	4,300	258	258	0.1	$ 37.98	$ 326.70	$ -	8.6	8.6
50LED	3029 Closet	1	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	1200	72	1	4 ft LED Tube	200732x2	30	0.0	NONE	1,200	36	36	0.0	$ 6.45	$ 163.35	$ -	25.3	25.3
201LED	3030	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	SW	2400	2,160	10	4 ft LED Tube	200732x3	45	0.5	C-OCC	1,680	756	1,404	0.5	$ 213.27	$ 2,720.25	$ 35	12.8	12.6
218LED	3032	9	W 32 P F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	C-OCC	1,680	680	1,264	0.4	$ 191.95	$ 2,475.23	$ 35	12.9	12.7
201LED	3033	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	C-OCC	1,680	680	1,264	0.4	$ 191.95	$ 2,475.23	$ 35	12.9	12.7
201LED	3034	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2400	1,296	6	4 ft LED Tube	200732x3	45	0.3	C-OCC	1,680	454	842	0.3	$ 127.96	$ 1,740.15	$ 35	13.6	13.3
201LED	3035	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	SW	2400	2,160	10	4 ft LED Tube	200732x3	45	0.5	C-OCC	1,680	756	1,404	0.5	$ 213.27	$ 2,720.25	$ 35	12.8	12.6
50LED	Stair #5	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	6240	749	2	4 ft LED Tube	200732x2	30	0.1	NONE	6,240	374	374	0.1	$ 53.68	$ 326.70	$ -	6.1	6.1
201LED	Stair #5	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	6240	1,685	3	4 ft LED Tube	200732x3	45	0.1	NONE	6,240	842	842	0.1	$ 120.78	$ 735.08	$ -	6.1	6.1
196LED	Stair #5	10	W 32 P F 4 (ELE)	F44ILL	112	1.1	SW	6240	6,989	10	T 74 R LED	RTLED50	50	0.5	NONE	6,240	3,120	3,869	0.6	$ 554.69	$ 2,362.50	$ 500	4.3	3.4
201LED	2063	18	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	SW	2400	2,160	10	4 ft LED Tube	200732x3	45	0.5	C-OCC	1,680	756	1,404	0.5	$ 213.27	$ 2,720.25	$ 35	12.8	12.6
201LED	2062	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2400	1,296	6	4 ft LED Tube	200732x3	45	0.3	C-OCC	1,680	454	842	0.3	$ 127.96	$ 1,740.15	$ 35	13.6	13.3
201LED	2061	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	C-OCC	1,680	680	1,264	0.4	$ 191.95	$ 2,475.23	$ 35	12.9	12.7
201LED	2060	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	C-OCC	1,680	680	1,264	0.4	$ 191.95	$ 2,475.23	$ 35	12.9	12.7
201LED	Restroom	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	4300	774	2	4 ft LED Tube	200732x3	45	0.1	C-OCC	3,000	270	504	0.1	$ 72.75	$ 760.05	$ 35	10.4	10.0
201LED	2059	10	T 32 R F 3 (ELE)	F43ILL/2	90	0.9	SW	2400	2,160	10	4 ft LED Tube	200732x3	45	0.5	C-OCC	1,680	756	1,404	0.5	$ 213.27	$ 2,720.25	$ 35	12.8	12.6
201LED	2058	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	C-OCC	1,680	680	1,264	0.4	$ 191.95	$ 2,475.23	$ 35	12.9	12.7
201LED	2054	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	C-OCC	1,680	680	1,264	0.4	$ 191.95	$ 2,475.23	$ 35	12.9	12.7
32LED	2054	3	1T 32 R F 2 (ELE)	F42LL	60	0.2	SW	2400	432	3	4 ft LED Tube	200732x2	30	0.1	C-OCC	1,680	151	281	0.1	$ 42.65	$ 760.05	$ 35	17.8	17.0
201LED	2051	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	C-OCC	1,680	680	1,264	0.4	$ 191.95	$ 2,475.23	$ 35	12.9	12.7
32LED	2051	3	1T 32 R F 2 (ELE)	F42LL	60	0.2	SW	2400	432	3	4 ft LED Tube	200732x2	30	0.1	C-OCC	1,680	151	281	0.1	$ 42.65	$ 760.05	$ 35	17.8	17.0
32LED	2051 Restroom	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	4300	516	2	4 ft LED Tube	200732x2	30	0.1	NONE	4,300	258	258	0.1	$ 37.98	$ 326.70	$ -	8.6	8.6
201LED	2045	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	C-OCC	1,680	907	1,685	0.5	$ 255.93	$ 3,210.30	$ 35	12.5	12.4
201LED	2044	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	C-OCC	1,680	907	1,685	0.5	$ 255.93	$ 3,210.30	$ 35	12.5	12.4
50LED	Stair #4	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	6240	749	2	4 ft LED Tube	200732x2	30	0.1	NONE	6,240	374	374	0.1	$ 53.68	$ 326.70	$ -	6.1	6.1
201LED	Stair #4	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	6240	1,685	3	4 ft LED Tube	200732x3	45	0.1	NONE	6,240	842	842	0.1	$ 120.78	$ 735.08	$ -	6.1	6.1
196LED	Stair #4	10	W 32 P F 4 (ELE)	F44ILL	112	1.1	SW	6240	6,989	10	T 74 R LED	RTLED50	50	0.5	NONE	6,240	3,120	3,869	0.6	$ 554.69	$ 2,362.50	$ 500	4.3	3.4
201LED	2030	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	C-OCC	1,680	907	1,685	0.5	$ 255.93	$ 3,210.30	$ 35	12.5	12.4
201LED	2029	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	C-OCC	1,680	907	1,685	0.5	$ 255.93	$ 3,210.30	$ 35	12.5	12.4
201LED	2023	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	C-OCC	1,680	907	1,685	0.5	$ 255.93	$ 3,210.30	$ 35	12.5	12.4
201LED	2022	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	C-OCC	1,680	907	1,685	0.5	$ 255.93	$ 3,210.30	$ 35	12.5	12.4
32LED	2019 Restroom	1	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	4300	258	1	4 ft LED Tube	200732x2	30	0.0	NONE	4,300	129	129	0.0	$ 18.99	$ 163.35	$ -	8.6	8.6
218LED	2019 Art	16	W 32 P F 3 (ELE)	F43ILL/2	90	1.4	SW	2400	3,456	16	4 ft LED Tube	200732x3	45	0.7	C-OCC	1,680	1,210	2,246	0.7	$ 341.24	$ 4,190.40	$ 35	12.3	12.2
X1	2nd Floor Hal	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	6240	37	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	6,240	37	-	0.0	$ -	$ -	$ -	-	-
50LED	2nd Floor Hal	62	W 32 W F 2 (ELE)	F42LL	60	3.7	SW	6240	23,213	62	4 ft LED Tube	200732x2	30	1.9	NONE	6,240	11,606	11,606	1.9	$ 1,664.06	$ 10,127.70	$ -	6.1	6.1
201LED	2024	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	SW	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	C-OCC	1,680	907	1,685	0.5	$ 255.93	$ 3,210.30	$ 35	12.5	12.4
201LED	2026 Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	4 ft LED Tube	200732x3	45	0.1	C-OCC	1,200	108	324	0.1	$ 48.48	$ 760.05	$ 35	15.7	15.0
201LED	2028 Break Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	2400	864	4	4 ft LED Tube	200732x3	45	0.2	C-OCC	1,200	216	648	0.2	$ 96.96	$ 1,250.10	$ 35	12.9	12.5
201LED	2027 Vice Principal Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	4 ft LED Tube	200732x3	45	0.1	C-OCC	1,200	108	324	0.1	$ 48.48	$ 760.05	$ 35	15.7	15.0
254LED	2nd Floor Stair 2 Lobby	10	CFQ26/2	CFQ26/2	66	0.7	SW	6240	4,118	10	EVO35/10	EVO35/10	39	0.4	NONE	6,240	2,434	1,685	0.3	$ 241.56	$ 4,387.50	$ -	18.2	18.2
201LED	2002 PE Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	4 ft LED Tube	200732x3	45	0.1	C-OCC	1,200	108	324	0.1	$ 48.48	$ 760.05	$ 35	15.7	15.0
201LED	2002 PE Office Restroom	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	4300	387	1	4 ft LED Tube	200732x3	45	0.0	NONE	4,300	194	194	0.0	$ 28.49	$ 245.03	$ -	8.6	8.6
201LED	2008 Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	4 ft LED Tube	200732x3	45	0.1	C-OCC	1,200	108	324	0.1	$ 48.48	$ 760.05	$ 35	15.7	15.0
201LED	2008 Restroom	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	4300	387	1	4 ft LED Tube	200732x3	45	0.0	NONE	4,300	194	194	0.0	$ 28.49	$ 245.03	$ -	8.6	8.6
32LED	Boys Room	4	1T 32 R F 2 (ELE)	F42LL	60	0.2	SW	4300	1,032	4	4 ft LED Tube	200732x2	30	0.1	NONE	4,300	516	516	0.1	$ 75.97	$ 653.40	$ -	8.6	8.6
32LED	2011 Boys Locker Room	10	1T 32 R F 2 (ELE)	F42LL	60	0.6	SW	4300	2,580	10	4 ft LED Tube	200732x2	30	0.3	NONE	4,300	1,290	1,290	0.3	$ 189.92	$ 1,633.50	$ -	8.6	8.6
50LED	2013 Storage	1	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	1200	72	1	4 ft LED Tube	200732x2	30	0.0	NONE	1,200	36	36	0.0	$ 6.45	$ 163.35	$ -	25.3	25.3
50LED	Stair #2	2	W 32 W F 2 (ELE)	F42LL	60	0.1	SW	6240	749	2	4 ft LED Tube	200732x2	30	0.1	NONE	6,240	374	374	0.1	$ 53.68	$ 326.70	$ -	6.1	6.1
201LED	Stair #2	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	6240	1,685	3	4 ft LED Tube	200732x3	45	0.1	NONE	6,240	842	842	0.1	$ 120.78	$ 735.08	$ -	6.1	6.1
196LED	Stair #2	10	W 32 P F 4 (ELE)	F44ILL	112	0.7	SW	6240	4,193	6	T 74 R LED	RTLED50	50	0.3	NONE	6,240	1,872	2,321	0.4	$ 332.81	$ 1,417.50	$ 300	4.3	3.4
265	Front Entrance	8	Entrance 5L CFL DC	CF42/5-L	222	1.8	SW	6240	11,082	8	Entrance 5L CFL DC	CF42/5-L	222	1.8	NONE	6,240	11,082	-	0.0	$ -	$ -	$ -	-	-
50LED	Front Entrance	22	W 32 W F 2 (ELE)	F42LL	60	1.3	SW	6240	8,237	22	4 ft LED Tube	200732x2	30	0.7	NONE	6,240	4,118	4,118	0.7	$ 590.47	$ 3,593.70	$ -	6.1	6.1
254LED	Front Entrance	10	CFQ26/2	CFQ26/2	66	0.7	SW	6240	4,118	10	EVO35/10	EVO35/10	39	0.4	NONE	6,240	2,434	1,685	0.3	$ 241.56	$ 4,387.50	$ -	18.2	18.2
231LED	Front Entrance	15	WP400MH1	MH400/1	458	6.9	SW	6240	42,869	15	WPLED2T78	WPLED2T78	91	1.4	NONE	6,240	8,518	34,351	5.5	$ 4,925.07	$ 15,362.87	$ 1,500

Energy Audit of Newark Public Schools - Mount Vernon School
CHA Project No.27999
ECM-L3 Lighting Replacements with 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 daily hours for the usage group	(kW/space) * (Annual Hours)	No. of fixtures after the retrofit	Lighting Fixture Code	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 Saved) * ($/kWh)	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
201LED	1103	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	C-OCC	1,680	680	1,264	0.4	$ 191.95	$ 2,475.23	$ 35	12.9	12.7
32LED	1103	3	1T 32 R F 2 (ELE)	F42LL	60	0.2	SW	2400	432	3	4 ft LED Tube	200732x2	30	0.1	C-OCC	1,680	151	281	0.1	$ 42.65	$ 760.05	$ 35	17.8	17.0
201LED	1099	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	C-OCC	1,680	680	1,264	0.4	$ 191.95	$ 2,475.23	$ 35	12.9	12.7
201LED	1097	9	T 32 R F 3 (ELE)	F43ILL/2	90	0.8	SW	2400	1,944	9	4 ft LED Tube	200732x3	45	0.4	C-OCC	1,680	680	1,264	0.4	$ 191.95	$ 2,475.23	$ 35	12.9	12.7
32LED	1097	3	1T 32 R F 2 (ELE)	F42LL	60	0.2	SW	2400	432	3	4 ft LED Tube	200732x2	30	0.1	C-OCC	1,680	151	281	0.1	$ 42.65	$ 760.05	$ 35	17.8	17.0
275	Cafeteria	12	CF 42 P 2 Chandelier	CF42/2-I	100	1.2	SW	2400	2,880	12	CF 42 P 2 Chandelier	CF42/2-I	100	1.2	NONE	2,400	2,880	-	0.0	$ -	$ -	$ -		
254LED	Cafeteria	21	CFQ26/2	CFQ26/2	66	1.4	SW	2400	3,326	21	EVO35/10	EVO35/10	39	0.8	NONE	2,400	1,966	1,361	0.6	$ 213.68	$ 9,213.75	$ -	43.1	43.1
254LED	Auditorium	3	CFQ26/2	CFQ26/2	66	0.2	SW	1600	317	3	EVO35/10	EVO35/10	39	0.1	NONE	1,600	187	130	0.1	$ 21.79	$ 1,316.25	$ -	60.4	60.4
X1	Auditorium	12	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	1600	29	12	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	1,600	29	-	0.0	$ -	$ -	$ -	-	-
261LED	Auditorium	40	PAR 38 SP	H100/1	100	4.0	SW	1600	6,400	40	EVO35/10	EVO35/10	39	1.6	NONE	1,600	2,496	3,904	2.4	$ 656.31	$ 17,550.00	$ -	26.7	26.7
146LED	Auditorium	6	High Bay MH 400	MH400/1	458	2.7	SW	1600	4,397	6	BAYLED78W	BAYLED78W	93	0.6	NONE	1,600	893	3,504	2.2	$ 589.06	$ 5,065.17	$ 600	8.6	7.6
254LED	Auditorium	10	CFQ26/2	CFQ26/2	66	0.7	SW	1600	1,056	10	EVO35/10	EVO35/10	39	0.4	NONE	1,600	624	432	0.3	$ 72.62	$ 4,387.50	$ -	60.4	60.4
254LED	Auditorium	4	CFQ26/2	CFQ26/2	66	0.3	SW	1600	422	4	EVO35/10	EVO35/10	39	0.2	NONE	1,600	250	173	0.1	$ 29.05	$ 1,755.00	$ -	60.4	60.4
218LED	1088	34	W 32 P F 3 (ELE)	F43ILL/2	90	3.1	SW	2400	7,344	34	4 ft LED Tube	200732x3	45	1.5	C-OCC	1,680	2,570	4,774	1.5	$ 725.13	$ 8,600.85	$ 35	11.9	11.8
X1	1088	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2400	14	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	C-OCC	1,680	10	4	0.0	$ 0.58	$ 270.00	$ 35	463.5	403.4
50LED	Custodian Office	10	W 32 W F 2 (ELE)	F42LL	60	0.6	SW	2400	1,440	10	4 ft LED Tube	200732x2	30	0.3	NONE	2,400	720	720	0.3	$ 113.06	$ 1,633.50	$ -	14.4	14.4
															0	#N/A								#VALUE!
															0	#N/A								#VALUE!
S	**Total**	**1,098**				**104.7**			**345,752**	**1,098**				**48.1**				**142,043**		**56.6**	**30,480**	**301,221**	**$9,920**		
S																		**Demand Savings**		**56.6**	**$3,011**			
S																		**kWh Savings**		**203,709**	**$27,469**			
S																		**Total Savings**			**$30,480**		**9.9**	**9.6**

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

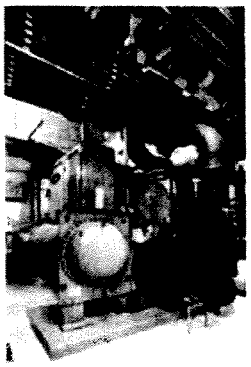
ENERGY BENCHMARKING

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

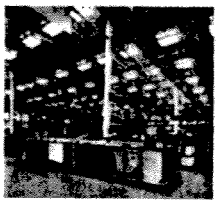
TOOLS AND RESOURCES

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.

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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, 2013 - June 30, 2014

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.
6. Provide brief description of facility.
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

New Jersey SmartStart Buildings® is a registered trademark. Use of the mark without the permission of the New Jersey Board of Public Utilities, Office of Clean Energy is prohibited.
*Incentives/Requirements subject to change.

Pay For Performance-Existing Buildings

Participation Agreement

Definitions:

Design Incentives – Incentives that may be offered to design professionals by the Program.

Design Services – Services that may be offered to design professionals under the Program.

Energy-Efficient Measures – Any device eligible to receive a Program Incentive payment through the NJ Clean Energy Commercial and Industrial Program (New Jersey SmartStart Buildings).

New Jersey Utilities – The regulated 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.

Administrator – New Jersey Board of Public Utilities, Office of Clean Energy

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

Product Installation or Equipment Installation – Installation of the Energy-Efficient Measures.

Projects with a contract threshold of $14,187 (increasing to $15,444 effective July 1, 2014) 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 – The Commercial and Industrial Energy-Efficient Construction Program (New Jersey SmartStart Buildings) offered herein by the New Jersey Board of Public Utilities, Office of Clean Energy pursuant to state regulatory approval under the New Jersey Electric Discount and Energy Competition Act, NJSA 48:3-49, et seq.

Program Incentives – Refers to the amount or level of incentive that the Program provides to Participating Customers pursuant to the Program offered herein (see description under "Incentive Amount" heading).

Program Offer – Program Incentives are available to non-residential retail electric and/or gas service customers of the New Jersey Utilities identified above.

Program Manager – TRC Energy Services.

Application and Eligibility Process – The Program pays incentives after the installation of qualified energy-efficient measures that were pre-approved (for exceptions to this condition, please refer to "Exceptions for Approval".) In order to be eligible for Program Incentives, a Customer, or an agent (contractor/vendor) authorized by a Customer, must submit a properly completed application package. The package must include an application signed by the customer; a complete (current) utility bill; and technology worksheet and manufacturer's cut sheets (where appropriate). This information must be submitted to the Program Manager before equipment is installed. Applications for measures that are self installed by customers must be submitted by the customer and not the sales vendor of the measure, however, the customer may elect to assign payment of the incentive to the sales vendor. This application package must be received by the Program Manager on or before June 30, 2014 in order to be eligible for the fiscal year July 1, 2013-June 30, 2014 incentives. The Program Manager will review the application package to determine if the project is eligible for a Program Incentive. If eligible, the Customer will receive an approval letter with the estimated authorized incentive amount and the date by which the equipment must be installed in order for the approval to remain in effect. Upon receipt of an approval letter, the Customer may then proceed to install the equipment listed on the approved application. Equipment installed prior to the date of the Program Manager's approval letter is not eligible for an incentive. The Program Manager 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 approval letter. All equipment must be purchased within 12 months of date of application. **Any Customer and/ or agent who purchases equipment prior to the receipt of an incentive approval letter does so at his/her own risk.**

Exceptions for Approval – The Application and Eligibility Process pertains to all projects except for those involving either Gas Heating, Unitary HVAC or Motors having an incentive amount less than $5,000 that were installed within 12 months of receipt of the application. These measures, at this incentive level, may be installed without prior approval. In addition, but at the sole discretion of the Program Manager, emergency replacement of equipment may not require a prior approval determination and letter. **In such cases, please notify the Program Manager of such emergencies as early as possible, that an application will soon be sent in that was not pre-approved.**

Post-Installation Approval – After installation is completed, the Customer, or an agent authorized by the Customer, must finalize and submit an invoice for the purchase of the equipment (material cost must be broken out from labor costs), and any other required documentation as specified on the equipment application or in the Program Manager's initial approval letter.

Please refer to the program guide on the NJCleanEnergy.com/ssb website for the complete Application and Eligibility Process.

The Program Manager reserves the right to verify sales transactions and to have reasonable access to Participating Customer's facility to inspect both pre-existing product 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 a New Jersey Utilities' service territory and designated on the Participating Customer's incentive application. Program Incentives are available for qualified Energy-Efficient Measures as listed and described in the Program materials and incentive applications. The Participating Customer must ultimately own the equipment, either through an up-front purchase or at the end of a short-term lease. Design Incentives are available to design professionals as described in the Program materials and applications. A different and separate agreement must be executed by participating design professionals to be eligible for this type of incentive. The design professional does not need to be based in New Jersey.

Equipment procured by Participating Customers through another program offered by New Jersey's Clean Energy Program or the New Jersey Utilities, as applicable, is not eligible for incentives through this program. Customers who have not contributed to the Societal Benefits Charge of the applicable New Jersey Utility are not be eligible for incentives offered through this program.

Incentive Amount – Program Incentives will equal either: a) the approved Program Incentive amount, or b) the actual equipment cost of the Energy-Efficient Measure, whichever is less, as determined by the Program Manager. Products offered at no direct cost to the customer are ineligible. Incomplete application submissions, applications requiring inspections and unanticipated high volume of activities may cause processing delays. Program Incentives are limited to $500,000 per utility account in a calendar year. Contact the Program Manager regarding any questions.

Tax Liability – The Program 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 to the Program Manager on the application form in order to receive a Program Incentive. In addition, Participating Customers must also provide a Tax Clearance Form (entitled "Business Assistance or Incentive Clearance Certificate") that is dated within 90 days of equipment installation.

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

Warranties – THE PROGRAM MANAGER AND ADMINISTRATOR DO NOT WARRANT THE PERFORMANCE OF INSTALLED EQUIPMENT, AND/OR SERVICES RENDERED AS PART OF THIS PROGRAM, EITHER EXPRESSLY OR IMPLICITLY. 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.

Limitation of Liability – By virtue of participating in this Program, Participating Customers agree to waive any and all claims or damages against the Program Manager or the Administrator, except the receipt of the Program Incentive. Participating Customers agree that the Program Manager's and Administrator's liability, in connection with this Program, is limited to paying the Program Incentive specified. Under no circumstances shall the Program 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 Program Manager under this Program shall be individual, and not joint and/or several.

Assignment – The Participating Customer may assign Program Incentive payments to a specified vendor.

Participating Customer's Certification – Participating Customer certifies that he/she purchased and installed the equipment listed in their application at their defined New Jersey location. Participating Customer agrees that all information is true and that he/she has conformed to all of the Program and equipment requirements listed in the application.

Termination – The New Jersey Board of Public Utilities reserves the right to extend, modify (this includes modification of Program Incentive levels) or terminate this Program without prior or further notice.

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 Program Manager permission to share my records with the New Jersey Board of Public Utilities, and contractors it selects to manage, coordinate or evaluate the NJ SmartStart Buildings Program. Additionally, 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.

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

LARGE ENERGY USERS PROGRAM

ENERGY SAVINGS IMPROVEMENT PROGRAM

DIRECT INSTALL

ENERGY BENCHMARKING

OIL, PROPANE & MUNICIPAL ELECTRIC CUSTOMERS

EDA PROGRAMS

SBC CREDIT PROGRAM

PAST PROGRAMS

TOOLS AND RESOURCES

PROGRAM UPDATES

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

NEWARK PUBLIC SCHOOL DISTRICT
SPEEDWAY MIDDLE SCHOOL

Cost of Electricity	$0.15	/kWh
Electricity Usage	1,686,000	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 SREC	Payback (with SREC
$	kW	kWh	therms	$	$	$	$	$	Years	Years
$560,000	**140.0**	**174,855**	**0**	**$26,228**	**0**	**$26,228**	**$0**	**$27,103**	**21.4**	**10.5**

** Estimated Solar Renewable Energy Certificate Program (SREC) SREC for 15 Years= $155 /1000kwh

Area Output*
3,248 m2
34,962 ft2

Perimeter Output*
839 m
2,752 ft

Available Roof Space for PV:
(Area Output - 5 ft x Perimeter) x 85%
18,020 ft2

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

8	watt/ft2	
144,163	DC watts	
140	kW	Enter into PV Watts

PV Watts Inputs***

Array Tilt Angle	20	Enter into PV Watts (always 20 if flat, if pitched - enter estimated roof angle)
Array Azimuth	180	Enter into PV Watts (default)
Zip Code	07103	Enter into PV Watts
DC/AC Derate Factor	0.83	Enter info PV Watts

PV Watts Output
174,855 annual kWh calculated in PV Watts program

% Offset Calc

Usage	1,686,000	(from utilities)
PV Generation	174,855	(generated using PV Watts)
% offset	10%	

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

PVWatts * * * AC Energy & Cost Savings

Cautions for Interpreting the Results

Speedway School

Station Identification	
City:	Newark
State:	New_Jersey
Latitude:	40.70° N
Longitude:	74.17° W
Elevation:	9 m
PV System Specifications	
DC Rating:	140.0 kW
DC to AC Derate Factor:	0.830
AC Rating:	116.2 kW
Array Type:	Fixed Tilt
Array Tilt:	20.0°
Array Azimuth:	180.0°
Energy Specifications	
Cost of Electricity:	15.0 ¢/kWh

Results			
Month	Solar Radiation (kWh/m ^{2}/day)	AC Energy (kWh)	Energy Value ($)
1	2.78	10226	1533.90
2	3.54	11783	1767.45
3	4.35	15599	2339.85
4	4.95	16535	2480.25
5	5.69	19197	2879.55
6	5.86	18569	2785.35
7	5.73	18539	2780.85
8	5.47	17514	2627.10
9	4.91	15690	2353.50
10	3.99	13609	2041.35
11	2.68	9135	1370.25
12	2.35	8459	1268.85
Year	4.36	174855	26228.25

Output Hourly Performance Data * Output Results as Text

About the Hourly Performance Data Saving Text from a Browser

Run PVWATTS v.1 for another US location or an International location
Run PVWATTS v.2 (US only)

Please send questions and comments regarding PVWATTS to Webmaster

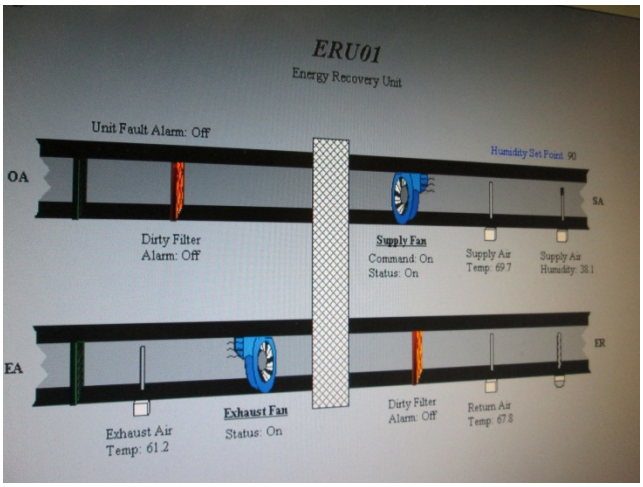
Disclaimer and copyright notice

RReDC Return to RReDC home page (http://www.nrel.gov/rredc)

APPENDIX F

Photos

1: Existing high efficiency heat pump supply pumps



2: Sample screenshot from Andover BMS

3: Sample interior lighting – Gymnasium

4: Sample exterior lighting – decorative

APPENDIX G

EPA Benchmarking Report

ENERGY STAR® Statement of Energy Performance

16

ENERGY STAR® Score[1]

Speedway School

Primary Property Function: K-12 School
Gross Floor Area (ft²): 127,530
Built: 2010

For Year Ending: May 31, 2013
Date Generated: May 15, 2014

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
Speedway School
701 South Orange Ave
Newark, New Jersey 07106

Property Owner
_____
,
(____)____-_____

Primary Contact
LGEA LGEA
900 ROUTE 9 NORTH
SUITE 404
WOODBRIDGE, NJ 07095
732-855-2864
amiller@trcsolutions.com

Property ID: 3980063

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
68.7 kBtu/ft²

Source EUI
170.4 kBtu/ft²

Annual Energy by Fuel

Electric - Grid (kBtu)	5,992,154 (68%)
Natural Gas (kBtu)	2,772,853 (32%)

National Median Comparison

National Median Site EUI (kBtu/ft²)	49.3
National Median Source EUI (kBtu/ft²)	122.2
% Diff from National Median Source EUI	39%

Annual Emissions

Greenhouse Gas Emissions (Metric Tons CO2e/year)	906

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)