THE NEWARK PUBLIC SCHOOLS

Group 3 Buildings

SCIENCE PARK HIGH SCHOOL

260 Norfolk St, Newark, NJ 07103

LOCAL GOVERNMENT ENERGY AUDIT PROGRAM

FOR

NEW JERSEY
BOARD OF PUBLIC UTILITIES

April 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
Science Park High School	260 Norfolk St, Newark, NJ 07103	275,743	2006

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)
Science Park High School	481,508	26,321	93,107	7.9

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	95,576	27,293	3.5	0	3.5	Y
2	Install Pool Cover	112,704	19,041	5.9	0	5.9	Y
3	Domestic Hot Water System Improvements	74,217	1,223	60.7	3,150	58.1	Y
4	Walk-In Cooler/Freezer Controls	20,625	1,906	10.8	0	10.8	Y
5	Booster Heater Conversion	16,000	3,209	5.0	2,210	4.3	Y
6	Install Vending Machine Controls	1,961	2,241	0.9	0	0.9	Y
L1**	Lighting Replacements / Upgrades	407,770	37,800	10.8	5,000	10.7	N
L2**	Install Lighting Controls (Occupancy Sensors)	7,020	904	7.8	910	6.8	N
L3	Lighting Replacements with Controls	414,790	38,194	10.9	5,910	10.7	Y
	Total**	**735,873**	**93,107**	**7.9**	**11,270**	**7.8**	
	Total (Recommended)	**735,873**	**93,107**	**7.9**	**11,270**	**7.8**	

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

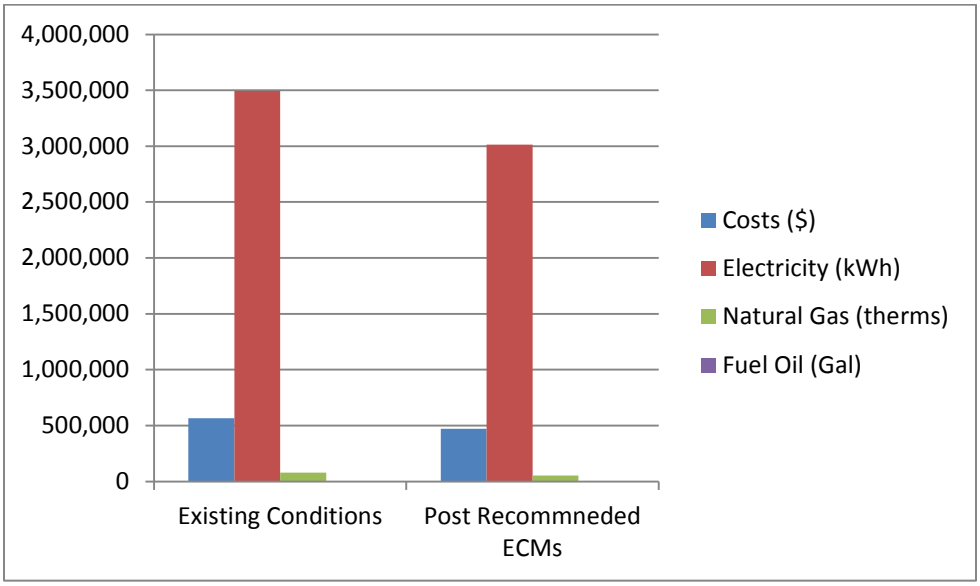
Note: The 'Total' and 'Total (Recommended)' rows in the table above have the same values because there are no alternate ECMs provided in this report. Alternate ECMs are normally listed with 'A' and 'B' options; in other reports for NPS.

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

- Photovoltaic (PV) Rooftop Solar Power Generation – 60 kW System

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

	Existing Conditions	Post Recommended ECMs	Percent Savings
Costs ($)	564,808	471,701	16%
Electricity (kWh)	3,493,842	3,012,334	14%
Natural Gas (therms)	79,010	52,689	33%
Fuel Oil (Gal)	417	417	0%
Site EUI (kbtu/SF/Yr)	72.1	56.6	



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: Science Park High School (Index No. 68)
Address: 260 Norfolk St, Newark NJ
Gross Floor Area: 275,743 Square Feet
Number of Floors: 4 and Basement
Year Built: 2006
Additions: None

Description of Spaces: Classrooms, offices, cafeteria, auditorium, gymnasium, natatorium, stage, a media center (library), storage rooms, toilet rooms and mechanical rooms.
Description of Occupancy: The school serves 787 students from 9th grade to 12th grade. There are 75 school faculty and staff members.
Number of Computers: The school has approximately 125 desktop and laptop computers.
Building Usage: Hours of operation are 7:00 AM – 3:30 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. Windows are in good condition and no ECMs associated with window replacement were evaluated.

Exterior Doors: The majority of exterior doors around the building are FRP. The main entrance and main student entrance to the building are double pane glass storefront type doors with aluminum frames. The doors seals and sweeps are in good condition and do not need to be replaced. There are no ECMs associated with the exterior doors.

Heating Ventilation & Air Conditioning (HVAC) Systems

Heating: The heating in this building differs between the North and South wings. The North wing utilizes water source heat pumps connected to a geothermal loop. There is no separation between the geothermal and heat pump loop. The bore fields for the geothermal system are located under the soccer and softball fields. Condenser water is circulated throughout the system using two (2) 75 HP inverter duty pumps controlled by VFDs. Each classroom has its own heat pump located in the ceiling in the corridor which supplies heating or cooling depending on what the classroom requires. There are seven (7) types of water source heat pumps in the building. The heat pumps receive water from water to water heat pumps located in MER-1 and MER-2. There are 12 identical water to water heat pumps in the school. Facility personnel indicated that only about 10 out of 180 heat pumps (5%) have failed in the school indicating that much of the system is still operating as intended. There are no ECMs associated with the heat pump loop.

The South wing contains larger capacity rooms including the natatorium, gymnasium and auditorium; as well as some smaller volume support rooms and some classrooms. These areas are heated by variable air volume (VAV) air handling units (AHU) which contain heating hot water (HHW) and chilled water (CHW) coils. HHW is generated by four (4) Aerco Benchmark 2.0 condensing hot water (HW) boilers located in the basement mechanical room. HHW is circulated to AHUs by three (3) 20 HP inverter duty pumps controlled by VFDs. The boilers are controlled by an Aerco Boiler Management System which sequences each boiler depending on the load and allows for HW temperature reset depending on the outdoor air temperature. The boilers are high efficiency and all motors have VFDs; there are no ECMs associated with the heating system in the south wing.

Cooling: 100% of the building is cooled. The North wing of the building is cooled by the water source heat pumps. The South wing of the school is cooled by CHW generated by two (2) York rotary chillers with remote air cooled condensers which are located on the roof. The chillers themselves are located in MER-3. Each chiller has a cooling capacity of 116.5 tons and EER of 10.1 (equivalent of 1.2 kW/ton). The CHW is circulated to CHW coils in each AHU by two (2) 15 HP pumps controlled by VFD. There are no ECMs associated with the cooling system.

Ventilation: Ventilation in the North wing is provided by four (4) total Semco energy recovery units (ERU) located in MER-1 and MER-2 (2 in each room) which provide 100% outdoor air (OA) and contain one (1) enthalpy wheel which recovers both sensible and latent heat from the exhaust air to pre-condition the OA. In the South wing ventilation is provided by each AHU. AHU-3-1 supplies 32,050 CFM of OA (91%) to the auditorium and music rooms; AHU-3-2 supplies 10,000 CFM of OA (100%) to the fitness area; AHU-3-3 supplies 12,300 CFM of OA (62%); and AHU-PH-1 supplies 19,200 CFM of OA (100%) to the cafeteria. There are also three (3) heating and ventilation units (HV) which provide heat and ventilation to the basement (two are 5,000 CFM and one is 8,000 CFM). All AHU supply and return fans are controlled by VFDs.

The natatorium is ventilated and dehumidified by a 100% OA PoolPak unit which has a hot gas by-pass loop that preheats the pool water. The final heating for the pool water is achieved using

a plate and frame heat exchanger with the HHW from the boilers. The PoolPak unit also contains HHW and CHW coils to heat and cool the natatorium.

Exhaust: The ERUs in the North wing exhaust 100% of the conditioned air from that wing while bringing in an equivalent amount to keep the building balanced. The toilet rooms and rest of the building including the South wing is exhausted by general exhaust fans. Some classrooms including science rooms, art rooms and fabrication rooms have specialty exhaust and fume-hood exhaust fans. There are also general exhaust fans throughout the building which exhaust corridors and other rooms. The kitchen has an exhaust fan which serves all of the kitchen hoods. The kitchen hood exhaust appeared to be operated by a VFD which would indicate some control system is in place. Therefore no ECMs are associated with the exhaust systems.

Controls Systems

This school's HVAC system is controlled by a Honeywell Triton DDC system with a computer front end located in its own room on the first floor. The system uses flat plate type thermostats located in each room to monitor the instantaneous temperature throughout the building. The controls allow for trending but the custodian on staff noted that the feature has never been used. The temperature setpoint was set to about 72F during the field visit, with scheduling controls which were programmed to setback each night at 10:30 pm to 65F. While reviewing the controls front end onsite, a few limitations were noted, including: incorrect outdoor air temperature, no indication of economizer mode on any AHUs and VFDs operating different than expected or operating in bypass mode. In general, retro-commissioning of the HVAC controls system will address the issues listed above and ensure the controls system continues to operate as intended. An ECM pertaining to retro-commissioning is included in Section 5.

Pool System

Pool water is pre-heated by the hot gas by-pass in the Pool-Pak unit to 80F with final heating done by a shell and tube heat exchanger which transfers heat from the South-wing HW loop. The pool is an estimated 100'x35' with water that is circulated at 80F. There is no pool cover to prevent evaporation while the natatorium is unoccupied. An ECM for installing a pool cover is included in Section 5.

Domestic Hot Water Systems

Domestic hot water (DHW) is generated by two (2) 600 gallon Reco hot water heaters with Power Flame burners. The DHW heaters have an estimated combustion efficiency of 80%. The units provide DHW to toilet rooms throughout the school, mop sinks and kitchen scullery sinks. There are several fractional horsepower recirculation pumps. We have included an ECM evaluating the savings associated with replacing these water heaters with high efficiency natural gas water heaters.

Kitchen Equipment

The kitchen performs cooking for many of the elementary schools apart from the High School. Cooking equipment is natural gas fired and includes: (1) steam kettle, (1) double convection steam oven, (4) double ovens and (1) 8-burner stove. The kitchen also has (2) walk-in coolers and (1) walk-in freezer. Each walk-in is about 8' x 12'. The cooking and reach-in refrigeration equipment appears to be new and therefore no upgrades are being considered; however the

walk-in coolers and freezers could benefit from better temperature controls. An ECM is included in Section 5 which evaluates walk-in unit controls. There is a small 9 kW electric booster heater for a dishwasher located in the corner of the kitchen. An ECM has been included in Section 5 which evaluates replacing the electric booster heater with a natural gas fired unit.

Plumbing Systems

There are several boy's and girl's as well as faculty men's and women's group toilet rooms throughout the school which contain low flow or no- flow (waterless) plumbing fixtures. Lavatory faucets have infrared sensors which turn on and off depending on if an occupant is using the fixture. Electric water coolers are provided in corridors. As the plumbing fixtures are all either low or no flow (waterless), we have not evaluated any water savings ECMs.

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. A vending machine occupancy sensor ECM has been included in Section 5.

Lighting Systems

Lighting in the entire building are 32W T8 fluorescent lamps in a variety of different fixture types. There are also many 2 and 4-pin CFL fixtures in use in some rooms and corridors. The natatorium has 1,500W metal halide type fixtures while the other high bay areas including the gymnasium and auditorium utilize fluorescent lighting systems. All classrooms and office lighting is controlled using occupancy sensors mounted on the ceiling; while corridors are controlled by breakers. 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

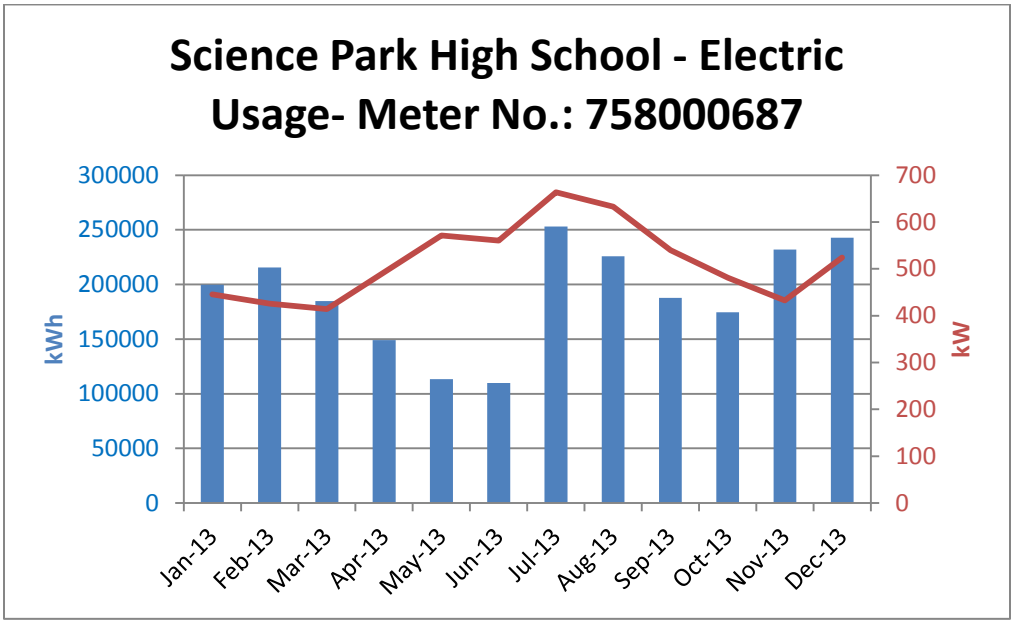
Utilities used by the building are delivered and supplied by the following utility companies:

	Electric	Natural Gas	Fuel Oil
Deliverer	PSEG	PSEG	Varies
Supplier	Nextera Energy Services	PSEG	Varies

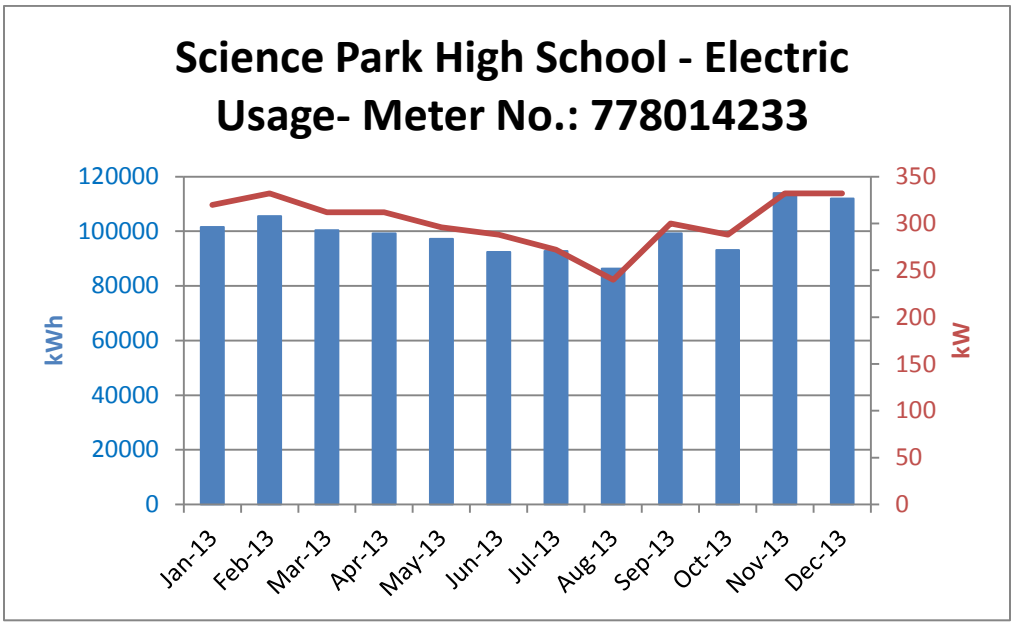
For the 12-month period ending in December 2013, the utilities usages and costs for the building were as follows:

Electric		
Annual Consumption	3,493,842	kWh
Annual Cost	492,509	$
Blended Unit Rate	0.14	$/kWh
Supply Rate	0.13	$/kWh
Demand Rate	4.35	$/kW
Peak Demand	663.5	kW
Natural Gas		
Annual Consumption	79,010	Therms
Annual Cost	70,968	$
Unit Rate	0.90	$/therm
Fuel Oil		
Annual Consumption	417	Gal
Annual Cost	1,331	$
Unit Rate	3.19	$/gal

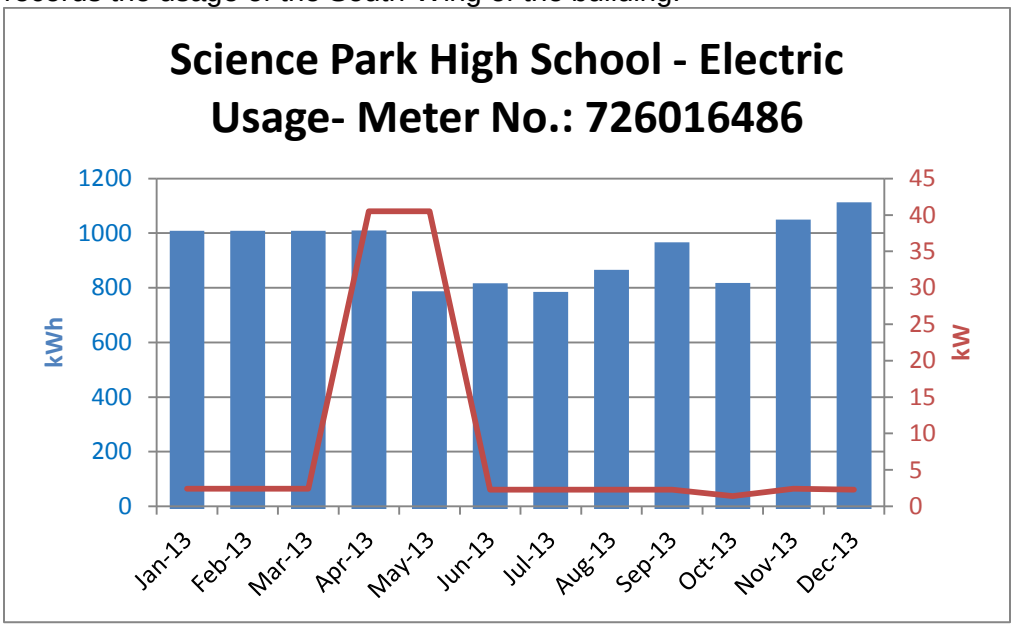
Blended Rate: Average rate charged determined by the annual cost / annual usage
Supply Rate: Actual rate charged for electricity usage in kWh (based on most recent electric bill)
Demand Rate: Rate charged for actual electrical demand in kW (based on most recent electric bill)



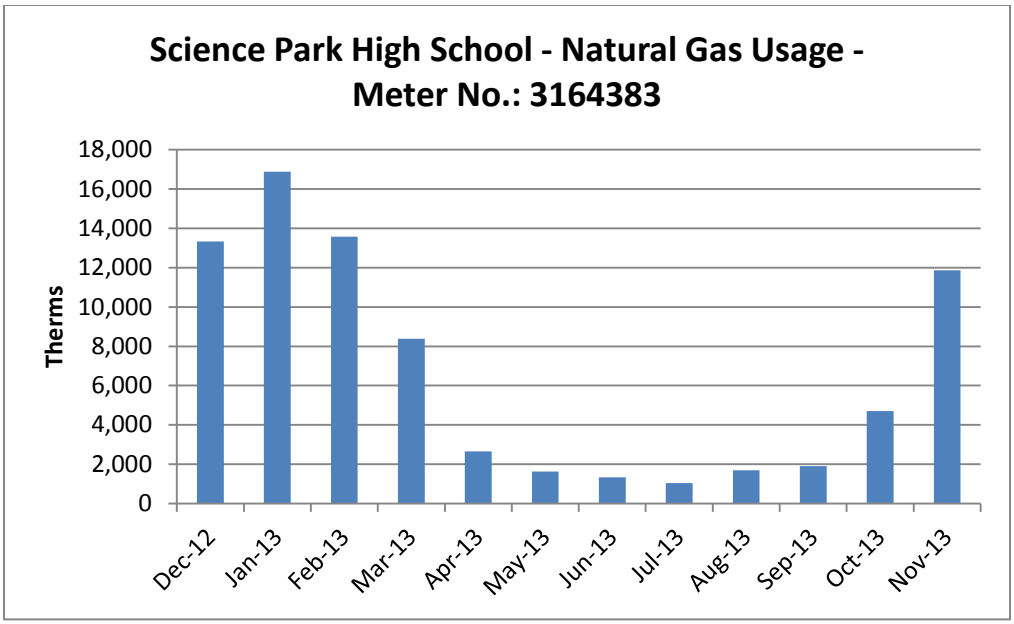
This electric meter for Science Park fluctuates usage from month to month with higher usage in the summer and winter months and lower usage in the shoulder months. It is assumed that this meter is the main meter for the school and handles all of the heating and cooling equipment in the school; specifically the heat pumps, among other things. For this reason it is assumed that this meter records the electric usage in the North-wing of the building.



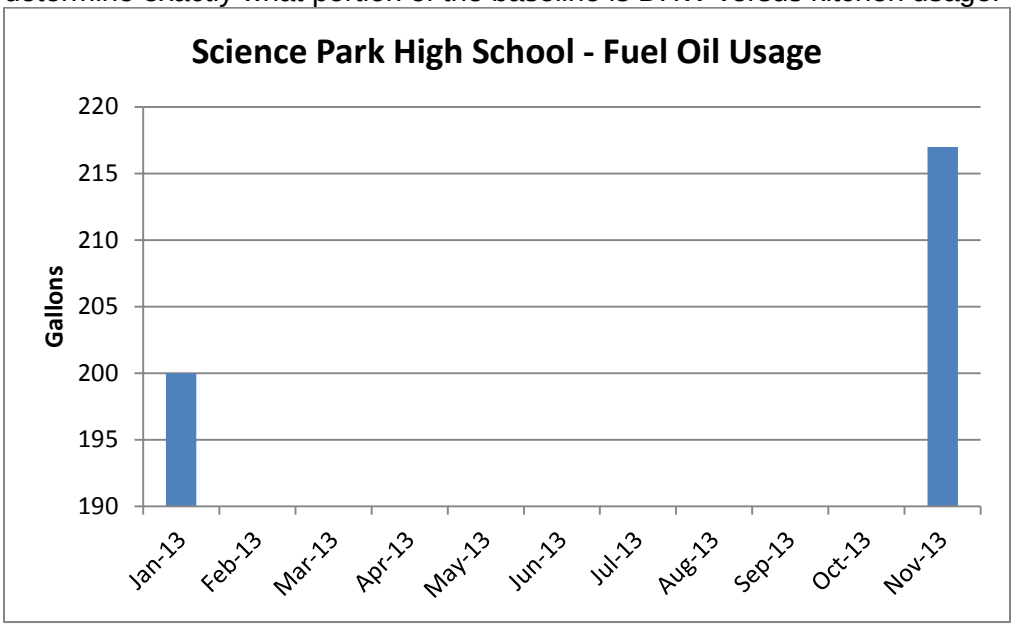
Unlike the previous electric meter, this meter remains fairly constant all year round. This meter records roughly a third of the total electric usage in the school. Based on the load profile of this meter and the previous one, it is assumed that this meter records the usage of the South-Wing of the building.



This electric meter is fairly small and could meter usage for a snack stand or lighting for the sports fields.



This graph displays the natural gas consumption of the building. The profile displayed above is typical that would be expected when the majority of natural gas is used for space heating. The baseline usage in the summer is attributed to domestic hot water production as well as some kitchen use. It is not possible from the utility data alone to determine exactly what portion of the baseline is DHW versus kitchen usage.



Fuel oil was delivered to the school twice in the past year, however no fuel oil consuming equipment was observed while onsite. It is not known what this fuel oil was used for.

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 detailed 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	$0.13	$0.12	Y
Natural Gas	$/Therm	$0.90	$0.95	N
Fuel Oil	$/Gal	$3.19	$3.62	N

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

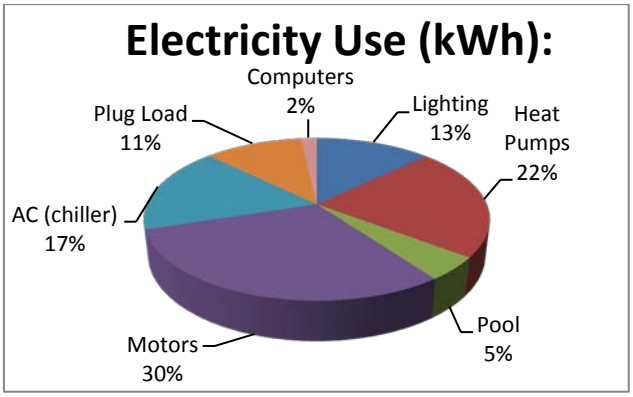
Additional information on selecting a third party energy supplier is available here:

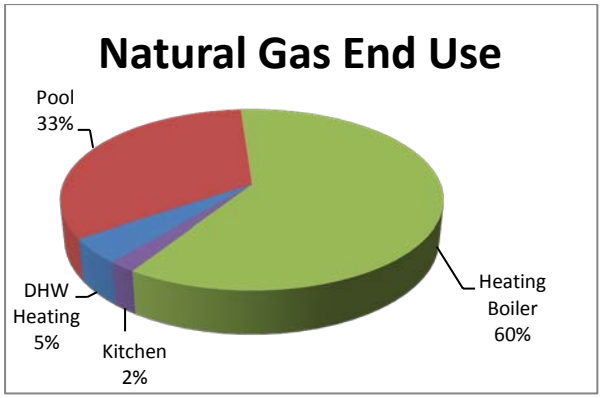
http://www.state.nj.us/bpu/commercial/shopping.html.

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

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

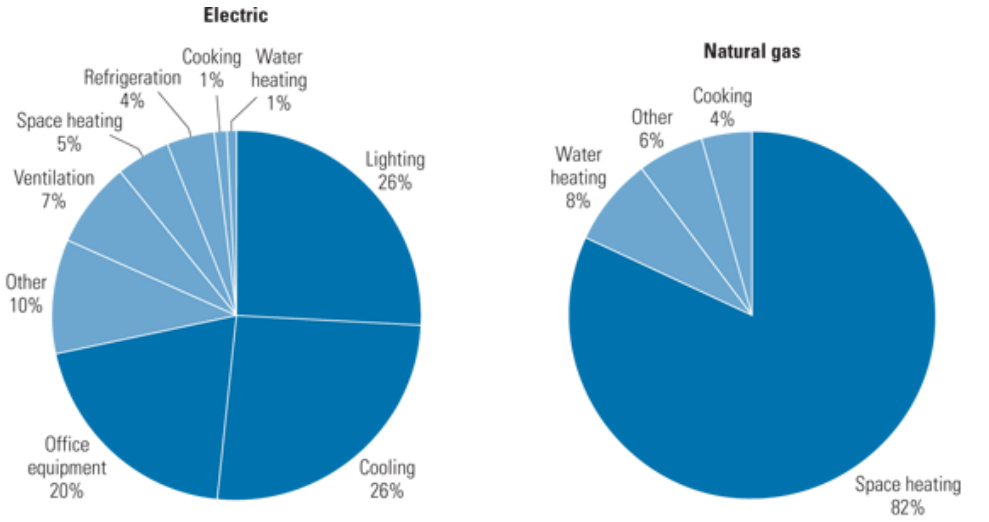
Site End-Use Utility Profile





Most of the electricity consumed by educational facilities is used to for lighting, cooling, heat pumps 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)
72.1*	33**

* 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 a Honeywell Triton 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
95,576	0	150,142	7,136	27,293	3.3	0	3.5	3.5

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

This measure is recommended.

5.2 ECM-2 Install Pool Cover

Swimming pools lose energy in a variety of ways although evaporation is one of largest sources of energy loss. Evaporation occurs because the pool water is heated to a temperature above the temperature of the natatorium and because natatoriums must be highly ventilated to control humidity. Pool covers can help reduce the amount of evaporation when the pools are not in use which will reduce energy consumption of the water heating equipment.

The evaporation reduction would result in water savings, pool water heating energy reductions and ventilation energy usage savings.

Implementation of this measure will require installation of pool cover, reel system and control system.

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

ECM-2 Install Pool Cover

Budgetary Cost	Annual Utility Savings					ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Water	Total				
$	kW	kWh	Therms	kGal	$		$	Years	Years
112,704	0	7,567	19,126	103	19,041	2.4	0	5.9	5.9

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

This measure is recommended.

5.3 ECM-3 Domestic Hot Water System Improvements

The existing domestic hot water heating system consists of two (2) natural gas fired 600 gallon tank type water heater which have thermal efficiencies of 80%. The amount of stored water is oversized for this type of school which only uses hot water at hand sinks and for showers after swimming in the pool.

Implementation of this ECM will entail replacing the existing DHW heater with a high efficiency condensing water heaters. The tank size of the existing system will be reduced to which will result in a combined savings from reducing the storage losses as well as reducing the overall fuel consumption. The proposed DHW heaters include four (4) high efficiency condensing heaters with 150 gallon capacity each.

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

ECM-3 Domestic Hot Water System Improvements

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total				
$	kW	kWh	Therms	$		$	Years	Years
74,217	0	0	1,359	1,223	(0.8)	3,150	60.7	58.1

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

This measure is recommended.

5.4 ECM-4 Install Walk-in Cooler / Freezer Controls

Presently there are two (2) walk-in coolers and one (1) walk-in freezer which are each approximately 8'x12'.

Installing a walk-in cooler/ freezer control system was assessed. The system will monitor both dry and wet bulb temperature within the walk-in unit and allow evaporators and compressors to modulate up and down based on enthalpy set points rather than by dry bulb temperature alone. Savings is a result of reduced run time of evaporator fans, compressors and door heaters.

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

ECM-4 Install Walk-in Cooler / Freezer Controls

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total				
$	kW	kWh	Therms	$		$	Years	Years
20,625	0	13,713	0	1,906	0.4	0	10.8	10.8

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

This measure is recommended.

5.5 ECM-5 Booster Heater Conversion

The school's kitchen uses an electric dishwasher booster heater to increase the temperature of the incoming hot water from 140 degrees to 180 degrees. The building typically uses these heaters for 1,000 per year. Natural gas is available in the kitchen and could be used instead of electricity as a means of boosting DHW temperature. Implementation would require a new DHW booster heater and venting. Energy cost savings would be achieved through the lower cost of natural gas versus the higher cost of electricity.

The calculation uses estimated electrical consumption and cost for the unit as the baseline, which was converted to natural gas 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-5 Booster Heater Conversion

Budgetary Cost	Annual Utility Savings				ROI	Potential Incentive*	Payback (without incentive)	Payback (with incentive)
	Electricity		Natural Gas	Total				
$	kW	kWh	Therms	$		$	Years	Years
16,000	9.0	30,481	(1,300)	3,209	2.3	2,210	5.0	4.3

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

This measure is recommended.

5.6 ECM-6 Install Vending Misers

The building presently has four (4) cold beverage and three (3) 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-6 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
1,961	0	16,122	0	2,241	16.1	0	0.9	0.9

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

This measure is recommended.

5.7.1 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. There are also some 1,500W MH fixtures in the natatorium. 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
407,770	85.6	260,407	0	37,800	0.5	5,000	10.8	10.7

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

This measure is not recommended in lieu of ECM L3.

5.7.2 ECM-L2 Install Lighting Controls (Occupancy Sensors)

Presently, most interior lighting fixtures are controlled by occupancy sensors. Review of the comprehensive lighting survey determined that lighting in some additional 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 5.7.1, 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
7,020	0	7,061	0	904	1.1	910	7.8	6.8

* 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.

5.7.3 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
414,790	85.6	263,483	0	38,194	0.5	5,910	10.9	10.7

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

This measure is recommended.

5.8 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.

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

Refer to Appendix D for more information on this program.

6.1.3 New Jersey Pay For Performance Program (P4P)

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

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

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

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

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

Electric

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

Gas

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

Incentive cap: 25% of total project cost

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

Electric

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

Gas

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

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

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

6.1.4 Energy Savings Improvement Plan

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

ESIP allows local units to use "energy savings obligations" (ESO) to pay for the capital costs of energy improvements to their facilities. ESIP loans have a maximum loan term of 15 year. ESOs are not considered "new general obligation debt" of a local unit and do not count against debt limits or require voter approval. They may be issued as refunding

bonds or leases. Savings generated from the installation of energy conservation measures pay the principal of and interest on the bonds; for that reason, the debt service created by the ESOs is not paid from the debt service fund, but is paid from the general fund.

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

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

6.1.5 Renewable Energy Incentive Program

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

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

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

7.0 ALTERNATIVE ENERGY SCREENING EVALUATION

7.1 Solar

7.1.1 Photovoltaic Rooftop Solar Power Generation

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

Available Roof Area (Ft^2)	Potential PV Array Size (kW)
7,737	60

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 – 60 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
240,000	60.0	74,938	0	10,491	11,615	22.9	10.9	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.

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

Solar Thermal Hot Water Generation

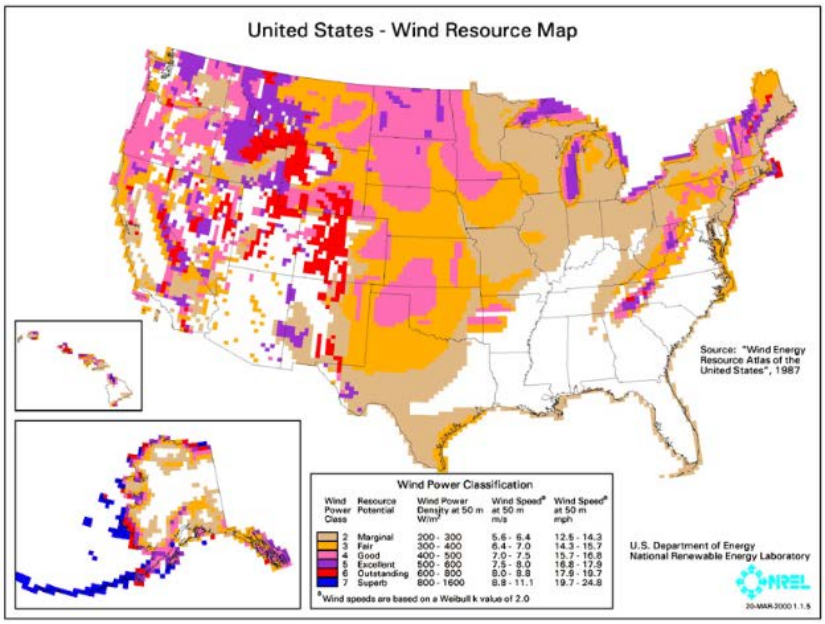
Budgetary Cost	Annual Utility Savings			Total Savings	Incentives*	Payback (without incentives)	Payback (with incentives)	Recommended
	Electricity		Natural Gas					
$	kW	kWh	Therms	$	$	Years	Years	Y/N
236,600	0	0	11,477	10,329	0	22.9	22.9	N

*Presently, there are no incentives available for the installation of solar hot water systems.

Note: This measure competes directly with the PV solar analysis because it uses the same available roof space to install solar flat plate collectors. This ECM is not recommended due to the long payback and because PV solar is recommended for further study.

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.

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
664	414	515	Y	Y

This measure is not recommended because the building does not have enough onsite generation to cover the required demand load reduction from curtailment.

8.0 CONCLUSIONS & RECOMMENDATIONS

The LGEA energy audit conducted by CHA for the building identified potential annual savings of $93,107/yr with an overall payback of 7.9 years, if the recommended ECMs are implemented.

The potential annual energy and cost savings (payback includes potential incentive) are shown in the following table.

Electric Savings (kWh)	Natural Gas Savings (therms)	Water Savings (kGal)	Total Savings ($)	Payback (years)
481,508	26,321	103	93,107	7.9

The following projects should be considered for implementation:

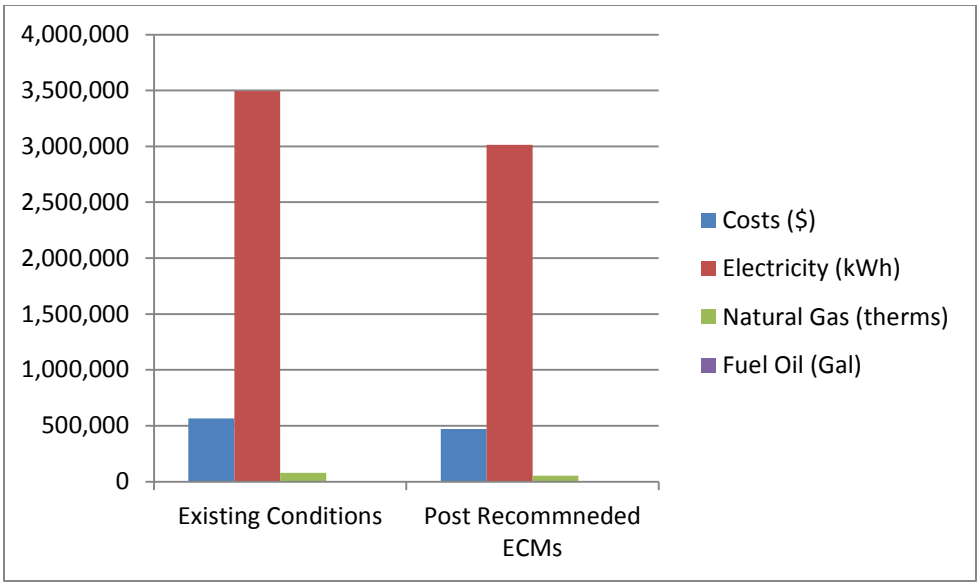
- Controls Upgrade/Retro-Commissioning
- Install Pool Cover
- Domestic Hot Water System Improvements
- Walk-In Cooler/Freezer Controls
- Booster Heater Conversion
- Lighting Replacements with Controls (Occupancy Sensors)

The following alternative energy measures are recommended for further study:

- Photovoltaic (PV) Rooftop Solar Power Generation – 60 kW System

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

	Existing Conditions	Post Recommended ECMs	Percent Savings
Costs ($)	564,808	471,701	16%
Electricity (kWh)	3,493,842	3,012,334	14%
Natural Gas (therms)	79,010	52,689	33%
Fuel Oil (Gal)	417	417	0%
Site EUI (kbtu/SF/Yr)	72.1	56.6	



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

Newark Public Schools LGEA
CHA Project# 27999

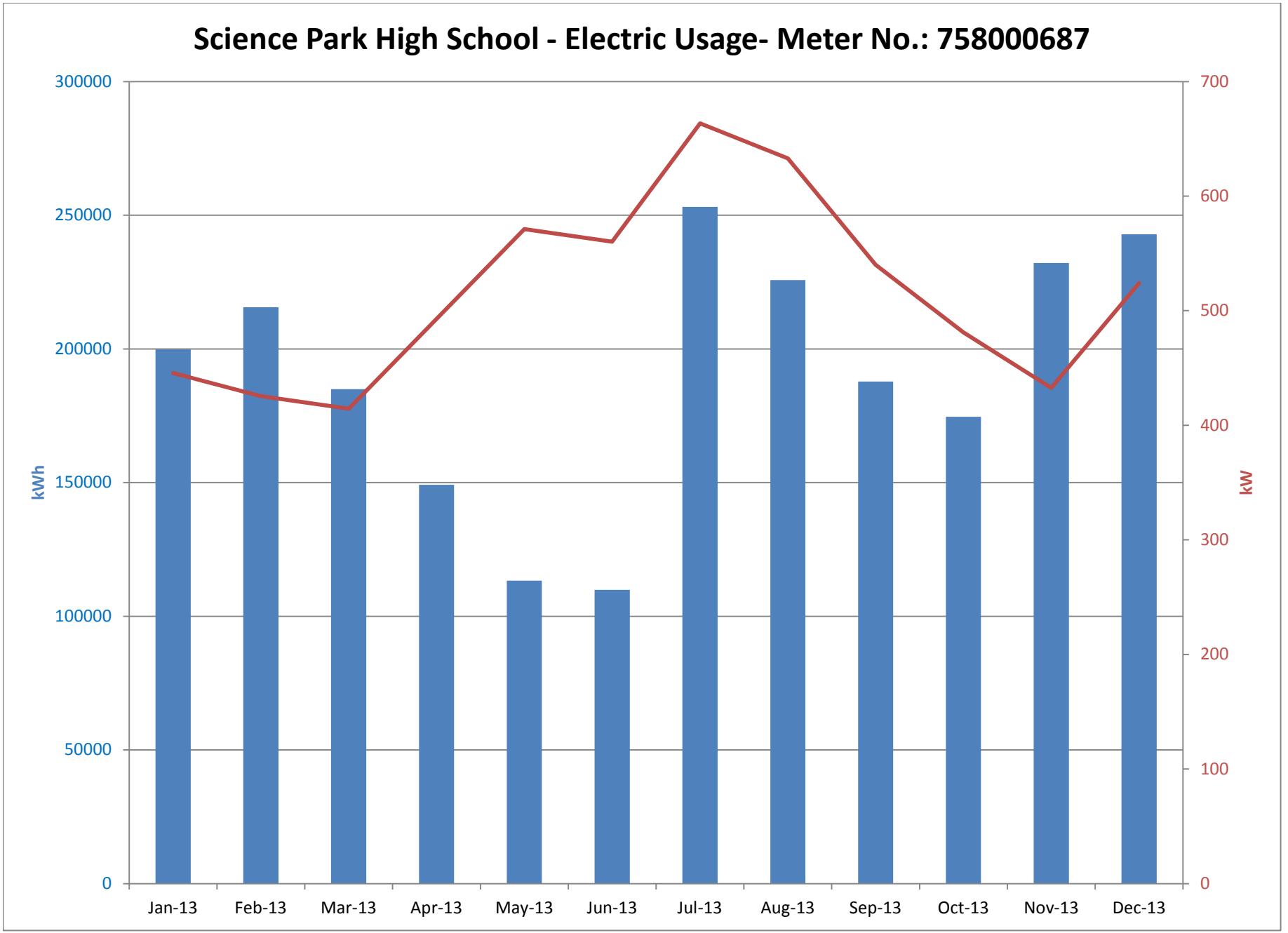
Science Park High School - Electric Usage-(1)

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)
1/19/2012	2/14/2012	201135	538.6	33,995.00	0	4,480.52	1,877.89	32117.11	$ 0.17	$ 0.16	$ 3.49
2/15/2012	3/15/2012	188409	487.4	31,845.00	0	4,270.68	1,699.37	30145.63	$ 0.17	$ 0.16	$ 3.49
3/16/2012	4/16/2012	183302	546.8	30,975.00	0	3,956.22	1,906.47	29068.53	$ 0.17	$ 0.16	$ 3.49
4/17/2012	5/15/2012	165542	500	27,975.00	0	3,592.39	1,743.30	26231.7	$ 0.17	$ 0.16	$ 3.49
5/16/2012	6/14/2012	212024	702	35,689.08	23,017.15	10,224.34	2,447.59	33241.49	$ 0.17	$ 0.16	$ 3.49
6/15/2012	7/16/2012	270916	690.5	41,363.91	26,809.97	12,146.44	2,407.50	38956.41	$ 0.15	$ 0.14	$ 3.49
7/17/2012	8/14/2012	255775	565.2	39,504.26	25,692.41	11,841.22	1,970.63	37533.63	$ 0.15	$ 0.15	$ 3.49
8/15/2012	9/13/2012	249302	570.2	38,498.70	24,819.14	11,691.50	1,988.06	36510.64	$ 0.15	$ 0.15	$ 3.49
9/14/2012	11/12/2012	315418	481.3	47,836.08	35,980.15	8,827.12	3,028.81	44807.27	$ 0.15	$ 0.14	$ 6.29
11/13/2012	12/13/2012	149416	375.5	22,891.61	17,362.84	4,219.55	1,309.22	21582.39	$ 0.15	$ 0.14	$ 3.49
12/14/2012	1/15/2013	152308	347.8	22,871.29	17,252.59	4,396.92	1,221.78	21649.51	$ 0.15	$ 0.14	$ 3.51
1/16/2013	2/13/2013	199765	445.7	27,574.02	20,444.97	5,549.31	1,579.74	25994.28	$ 0.14	$ 0.13	$ 3.54
2/14/2013	3/15/2013	215603	425.5	29,198.57	21,857.07	5,833.36	1,508.14	27690.43	$ 0.14	$ 0.13	$ 3.54
3/16/2013	4/16/2013	184938	414.4	26,399.90	19,945.31	4,985.79	1,468.80	24931.1	$ 0.14	$ 0.13	$ 3.54
4/17/2013	5/15/2013	149132	492.85	21,366.97	16,123.54	3,969.05	1,274.38	20092.59	$ 0.14	$ 0.13	$ 2.72
5/16/2013	5/31/2013	113325	571.3	16,334.03	12,301.76	2,952.31	1,079.96	15254.07	$ 0.14	$ 0.13	$ 1.89
6/14/2013	6/14/2013	109852	560.2	16,484.60	10,223.06	5,334.94	926.6	15558	$ 0.15	$ 0.14	$ 1.65
7/13/2013	7/14/2013	253112	663.5	39,480.34	21,695.12	7,132.23	7,652.99	31827.35	$ 0.16	$ 0.13	$ 11.53
8/15/2013	9/13/2013	225732	632.9	34,274.01	20,383.60	11,647.15	2,243.26	32030.75	$ 0.15	$ 0.14	$ 3.54
9/14/2013	10/14/2013	187770	540	24,170.83	16,955.63	5,301.22	1,913.98	22256.85	$ 0.13	$ 0.12	$ 3.54
10/15/2013	11/12/2013	174627	481	22,470.68	15,768.84	4,996.98	1,704.86	20765.82	$ 0.13	$ 0.12	$ 3.54
11/13/2013	12/13/2013	232102	432.7	29,308.33	20,958.79	6,815.88	1,533.66	27774.67	$ 0.13	$ 0.12	$ 3.54
12/14/2013	1/14/2014	242879	524.2	30,627.08	21,931.96	6,837.15	1,857.97	28769.11	$ 0.13	$ 0.12	$ 3.54

Science Park High School	Start Date	End Date	Months
260 Norfolk St, 07103	1/19/2012	1/14/2014	23
Account Number 2147483647			
Meter Number 758000687			

ELECTRIC USAGE - MOST RECENT 12 MONTHS, PERIOD ENDING: 1/14/2014

Total Usage	2,288,837	**kwh**	3,493,842
Total Charges	$317,689		
Blended Rate	$0.139	**$/kWh**	
Consumption Ra	$0.128	**$/kWh**	
Demand Rate	$4.33	**$/kW**	
Max Demand	663.5	**kW**	
Min Demand	414.4	**kW**	
Avg Demand	515	**kW**	


Science Park High School - Electric Usage- Meter No.: 758000687
300000
250000
200000
150000
100000
50000
0
kWh
700
600
500
400
300
200
100
0
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

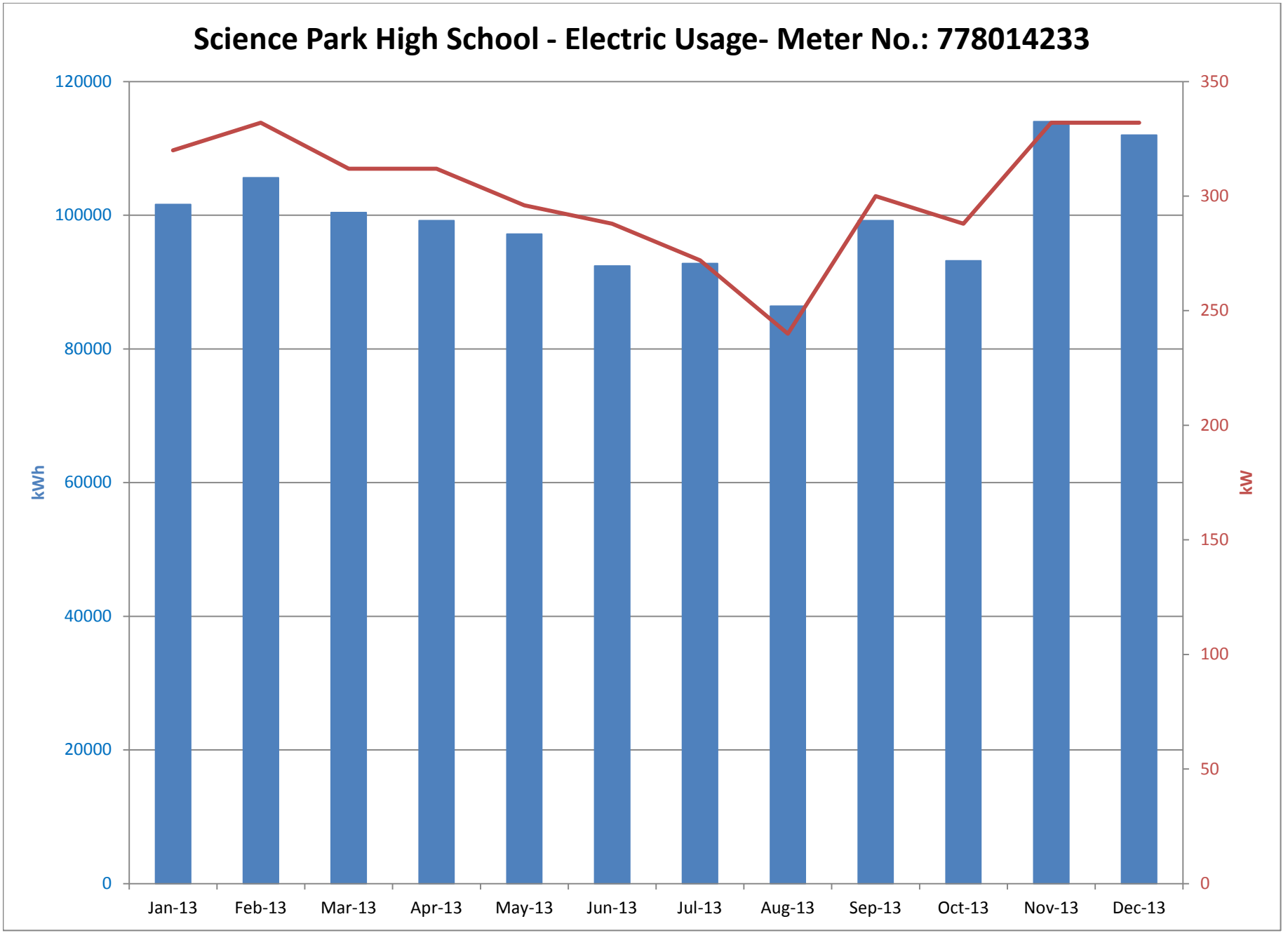
Science Park High School - Electric Usage-(2)

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)
1/17/2012	2/14/2012	105600	304	17,845.00	0	2,473.92	1,059.93	16785.07	$ 0.17	$ 0.16	$ 3.49
2/15/2012	3/15/2012	108000	288	18,250.00	0	2,587.39	1,004.14	17245.86	$ 0.17	$ 0.16	$ 3.49
3/16/2012	4/16/2012	105200	324	17,775.00	0	2,405.09	1,129.66	16645.34	$ 0.17	$ 0.16	$ 3.49
4/17/2012	5/15/2012	108400	336	18,315.00	0	2,460.38	1,171.50	17143.5	$ 0.17	$ 0.16	$ 3.49
5/16/2012	6/14/2012	103600	324	16,998.67	10,778.28	5,090.74	1,129.65	15869.02	$ 0.16	$ 0.15	$ 3.49
6/15/2012	7/16/2012	87200	292	14,790.24	9,224.07	4,548.08	1,018.09	13772.15	$ 0.17	$ 0.16	$ 3.49
7/17/2012	8/14/2012	84800	168	13,631.19	9,028.54	4,016.90	585.75	13045.44	$ 0.16	$ 0.15	$ 3.49
8/15/2012	9/13/2012	88800	248	14,865.77	9,281.25	4,719.84	864.68	14001.09	$ 0.17	$ 0.16	$ 3.49
9/14/2012	11/12/2012	185600	288	26,545.04	19,173.66	5,446.78	1,924.60	24620.44	$ 0.14	$ 0.13	$ 6.68
11/13/2012	12/13/2012	104800	296	14,523.94	10,464.46	3,027.45	1,032.03	13491.91	$ 0.14	$ 0.13	$ 3.49
12/14/2012	1/15/2013	111200	320	14,969.43	10,626.53	3,218.78	1,124.12	13845.31	$ 0.13	$ 0.12	$ 3.51
1/16/2013	2/13/2013	101600	320	14,241.51	10,222.80	2,884.50	1,134.21	13107.3	$ 0.14	$ 0.13	$ 3.54
2/14/2013	3/15/2013	105600	332	14,777.96	10,731.01	2,870.21	1,176.74	13601.22	$ 0.14	$ 0.13	$ 3.54
3/16/2013	4/16/2013	100400	312	14,146.40	10,287.98	2,752.57	1,105.85	13040.55	$ 0.14	$ 0.13	$ 3.54
4/17/2013	5/15/2013	99200	312	14,315.96	10,491.33	2,718.78	1,105.85	13210.11	$ 0.14	$ 0.13	$ 3.54
5/15/2013	6/14/2013	97200	296	16,600.96	10,277.87	2,778.05	3,545.04	13055.92	$ 0.17	$ 0.13	$ 11.98
6/14/2013	7/16/2013	92400	288	15,698.05	9,501.01	2,747.08	3,449.23	12248.82	$ 0.17	$ 0.13	$ 11.98
7/17/2013	8/14/2013	92800	272	15,312.62	9,272.15	5,076.39	964.08	14348.54	$ 0.17	$ 0.15	$ 3.54
8/15/2013	9/13/2013	86400	240	13,312.13	7,801.92	4,659.55	850.66	12461.47	$ 0.15	$ 0.14	$ 3.54
9/14/2013	10/14/2013	99200	300	12,961.43	8,957.76	2,940.35	1,063.32	11898.11	$ 0.13	$ 0.12	$ 3.54
10/15/2013	11/12/2013	93200	288	12,218.24	8,415.96	2,781.49	1,020.79	11197.45	$ 0.13	$ 0.12	$ 3.54
11/13/2013	12/13/2013	114000	332	14,818.82	10,294.20	3,347.88	1,176.74	13642.08	$ 0.13	$ 0.12	$ 3.54
12/14/2013	1/14/2014	112000	332	14,506.52	10,113.60	3,216.18	1,176.74	13329.78	$ 0.13	$ 0.12	$ 3.54

Science Park High School		Start Date	End Date	Months
260 Norfolk St, 07103		1/17/2012	1/14/2014	23
Account Number	2147483647			
Meter Number	778014233			

ELECTRIC USAGE - MOST RECENT 12 MONTHS, PERIOD ENDING: 1/14/2014

Total Usage	1,194,000	**kwh**
Total Charges	$172,911	
Blended Rate	$0.14	**$/kWh**
Consumption Rate	$0.13	**$/kWh**
Demand Rate	$4.90	**$/kW**
Max Demand	332	**kW**
Min Demand	240	**kW**
Avg Demand	302	**kW**


Science Park High School - Electric Usage- Meter No.: 778014233
120000
100000
80000
60000
40000
20000
0
kWh
350
300
250
200
150
100
50
0
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

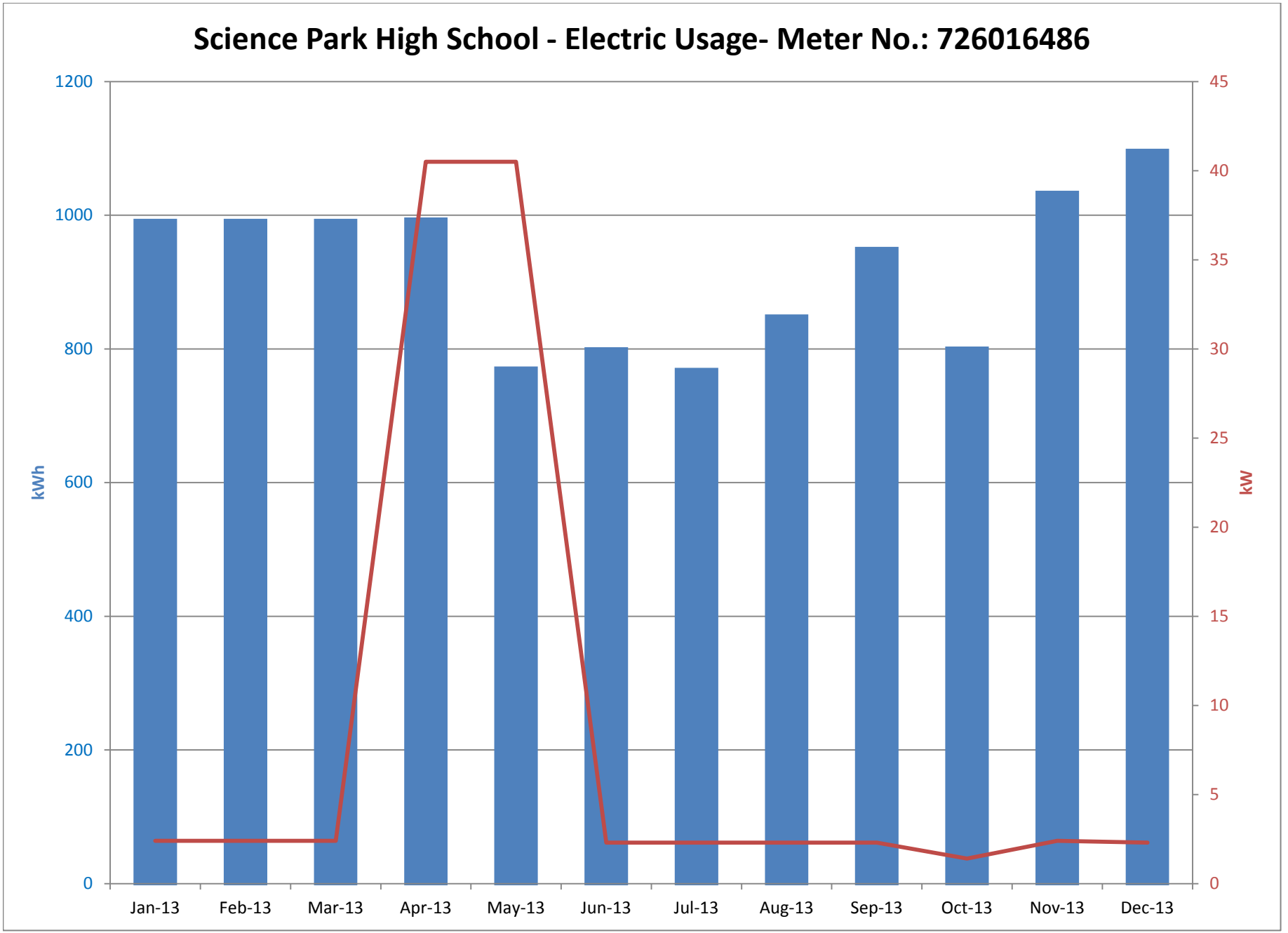
Science Park High School - Electric Usage-(3)

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)
1/18/2012	2/14/2012	542	1.4	117.73	94.07	17.73	5.93	111.8	$ 0.22	$ 0.21	$ 4.24
2/15/2012	3/15/2012	649	4.9	133.58	101.74	11.08	20.76	112.82	$ 0.21	$ 0.17	$ 4.24
3/16/2012	4/17/2012	764	32.8	276.17	108.33	28.88	138.96	137.21	$ 0.36	$ 0.18	$ 4.24
4/18/2012	5/16/2012	3950	40.1	545.84	360.42	15.54	169.88	375.96	$ 0.14	$ 0.10	$ 4.24
5/17/2012	6/15/2012	779	2.4	150.47	93.61	46.7	10.16	140.31	$ 0.19	$ 0.18	$ 4.23
6/16/2012	7/16/2012	784	2.4	137.43	79.52	47.74	10.17	127.26	$ 0.18	$ 0.16	$ 4.24
7/17/2012	8/15/2012	807	2.4	140.24	81.39	48.68	10.17	130.07	$ 0.17	$ 0.16	$ 4.24
8/16/2012	9/13/2012	873	2.5	147.2	84.75	51.86	10.59	136.61	$ 0.17	$ 0.16	$ 4.24
9/14/2012	12/13/2012	3026	2.5	402.06	279.34	96.03	26.69	375.37	$ 0.13	$ 0.12	$ 10.68
12/14/2012	1/15/2013	1216	2.3	155.6	107.25	38.56	9.79	145.81	$ 0.13	$ 0.12	$ 4.26
1/16/2013	2/16/2013	989	2.4	132.53	93.35	30.33	8.85	123.68	$ 0.13	$ 0.13	$ 3.69
2/17/2013	3/13/2013	989	2.4	132.53	93.35	30.33	8.85	123.68	$ 0.13	$ 0.13	$ 3.69
3/14/2013	4/15/2013	989	2.4	44.18	31.12	10.11	2.95	41.23	$ 0.04	$ 0.04	$ 1.23
4/16/2013	5/15/2013	991	40.5	189.12	96.4	-80.64	173.36	15.76	$ 0.19	$ 0.02	$ 4.28
5/16/2013	6/14/2013	768	40.5	492.82	79.78	-82.05	495.09	-2.27	$ 0.64	$ (0.00)	$ 12.22
6/14/2013	7/16/2013	797	2.3	138.52	80.43	29.97	28.12	110.4	$ 0.17	$ 0.14	$ 12.23
7/17/2013	8/14/2013	766	2.3	133.25	76.41	46.99	9.85	123.4	$ 0.17	$ 0.16	$ 4.28
8/15/2013	9/13/2013	846	2.3	136.47	76.39	50.23	9.85	126.62	$ 0.16	$ 0.15	$ 4.28
9/14/2013	10/14/2013	947	2.3	125.27	85.51	29.91	9.85	115.42	$ 0.13	$ 0.12	$ 4.28
10/15/2013	11/12/2013	798	1.4	105.53	72.06	27.48	5.99	99.54	$ 0.13	$ 0.12	$ 4.28
11/13/2013	12/13/2013	1031	2.4	135.92	93.1	32.55	10.27	125.65	$ 0.13	$ 0.12	$ 4.28
12/14/2013	1/14/2014	1094	2.3	142.77	98.79	34.13	9.85	132.92	$ 0.13	$ 0.12	$ 4.28

Science Park High School	Start Date	End Date	Months
260 Norfolk St, 07103	1/18/2012	1/14/2014	23
Account Number 2147483647			
Meter Number 726016486			

ELECTRIC USAGE - MOST RECENT 12 MONTHS, PERIOD ENDING: 1/14/2014

Total Usage	11,005	**kwh**
Total Charges	$1,909	
Blended Rate	$0.17	**$/kWh**
Consumption Rat	$0.10	**$/kWh**
Demand Rate	$7.47	**$/kW**
Max Demand	40.5	**kW**
Min Demand	1.4	**kW**
Avg Demand	8.6	**kW**


Science Park High School - Electric Usage- Meter No.: 726016486
kWh
kW
1200
1000
800
600
400
200
0
45
40
35
30
25
20
15
10
5
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

Newark Public Schools LGEA
CHA Project# 27999

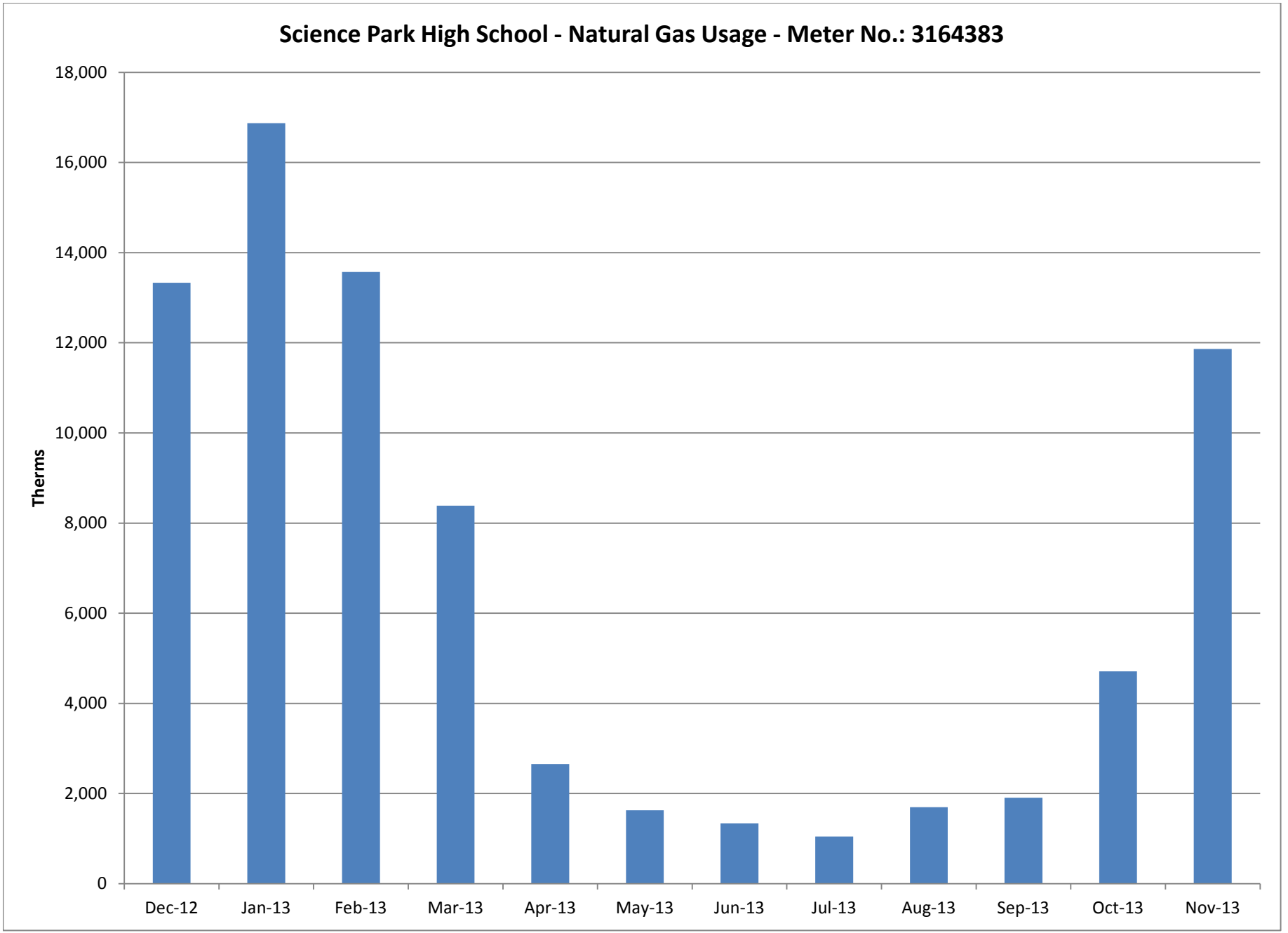
Science Park High School - Natural Gas Usage

Index No	Current Name	Acct	Meter	Start Date	End Date	Therms	Total Charge	$/therm
68	Science Park High School	4200272709	3164383	1/19/2012	2/15/2012	9,591.97	8,412.51	0.88
68	Science Park High School	4200272709	3164383	2/16/2012	3/15/2012	7,888.04	6,675.22	0.85
68	Science Park High School	4200272709	3164383	3/16/2012	4/18/2012	5,187.68	3,153.93	0.61
68	Science Park High School	4200272709	3164383	4/19/2012	5/17/2012	3,378.14	2,028.81	0.60
68	Science Park High School	4200272709	3164383	5/18/2012	6/15/2012	2,256.67	1,437.99	0.64
68	Science Park High School	4200272709	3164383	6/16/2012	7/16/2012	2,170.14	1,477.88	0.68
68	Science Park High School	4200272709	3164383	7/17/2012	8/15/2012	1,939.25	1,397.73	0.72
68	Science Park High School	4200272709	3164383	8/16/2012	9/14/2012	2,086.41	1,479.02	0.71
68	Science Park High School	4200272709	3164383	9/15/2012	12/13/2012	15,858.09	14,903.90	0.94
68	Science Park High School	4200272709	3164383	12/14/2012	1/17/2013	13,333.89	12,284.97	0.92
68	Science Park High School	4200272709	3164383	1/18/2013	2/14/2013	16,876.30	15,073.60	0.89
68	Science Park High School	4200272709	3164383	2/15/2013	3/15/2013	13,572.02	12,722.01	0.94
68	Science Park High School	4200272709	3164383	3/16/2013	4/17/2013	8,385.38	6,127.42	0.73
68	Science Park High School	4200272709	3164383	4/18/2013	5/15/2013	2,653.73	2,115.54	0.80
68	Science Park High School	4200272709	3164383	5/16/2013	6/14/2013	1,627.84	1,368.06	0.84
69	Science Park High School	4200272709	3164383	6/15/2013	7/16/2013	1,337.13	1,113.72	0.83
68	Science Park High School	4200272709	3164383	7/17/2013	8/14/2013	1,046.42	859.37	0.82
68	Science Park High School	4200272709	3164383	8/14/2013	9/16/2013	1,695.67	1,282.99	0.76
68	Science Park High School	4200272709	3164383	9/17/2013	10/14/2013	1,905.19	1,423.30	0.75
68	Science Park High School	4200272709	3164383	10/15/2013	11/14/2013	4,712.42	5,450.37	1.16
68	Science Park High School	4200272709	3164383	11/15/2013	12/13/2013	11,863.61	11,146.40	0.94

Science Park High School		Start Date	End Date	# Months
Account Number	4200272709	1/19/2012	12/13/2013	22
Meter Number	3164383			

NATURAL GAS USAGE - MOST RECENT 12 MONTHS, PERIOD ENDING: 10/14/2013

Annual Usage	79,010	**Therms**
Annual Cost	$70,968	
Rate	$0.90	**$/Therm**


Science Park High School - Natural Gas Usage - Meter No.: 3164383
Therms
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Dec-12
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13

Newark Public Schools LGEA
CHA Project# 27999

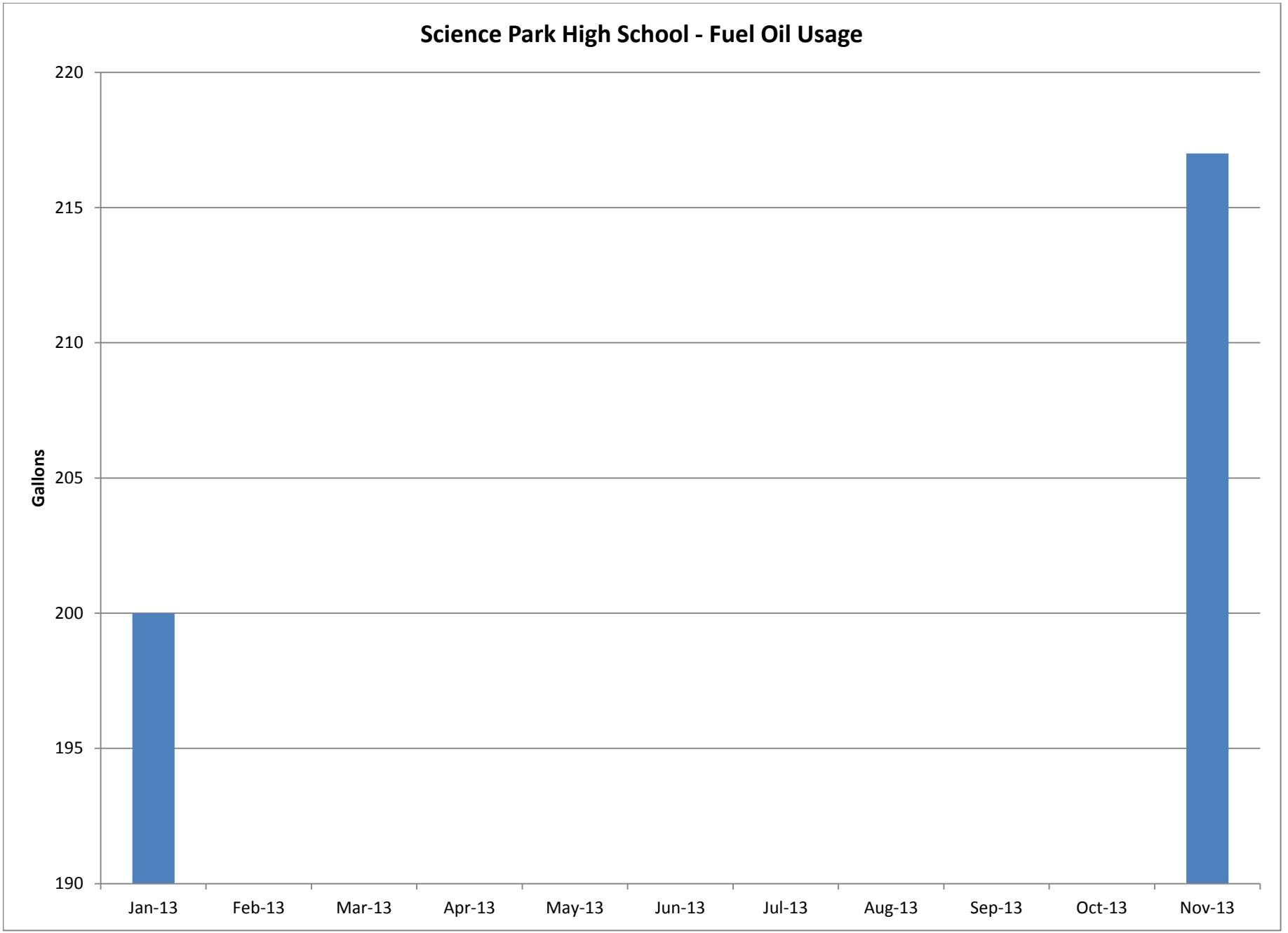
Science Park High School - Fuel Oil Usage

Index No	Current Name	Address NJIT PSS	Ticket Number	Delivery Date	Gallons	Delivery $	$/Gallon
68	Science Park High School	260 Norfolk St, 07103	74796037	1/15/2013	200	675	3.38
68	Science Park High School	260 Norfolk St, 07103	74821135	11/19/2013	217	656	3.02

Science Park High School		Start Date	End Date	# Months
Address	260 Norfolk St, 07103	1/15/2013	11/19/2013	10

FUEL OIL USAGE - MOST RECENT 12 MONTHS, PERIOD ENDING: 11/19/2013

Annual Usage	417	**Gallons**
Annual Cost	$1,331	
Rate	$3.19	**$/Gallon**


Science Park High School - Fuel Oil Usage
Gallons
220
215
210
205
200
195
190
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-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
Science Park High 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)	Other Info.
ERU-PH-1,2,3,4	4	Semco	EPD-28	35115/PJ12760 35115/PJ12759 35115/PJ12761 35115/PJ12762	Energy Recovery Ventilator	20,000 CFM, 78% efficient	MER-1 MER-2	Water-Source Heat Pumps	2006	7	
ACC-PH-1,2	2	York	YCRS014	*Unknown*	Remote Air Cooled Condenser	934.6 Tons	MER-3	CH-1,2	2006	7	
CH-1,2	2	York	YCRS014	RAPM010447 RAPM010448	Rotary Chiller	116.5 Tons, 0.85 kW/Ton	MER-3	Chilled Water System	2006	12	
B-1,2,3,4	1	Aerco	BMK2000	*Unknown*	Condensing HW Boiler, Natural Gas	2,000 MBH	Physical Plant	South-Wing AHUs	2006	17	
P-B-1,2,3	3	B&G	HSC 365TS	*Unknown*	Electric Pump (Water)	75 HP	Physical Plant	Condenser Water	2006	7	VFD Controlled, Premium Efficiency
P-B-4,5,6	3	B&G	1510 256T	*Unknown*	Electric Pump (Water)	20 HP	Physical Plant	Hot Water Heating System	2006	7	VFD Controlled, Premium Efficiency
P-B-9	1	B&G	80 184JM	*Unknown*	Electric Pump (Water)	5 HP	MER-3	Pool Water Heater	2006	7	VFD Controlled, Premium Efficiency
P-B-10	1	B&G	145T	*Unknown*	Electric Pump (Water)	1.5 HP	MER-3	Heat Exchanger Pump	2006	7	VFD Controlled, Premium Efficiency
P-3-5,6	3	B&G	254JT	*Unknown*	Electric Pump (Water)	15 HP	MER-3	Chilled Water System	2006	7	VFD Controlled, Premium Efficiency
P-PH-1,2,3,4,5,6	6	B&G	80 215JM	*Unknown*	Electric Pump (Water)	10 HP	MER-1 MER-2	Water Source Heat Pumps	2006	7	VFD Controlled, Premium Efficiency
WHP-PH-1,2.3,4,5,6,7,8,9,10,11,12	12	FHP	WP420	*Unknown*	Water to Water Heat Pump	Cooling: 323.7 MBH, 12.2 EER / Heating: 332.9 MBH, 3.0 COP	MER-1 MER-2	Water Source Heat Pumps	2006	7	
HP-1	180*	FHP	GT036	*Unknown*	Water Source Heat Pump	Cooling: 34.3 MBH / Heating: 35.2 MBH	Various (in Ceiling)	Various (Classrooms)	2006	7	*180 total water source heat pumps in school, exact quantity of each type not known
HP-2	180*	FHP	GT042	*Unknown*	Water Source Heat Pump	Cooling: 39.9 MBH / Heating: 42.0 MBH	Various (in Ceiling)	Various (Classrooms)	2006	7	*180 total water source heat pumps in school, exact quantity of each type not known
HP-3	180*	FHP	GT048	*Unknown*	Water Source Heat Pump	Cooling: 47.5 MBH / Heating: 50.7 MBH	Various (in Ceiling)	Various (Classrooms)	2006	7	*180 total water source heat pumps in school, exact quantity of each type not known
HP-4	180*	FHP	GT054	*Unknown*	Water Source Heat Pump	Cooling: 50.7 MBH / Heating: 57.0 MBH	Various (in Ceiling)	Various (Classrooms)	2006	7	*180 total water source heat pumps in school, exact quantity of each type not known
HP-5	180*	FHP	GT060	*Unknown*	Water Source Heat Pump	Cooling: 57.5 MBH / Heating: 68.8 MBH	Various (in Ceiling)	Various (Classrooms)	2006	7	*180 total water source heat pumps in school, exact quantity of each type not known
HP-6	180*	FHP	GT070	*Unknown*	Water Source Heat Pump	Cooling: 66.0 MBH / Heating: 71.0 MBH	Various (in Ceiling)	Various (Classrooms)	2006	7	*180 total water source heat pumps in school, exact quantity of each type not known
HP-7	180*	York	RP007	*Unknown*	Water Source Heat Pump	Cooling: 7.8 MBH / Heating: 7.2 MBH	Various (in Ceiling)	Various (Classrooms)	2006	7	*180 total water source heat pumps in school, exact quantity of each type not known
AHU-3-1	1	York	XTI-096X144-JEQL046A	CCPM XT0057	Air Handling Unit	35,000 CFM (100% OA), 40HP	MER-3	Auditorium/Music	2006	12	VFD Controlled
AHU-3-2	1	York	XTI-051X081-JALA046A	CCPM XT0058	Air Handling Unit	10,000 CFM (100% OA), 15HP	MER-3	Fitness Area	2006	12	VFD Controlled
AHU-3-3	1	York	XTI-075X120-JENJ046A	CCPM XT0059	Air Handling Unit	20,000 CFM (100% OA), 25HP	MER-3	Gymnasium	2006	12	VFD Controlled
AHU-3-4	1	PoolPak	SWHP190-30E-B08	PPK050306	Natatorium Dehumidification & Ventilation Unit	17,500 CFM (22% OA), Heating: 471 MBH / Cooling: 590 MBH	MER-3	Natatorium	2006	12	VFD Controlled
AHU-PH-1	1	York	XTI-075X120-NAPA046A	CAPM XT0121	Air Handling Unit	19,200 CFM (100% OA), 30HP	MER-3	Cafeteria	2006	12	VFD Controlled
KX-PH-1	1	*Unknown*	*Unknown*	*Unknown*	Kitchen Exhaust Fan	5,750 CFM, 7.5 HP	Roof	Kitchen Hood	2006	7	VFD Controlled
WIC-1,2	2	*Unknown*	*Unknown*	*Unknown*	Walk-In Cooler	8' x 12'	Kitchen	Kitchen	2006	12	
WIF-1	1	*Unknown*	*Unknown*	*Unknown*	Walk-In Freezer	8' x 12'	Kitchen	Kitchen	2006	12	
DHW-1, 2	2	Reco	R60-1569-FG	T-199966 TK1 T-199966 TK2	Domestic Hot Water Heater	Max: 1,260 MBH, Min: 650 MBH / 600 Gal	Physical Plant	Domestic Hot Water System	2006	7	Power Flame Burner (M#: JR30A-12)

APPENDIX C

ECM Calculations

Newark Board of Education - NJBPU
CHA Project Numer: 27999

Rate of Discount (used for NPV) 3.0%

Utility Costs		Yearly Usage	Metric Ton Carbon Dioxide Equivalent	Building Area	Annual Utility Cost		
					Electric	Natural Gas	Fuel Oil
$ 0.139	$/kWh blended		0.000420205	275,743	$ 492,509	$ 70,968	$ 1,331
$ 0.128	$/kWh supply	3,493,842	0.000420205				
$ 4.35	$/kW	663.5	0				
$ 0.90	$/Therm	79,010	0.00533471				
$ 7.55	$/kgals	10,000	0				
$ 3.19	$/Gal #2	417					

Science Park High 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	150,142	7,136	0	0	27,293	$ 95,576	3.5	15	101.2	$ -	N	3.5	0.0	2,252,132	107,047	0	$ 409,389	3.3	$230,241	27.8%
Y	ECM-2	Install Pool Cover	0.0	7,567	19,126	0	103	19,041	$ 112,704	5.9	20	105.2	$ -	N	5.9	0.0	151,346	382,515	2,055	$ 380,816	2.4	$170,575	16.0%
Y	ECM-3	Domestic Hot Water System Improvements	0.0	0	1,359	0	0	1,223	$ 74,217	60.7	15	7.2	$ 3,150	N	58.1	0.0	0	20,384	0	$ 18,346	(0.8)	($56,466)	-13.5%
Y	ECM-4	Walk-In Cooler/Freezer Controls	0.0	13,713	0	0	0	1,906	$ 20,625	10.8	15	5.8	$ -	N	10.8	0.0	205,694	0	0	$ 28,591	0.4	$2,130	4.4%
Y	ECM-5	Booster Heater Conversion	9	30,481	(1,300)	0	0	3,209	$ 16,000	5.0	15	5.9	$ 2,210	N	4.3	137.2	457,210	(19,500)	0	$ 53,162	2.3	$24,517	22.1%
Y	ECM-6	Install Vending Machine Controls	0.0	16,122	0	0	0	2,241	$ 1,961	0.9	15.0	6.8	$ -	N	0.9	0.0	241,830	0	0	$ 33,614	16.1	$24,792	114.3%
N	ECM-L1	Lighting Replacements / Upgrades	85.6	260,407	0	0	0	37,800	$ 407,770	10.8	15.0	109.4	$ 5,000	N	10.7	1,284.0	3,906,105	0	0	$ 609,973	0.5	$48,489	4.6%
N	ECM-L2	Install Lighting Controls (Add Occupancy Sensors)	0.0	7,061	0	0	0	904	$ 7,020	7.8	15.0	3.0	$ 910	N	6.8	0.0	105,915	0	0	$ 14,722	1.1	$4,680	12.1%
Y	ECM-L3	Lighting Replacements with Controls (Occupany Sensors)	85.6	263,483	0	0	0	38,194	$ 414,790	10.9	15.0	110.7	$ 5,910	N	10.7	1,284.0	3,952,245	0	0	$ 616,387	0.5	$47,079	4.5%
		Total (Does Not Include ECM-L1 & ECM-L2)	**94.7**	**481,508**	**26,321**	**0**	**103**	**$ 93,107**	**$ 735,873**	**7.9**	**15.7**	**343**	**$ 11,270**		**7.8**	**1,421**	**7,260,457**	**490,447**	**2,055**	**$ 1,540,306**	**1.1**	**386896.84**	**9.6%**
		Recommended Measures (highlighted green above)	**94.7**	**481,508**	**26,321**	**0**	**103**	**$ 93,107**	**$ 735,873**	**7.9**	**15.7**	**343**	**$ 11,270**	**0**	**7.8**	**1,421**	**7,260,457**	**490,447**	**2,055**	**$ 1,540,306**	**1.1**	**386896.84**	**9.6%**
		% of Existing	**14%**	**14%**	**33%**	**0**	**1%**																

City: **Newark, NJ**

Occupied Hours/Week			70	70	70	70	50
			Building Operating	Auditorium Occupied	Gymnasium Occupied	Library Occupied	Classrooms Occupied
Temp	Enthalpy h (Btu/lb)	Bin Hours	Hours	Hours	Hours	Hours	Hours
102.5							
97.5	35.4	6	3	3	3	3	2
92.5	37.4	31	13	13	13	13	9
87.5	35.0	131	55	55	55	55	39
82.5	33.0	500	208	208	208	208	149
77.5	31.5	620	258	258	258	258	185
72.5	29.9	664	277	277	277	277	198
67.5	27.2	854	356	356	356	356	254
62.5	24.0	927	386	386	386	386	276
57.5	20.3	600	250	250	250	250	179
52.5	18.2	730	304	304	304	304	217
47.5	16.0	491	205	205	205	205	146
42.5	14.5	656	273	273	273	273	195
37.5	12.5	1,023	426	426	426	426	304
32.5	10.5	734	306	306	306	306	218
27.5	8.7	334	139	139	139	139	99
22.5	7.0	252	105	105	105	105	75
17.5	5.4	125	52	52	52	52	37
12.5	3.7	47	20	20	20	20	14
7.5	2.1	34	14	14	14	14	10
2.5	1.3	1	0	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
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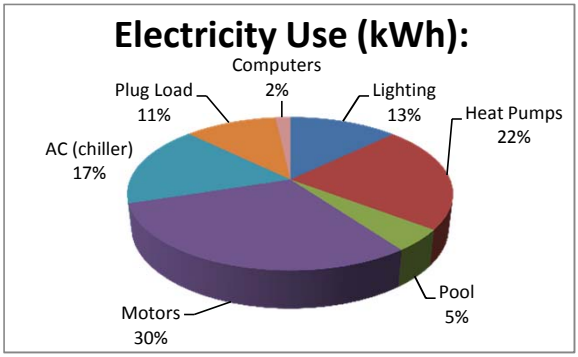
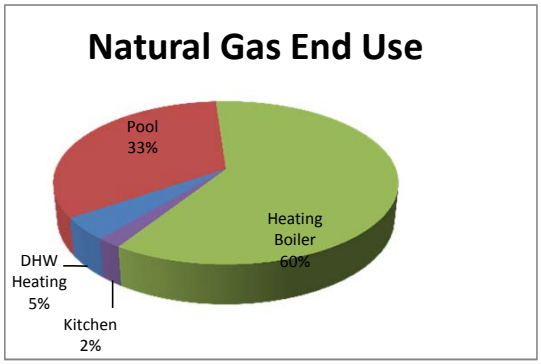
Utility End Use Analysis		
Electricity Use (kWh):		**Notes/Comments:**
3,493,842	Total	Based on utility analysis
453,774	Lighting	From Lighting Calculations
790,388	Heat Pumps	Calculated Based on Design Schedules
163,374	Pool	Calculated Based on Design Schedules
1,061,331	Motors	Estimated
605,753	AC (chiller)	Calculated Based on Design Schedules
386,040	Plug Load	Estimated
	Kitchen	Estimated
62,500	Computers	Estimated
	Other	Remaining
Natural Gas Use (Therms):		**Notes/Comments:**
79,010	Total	Based on utility analysis
3,500	DHW Heating	Therms/SF x Square Feet Served
26,353	Pool	Based on utility analysis
47,577	Heating Boiler	Based on utility analysis
1,580	Kitchen	Based on utility analysis





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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:

275,743 Sq Footage

$0.14 $/kWh Blended
$0.90 $/Therm

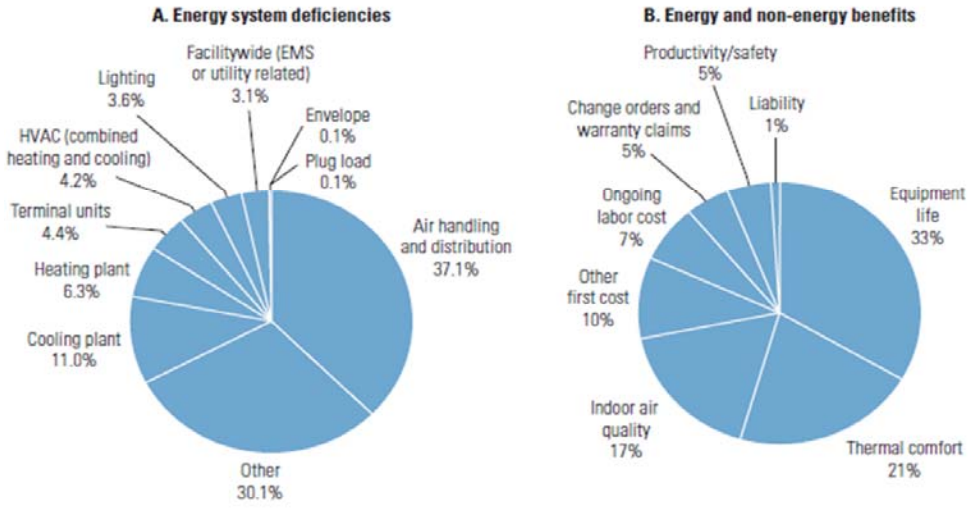
EXISTING CONDITIONS		
Existing Facility Total Electric usage	3,493,842	kWh
Existing Facility Total Gas usage	79,010	Therms
Existing Facility Cooling Electric usage	1,000,947	kWh[1]
Existing Facility Heating Natural Gas usage	47576.65901	Therms[2]
PROPOSED CONDITIONS		
Proposed Facility Cooling Electric Savings	150,142	kWh
Proposed Facility Natural Gas Savings	7136.498851	Therms
SAVINGS		
Retro-Commissioning Electric Savings	150,142	**kWh**
Retro-Commissioning Natural Gas Savings	7,136	**Therms**
Total cost savings	$ 27,292.60	

Assumptions

1 29% of facility total electricity dedicated to Cooling based on Building Utility Analysis
2 60% 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

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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	275743	SF	$ 0.27	INC	INC	$ 76,461	INC	INC	$ 76,461	EPA Estimate
						$ -	$ -	$ -	$ -	

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

$ 76,461	Subtotal
$ 19,115	25% Contingency
$ 95,576	**Total**

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ECM-2: Install a Pool Cover

DESCRIPTION: Install an automatic pool cover to cover the pool when it is not in use. This reduces evaporation, make-up water, heat loss and ventilation costs.

GIVEN:

Heating Energy Cost	=	$ 0.90	$/Therm (Nat'l Gas)
Water Cost	=	$ 7.5500	$/kGal
Blended Electric Rate	=	$ 0.14	/ kWh
Area of Pool Water Surface	=	3,500	square feet
Temperature of Air	=	85	F
Temperature of Water	=	80	F
Make-up water temperature	=	55	F
Elevation of location	=	230	feet
Relative Humidity of air at above temperature	=	50%	
Pa=saturation pressure at air temp Dew Pt.	=	0.51649	" Hg
Pw=saturation vapor pressure at surface temperature	=	1.21440	" Hg
Wi=humidity ratio of pool (design)	=	0.01101	W (Lbw/Lba)
Wo=humidity ratio of outdoor air (design)	=	0.01908	W (Lbw/Lba)
Hours of operation	=	8,760	hours
Unoccupied Hours (Time when pool cover can be used)	=	4,380	hours
Proposed Reduction in Pool Evaporation Hours	=	50%	
Pool Air Heating Efficiency		80%	
Pool DX Cooling Efficiency		1.2	kW / Ton

ASSUMPTION:

Pool Cover R-value			4.0	
Heating Efficiency			80%	
Average Return Air Temperature	50% RH	80 F	31.3	Enthalpy
Activity Factor	(hotel, health clubs=1.3, Schools=1.6, Public=2.0)		1.6	
Temperature of Outside Air - Design Day	=		97	F
Average Relative Humidity of air at above temperature	=		50%	

FORMULA:

Cost of Heating ($/MMBH) = (Cost of Fuel ($/unit)) / ((Heating Efficiency (%)) x (Conversion (btu/unit))
Cost of Water ($/1000 gallons) = (Cost of Water ($/unit)) x (Conversion (unit/1000 gallons))
Evaporation Rate (lb/hr/sf) = (0.05 x (Saturation Air Pressure (Water)(Pw) - Saturation Air Pressure (Air) (Pa)) (Simplified Equation from ASHRAE)
Evaporation of water (lb/hr) = (Evaporation rate) x (Activity Factor) x (Surface Area of pool) (Without cover, With cover assumed to be zero)
Evaporation of water (gallon/year) = (Evaporation (lbs/hr)) x (Hours/Year) / (Water Density (lb/ gallon))
Water Cost ($) = (Evaporation of water(gallon/year)) x (Water Cost ($/1000 gallons))
Pool Heat Loss w/o cover (Btu) = (40) x ((Pool Temperature)-(Air Temperature)^(1/3)) (Simplified equation from ASHRAE Fund Chapter 4) (Used constant of 40 and 20 in leui of 80)
Pool Heat Loss w cover (Btu) = (1 / (R value)) x ((Pool Temperature) - (Air Temperature)))
Pool Heat Load (MMBtu) = (Heat Loss (btu)) x (Hours/Year) / (1,000,000btu/MMBtu)
Pool Heat Costs ($) = Pool Heat Load (MMBH) x (Cost of Heating ($/MMbh))
Outside air quantity required = ((Evaporation rate / ((60min/hr) x (0.075) x (humidity ratio inside(Wi) - humidity ratio outside(Wo))
Ventilation Usage (mbh) =(1.08 x OA Cfm x (Return Air Temperature - Outside Air Temperature) x (Hours in bin) / (1000 btu/MBh)
Ventilation Cost ($) = Ventilation Usage (mbh) x (Cost of Heating ($/MMbh)) x (1000 Mbh/MMbh)

CALCULATION:

Cost of Heating=($ 0.90) / (80%) / (0.1000 MMbh/Therm) = $ 11.25 $/MMBtu
Cost of Water=($ 7.5500 ($/unit)) x (1.0 1000 gallons/1000 gallons) = $ 7.550 $/1000 gallons

POOL EVAPORATION LOSSES

Evaporation Rate (0.05 x (Pw-Pa))= (0.05) x ((1.214401834) - (0.516486353)) =	0.0349	lb/hr/sq ft
Evaporation of water = (0.0349) x (1.6) x (3,500) =	195.42	lb/hr
Evaporation of water w/o cover= (195.4) x (8760) / (8.33 lb/gallon) =	205,504	gallons
Evaporation of water with pool cover = (195.4) x (4380) / (8.33 lb/gallon) =	102,752	gallons
Water Cost w/o Cover = ((205,504) gallons x ($ 7.55) / 1000 gallons =	$ 1,552	
Water Cost w/ Cover = ((102,752) gallons x ($ 7.55) / 1000 gallons =	$ 776	

POOL HEAT LOSSES

Pool Heat Loss w/o cover = (40) x ((85.0) - (80.0)^(1/3)) x (3,500)=	239,397	btu/hr
Pool Heat Load w/ Dectron Condenser Heat Recovery to Pool Water =	-	btu/hr
Hours / Year w/ Dectron Condenser Heat Recovery to Pool Water =	168	hours/yr
Pool Heat Load w/o cover = (239,397) x (8,592) / (1,000,000 btu/MMBtu) =	2,057	MMBtu
Evaporated Water Heat Loss = (205,504) x (8.33 lb/gallon) x (85 - 55))/1E 6 btu/MMBtu =	51	MMBtu
Pool Heat Loss w/ cover = (0.25) x ((85.0) - (80.0)) x (3,500)=	1,496	btu/hr
Pool Heat Load w/ cover = ((239,397) x (4380) + (1,496) x (4,380))/1E 6 btu/MMBtu =	1,055	MMBtu
Evaporated Water Heat Loss = (102,752) x (8.33 lb/gallon) x (85 - 55))/1E 6 btu/MMBtu =	26	MMBtu
Heat Loss Cost w/o Cover (2,057 + 51) MMBtu x ($ 11.250 $/MMBtu) =	$ 23,718	
Heat Loss Cost w/ Cover = (1,055 + 26) MMBtu x ($ 11.250 $/MMBtu) =	$ 12,159	

POOL AREA VENTILATION

Outside air quantity required = (195.42) / (60 x 0.075 › 0.011 - 0.019079374)) =	(5,385)	cfm
Pool supply air humidity ratio =	0.01101	W (Lbw/Lba)
Humidity added to pool air (lb / hr) =	195	lb/hr
Total pool volume =	70,000	Cubic Ft
Total pool volume =	5,072	Lbs of Dry Air
Max Available Ventilation (size of Dectron + RA/OA System)	22,000	CFM
Dectron unit DX Enable Setpoint	80	F
Cooling Discharge Air Temperature Setpoint	55	F

POOL AREA VENTILATION TABLE:

OA BIN DATA					POOL AREA SETPOINTS						HUMIDITY GAINS		REQUIRED VENTILATION / COOLING				VENTILATION HEATING LOADS					DX COOLING LOADS								
OA Temp	OA Enth.	OA Dewpoint	OA Grains / Ft3	Annual Bin Hours	Target Room Temp	Target Room %RH	Target Room Enthalpy	Target Room Dewpoint	Target Room Grains / Ft3	Target Total Grains	Humidity Added (Grains / Hr)	1 AX / Hour Total Grains	Dehumid. Required AX / Hour	Dehumd. Required OA CFM	MAX OA CFM Available	DX Cooling Required?	OA Heating Required?	OA Heating MBH	OA Heat Recovery Effectiveness	Post-Heat Recov OA Heating MBH	Annual Natural Gas Usage (Therms)	DX Cooling Enabled?	Cooling Disch. Air Temp	Cooling Disch. Grains / Ft3	Cooling Disch. Enthalpy	1 AX / Hour Total Grains	Dehumid. Required AX / Hour	Dehumid. Required CFM	Dehumid. Cooling MBH	Dehumid. Cooling kWh
92.5	35.4	66.3	6.81	6	80	50%	32.1	60.6	5.7	399,700	1,367,914	476,700	0.0	0	22,000	Yes	No	0.0	0%	0.0	0	Yes	55.0	4.66	22.84	326,200	18.6	21,713	901	541
87.5	37.4	64.8	6.54	31	80	50%	32.1	60.6	5.7	399,700	1,367,914	457,800	0.0	0	22,000	Yes	No	0.0	0%	0.0	0	Yes	55.0	4.66	22.84	326,200	18.6	21,713	901	2,793
82.5	35.0	66.3	6.26	131	80	50%	32.1	60.6	5.7	399,700	1,367,914	438,200	0.0	0	22,000	Yes	No	0.0	0%	0.0	0	Yes	55.0	4.66	22.84	326,200	18.6	21,713	901	11,801
77.5	33.0	60.9	5.80	500	80	50%	32.1	60.6	5.7	399,700	1,367,914	406,000	0.0	0	22,000	Yes	No	0.0	0%	0.0	0	No	0.0	0.00	0.00	0	0.0	0	0	0
72.5	31.5	60.0	5.68	620	80	50%	32.1	60.6	5.7	399,700	1,367,914	397,600	651.4	759,952	22,000	Yes	No	0.0	0%	0.0	0	No	0.0	0.00	0.00	0	0.0	0	0	0
67.5	29.9	58.9	5.52	664	80	50%	32.1	60.6	5.7	399,700	1,367,914	386,400	102.9	119,992	22,000	Yes	No	0.0	0%	0.0	0	No	0.0	0.00	0.00	0	0.0	0	0	0
62.5	27.2	55.0	4.84	854	80	50%	32.1	60.6	5.7	399,700	1,367,914	338,800	22.5	26,205	22,000	Yes	No	0.0	0%	0.0	0	No	0.0	0.00	0.00	0	0.0	0	0	0
57.5	24.0	48.6	3.85	927	80	50%	32.1	60.6	5.7	399,700	1,367,914	269,500	10.5	12,257	22,000	No	Yes	297.9	40%	178.7	2,071	No	0.0	0.00	0.00	0	0.0	0	0	0
52.5	20.3	42.0	3.03	600	80	50%	32.1	60.6	5.7	399,700	1,367,914	212,100	7.3	8,507	22,000	No	Yes	252.7	40%	151.6	1,137	No	0.0	0.00	0.00	0	0.0	0	0	0
47.5	18.2	39.0	2.72	730	80	50%	32.1	60.6	5.7	399,700	1,367,914	190,400	6.5	7,625	22,000	No	Yes	267.6	40%	160.6	1,465	No	0.0	0.00	0.00	0	0.0	0	0	0
42.5	16.0	32.9	2.16	491	80	50%	32.1	60.6	5.7	399,700	1,367,914	151,200	5.5	6,422	22,000	No	Yes	260.1	40%	156.1	958	No	0.0	0.00	0.00	0	0.0	0	0	0
37.5	14.5	29.6	1.88	656	80	50%	32.1	60.6	5.7	399,700	1,367,914	131,600	5.1	5,953	22,000	No	Yes	273.2	40%	163.9	1,344	No	0.0	0.00	0.00	0	0.0	0	0	0
32.5	12.5	25.8	1.59	1023	80	50%	32.1	60.6	5.7	399,700	1,367,914	111,300	4.7	5,534	22,000	No	Yes	283.9	40%	170.3	2,178	No	0.0	0.00	0.00	0	0.0	0	0	0
27.5	10.5	18.7	1.15	734	80	50%	32.1	60.6	5.7	399,700	1,367,914	80,500	4.3	5,000	22,000	No	Yes	283.5	40%	170.1	1,561	No	0.0	0.00	0.00	0	0.0	0	0	0
22.5	8.7	14.6	0.95	334	80	50%	32.1	60.6	5.7	399,700	1,367,914	66,500	4.1	4,790	22,000	No	Yes	297.4	40%	178.5	745	No	0.0	0.00	0.00	0	0.0	0	0	0
17.5	7.0	9.6	0.75	252	80	50%	32.1	60.6	5.7	399,700	1,367,914	52,500	3.9	4,596	22,000	No	Yes	310.3	40%	186.2	586	No	0.0	0.00	0.00	0	0.0	0	0	0
12.5	5.4	4.9	0.60	125	80	50%	32.1	60.6	5.7	399,700	1,367,914	42,000	3.8	4,462	22,000	No	Yes	325.2	40%	195.1	305	No	0.0	0.00	0.00	0	0.0	0	0	0
7.5	3.7	1.1	0.49	47	80	50%	32.1	60.6	5.7	399,700	1,367,914	34,300	3.7	4,368	22,000	No	Yes	342.0	40%	205.2	121	No	0.0	0.00	0.00	0	0.0	0	0	0
2.5	2.1	-3.6	0.39	34	80	50%	32.1	60.6	5.7	399,700	1,367,914	27,300	3.7	4,285	22,000	No	Yes	358.7	40%	215.2	91	No	0.0	0.00	0.00	0	0.0	0	0	0
-2.5	1.3	-12.0	0.20	1	80	50%	32.1	60.6	5.7	399,700	1,367,914	14,000	3.5	4,138	22,000	No	Yes	368.7	40%	221.2	3	No	0.0	0.00	0.00	0	0.0	0	0	0
-7.5	0.0	-20.0	0.15	0	80	50%	32.1	60.6	5.7	399,700	1,367,914	10,500	3.5	4,100	22,000	No	Yes	387.5	40%	232.5	0	No	0.0	0.00	0.00	0	0.0	0	0	0
																					12,565									15,135

Existing Gas Ventilation Costs = (12,565 Therms) * ($ 0.90 / Therm) = **$ 11,308**

Existing Electric Ventilation Costs = (15,135 kWh) * ($ 0.14 / kWh) = **$ 2,104**

Ventilation savings will be respective of the evaporation savings since the ventilation system brings in outside air in response to evaporation into the air from the pool.

Proposed Gas Ventilation Costs = (6,282 Therms) * ($ 0.90 / Therm) = **$ 5,654**

Proposed Electric Ventilation Costs = (7,567 kWh) * ($ 0.14 / kWh) = **$ 1,052**

RESULT:

Annual Exist. Water Use	**205,504**	**gallons**	**=>**	**$ 1,552**
Annual Exist. Water Heating Use	**26,353**	**Therm**	**=>**	**$ 23,718**
Annual Exist. Ventilation Heating Use	**12,565**	**Therm**	**=>**	**$ 11,308**
Annual Exist. Ventilation Cooling (Dehumidifying) Use	**15,135**	**kWh**	**=>**	**$ 2,104**
TOTAL EXIST COST PER YEAR				**$ 38,682**

Annual Proposed Water Use	**102,752**	**gallons**	**=>**	**$ 776**
Annual Proposed Water Heating Use	**13,510**	**Therm**	**=>**	**$ 12,159**
Annual Proposed Ventilation Heating Use	**6,282**	**Therm**	**=>**	**$ 5,654**
Annual Proposed Ventilation Cooling (Dehumidifying) Use	**7,567**	**kWh**	**=>**	**$ 1,052**
TOTAL PROPOSED COST PER YEAR				**$ 19,641**

TOTAL SAVINGS:

					% of existing
Annual Proposed Water Savings	**102,752**	**gallons**	**=>**	**$ 776**	50%
Annual Proposed Water Heating Savings	**12,843**	**Therm**	**=>**	**$ 11,559**	49%
Annual Proposed Ventilation Heating Savings	**6,282**	**Therm**	**=>**	**$ 5,654**	50%
Annual Proposed Ventilation Cooling (Dehumidifying) Savings	**7,567**	**kWh**	**=>**	**$ 1,052**	50%
TOTAL COST SAVINGS PER YEAR				**$ 19,041**	49%

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ECM-2: Install a Pool Cover - Cost

Multipliers	
Material:	1.10
Labor:	1.35
Equipment:	1.10

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
Pool Cover Cost	1	ls	$9,982.0	$ -	$ -	$ 10,980	$ -	$ -	$ 10,980	Vendor Quote
Pool Cover Reel System Cost	4	ea	$ 14,280	$ -	$ -	$ 62,832	$ -	$ -	$ 62,832	*Vendor Quote*
Installation & Freight	1	ls	$ -	$ 7,060	$ -	$ -	$ 9,531	$ -	$ 9,531	Vendor Quote
Electrical Estimate	1	ls	$ 6,200	$ -	$ -	$ 6,820	$ -	$ -	$ 6,820	Vendor Quote

$ 90,163	Subtotal
$ 22,540.80	25% Contingency
$ 112,704	**Total**

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ECM-3: Replace Gas-Fired DHW Heater w/ High Efficiency Condensing Gas-Fired DHW Heater

Description: This ECM evaluates the energy savings associated with replacing two (2) 600 gal gas fired tank type domestic water boilers with two high efficiency condensing domestic hot water boilers which have a higher recovery rate, providing near instanteous DHW production. The new capacity is estimated to be half the original capacity.

Item	Value	Units	Formula/Comments
Avg. Monthly Utility Demand by Water Heater	**292**	Therms/month	Calculated from utility bill
Total Annual Utility Demand by Water Heater	350,000	MBTU/yr	1therm = 100 MBTU
Existing DHW Heater Efficiency	80%		Per manufacturer nameplate
Total Annual Hot Water Demand (w/ standby losses)	280,000	MBTU/yr	
Existing Tank Size	1,200	Gallons	Per manufacturer nameplate
Hot Water Piping System Capacity	5	Gallons	Estimated Per existing system (includes HWR piping)
Hot Water Temperature	140	˚F	Per building personnel
Room Temperature	72	˚F	
Standby Losses (% by Volume)	2.5%		(2.5% of stored capacity per hour, per U.S. Department of Energy)
Standby Losses (Heat Loss)	17.1	MBH	
Annual Standby Hot Water Load	149,541	MBTU/yr	
New Tank Size	600	Gallons	
Hot Water Piping System Capacity	5	Gallons	Estimated Per existing system (includes HWR piping)
Hot Water Temperature	140	˚F	
Room Temperature	72	˚F	
Standby Losses (% by Volume)	2.5%		(2.5% of stored capacity per hour, per U.S. Department of Energy)
Standby Losses (Heat Loss)	8.6	MBH	
Annual Standby Hot Water Load	75,081	MBTU/yr	
Total Annual Hot Water Demand	205,540	MBTU/yr	
Proposed Avg. Hot water heater efficiency	96%		Based on AO Smith Cyclone
Proposed Fuel Use	2,141	Therns	Standby Losses and inefficient DHW heater eliminated
Utility Cost	$0.90	$/Therm	
Existing Operating Cost of DHW	$3,150	$/yr	
Proposed Operating Cost of DHW	$1,927	$/yr	

Savings Summary:

Utility	Energy Savings	Cost Savings
Therms/yr	1,359	$1,223

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Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.12

ECM-3: Replace Gas-Fired DHW Heater w/ High Efficiency Condensing Gas-Fired DHW Heater Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
Gas-Fired DHW Heater Removal	2	LS		$ 50		$ -	$ 125	$ -	$ 125	RS Means 2012
High Efficiency Gas-Fired DHW Heater (150 Gallon)	4	EA	$ 7,500	$ 5,000		$ 30,810	$ 24,920	$ -	$ 55,730	RS Means 2012
Miscellaneous Electrical	1	LS	$ 300	$ 500		$ 308	$ 623	$ -	$ 931	RS Means 2012
Venting Kit	1	EA	$ 500	$ 1,000		$ 514	$ 1,246	$ -	$ 1,760	RS Means 2012
Miscellaneous Piping and Valves	1	LS	$ 200	$ 500		$ 205	$ 623	$ -	$ 828	RS Means 2012

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

$ 59,374	Subtotal
$ 14,843	25% Contingency
$ 74,217	**Total**

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ECM-4: Walk-in Cooler & Freezer EC Motor Retrofits

ECM Description :
For kitchens that contain walk-in coolers and freezers, CoolTrol is a controller that reduces energy consumption by controlling off of dewpoint temperature. Compressor cycling is reduced and the evaporator fans run 25% to 80% less. Door and frame heaters are also installed and controlled by store dew point temperature; this can reduce run time by up to 95% in coolers and 60% in freezers. The evaporator fan motors are also replaced with hi-efficiency fan motors saving 40% to 70% in energy. The proposed system comprises of an anti-sweat door controller, evaporator fan motor replacement and CoolTrol Cooler Control System.

Utility Cost

$0.14 $/kWh Blended

EXISTING CONDITIONS			
Walk-In Freezer(s)			
Existing Freezer Controls?	N		
Quantity of Walk-In Freezers	1		
Nameplate Amps of Freezer Evaporator Fan	4		AmpsEF
Nameplate Volts of Freezer Evaporator Fan	280		VoltsEF
Phase of Evaporator Fan	1		PhaseEF
Power Factor of Evaporator Fan	0.55		PFEF
Operating Hours	8,760	hrs	
Load Reduction	65%		LR
Electricity Savings (Evaporator Fan)	3,157	kWh	kWhEF
Electricity Savings (Evaporator Fan Reduced Heat)	1,414	kWh	kWhRH
Total Walk-In Freezer(s) Electricity Savings	4,571	kWh	
Walk-In Cooler(s)			
Existing Cooler Controls?	N		
Quantity of Walk-In Coolers	2		
Nameplate Amps of Cooler Evaporator Fan	4		
Nameplate Volts of Cooler Evaporator Fan	280		
Phase of Evaporator Fan	1		
Power Factor of Evaporator Fan	0.55		
Operating Hours	8,760	hrs	
Load Reduction	65%		
Electricity Savings (Evaporator Fan)	6,314	kWh	
Electricity Savings (Evaporator Fan Reduced Heat)	2,828	kWh	
Total Walk-In Cooler(s) Electricity Savings	9,142	kWh	
SAVINGS			
Total Electricity Savings	**13,713**	**kWh**	
Total Cost Savings	**$ 1,906**		
Estimated Cost	$ 20,625		
Simple Payback	10.8	**years**	

Savings calculation formulas are taken from NJ Protocols document for Walk-in Controller

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

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Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.12

ECM-4: Walk-in Cooler & Freezer EC Motor Retrofits - Cost

Description	QTY	UNIT	UNIT COSTS			SUBTOTAL COSTS			TOTAL COST	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.		
									$ -	
Turnkey Walk-In Controller & Equipment	1	EA	$ 10,000	$ 5,000	$ -	$ 10,270	$ 6,230	$ -	$ 16,500	Vendor Estimate
						$ -	$ -	$ -	$ -	

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

$ 16,500	Subtotal
$ 4,125	25% Contingency
$ 20,625	**Total**

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ECM-5: Dishwasher Booster Heater Conversion

Description: This ECM evaluates the energy savings associated with replacing an electrically powered dishwasher booster heater with and equivalently sized natural gas booster heater

Item	Value	Units	Formula/Comments
Baseline Fuel Cost	$ 0.90	/ Therm	
Electricity Cost	$ 0.13	$/kWh	
Demand Cost	$ 4.35	$/kWh	
FORMULA CONSTANTS			
CF	0.3		Coincidence Factor (NJ Protocols)
EFLH	1,000		Equivalent Full Load Hours (NJ Protocols)
PROPOSED EQUIPMENT			
Input Rating	130,000	btu/hr	Estimated
Efficiency	80%		
SAVINGS			
Electricity Savings	30,481	kWh	
Demand Savings	9	kW	
Fuel Usage	1,300	Therms	
Fuel Cost Savings	$ 2,771		

Savings calculation formulas are taken from NJ Protocols document for Booster Heater

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ECM-5: Dishwasher Booster Heater Conversion - 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.		
						$ -	$ -	$ -	$ -	
Natural Gas Fired Booster Heater	1	EA	$ 5,000	$ 2,500		$ 5,135	$ 3,115	$ -	$ 8,250	RS Means 2012
Venting, Piping, Ect.	1	LS	$ 1,500	$ 1,000		$ 1,541	$ 1,246	$ -	$ 2,787	RS Means 2012
Electrical wiring	1	LS	$ 500	$ 1,000		$ 514	$ 1,246	$ -	$ 1,760	Est

$ 12,796	Subtotal
$ 3,199	25% Contingency
$ 16,000	**Total**

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

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ECM-6: 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: $0.139 $/kWh blended

Energy Savings Calculations:

Existing		
Cold Beverage Vending Machine Electric usage	14,016	kWh[1,4,7]
Snack Vending Machine Electric usage	5,256	kWh[2,5,7]
Dual Vending Machine Electric Usage	-	kWh[3,6,7]
Total Vending Machine Electric Usage	19,272	kWh
Proposed		
Cold Beverage Vending Machine Electric usage	2,205	kWh[8]
Snack Vending Machine Electric usage	945	kWh
Dual Vending Machine Electric Usage	0	kWh
Total Vending Machine Electric Usage	3,150	kWh
Vending Machine Controls Usage Savings	**16,122**	**kWh**
Total cost savings	**$ 2,241**	
Estimated Total Project Cost	**$ 1,961**	[9]
Simple Payback	**1**	**years**

Assumptions

1	4	Number of cold beverage vending machines
2	3	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)

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ECM-6: 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	7	EA	$ 200	$ 15	$ -	$ 1,438	$ 131	$ -	$ 1,569	Vendor Estimation
						$ -	$ -	$ -	$ -	

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

$ 1,569	Subtotal
$ 392	25% Contingency
$ 1,961	**Total**

Newark Board of Education - NJBPU
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Science Park High 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)	275,743
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)	$492,509	$70,968
Existing Usage (from utility)	3,493,842	79,010
Proposed Savings	481,508	26,321
Existing Total MMBtus	19,825	
Proposed Savings MMBtus	4,276	
% Energy Reduction	**21.6%**	
Proposed Annual Savings	$93,107	

	Min (Savings = 15%)		Increase (Savings > 15%)		Max Incentive		Achieved Incentive	
Incentive #2	$0.09	$0.90	$0.005	$0.05	$0.11	$1.25	$0.11	$1.23
Incentive #3	$0.09	$0.90	$0.005	$0.05	$0.11	$1.25	$0.11	$1.23

	Incentives $		
	Elec	Gas	Total
Incentive #1	$0	$0	$13,787
Incentive #2	$52,966	$32,330	$85,296
Incentive #3	$52,966	$32,330	$85,296
Total All Incentives	**$105,932**	**$64,660**	**$184,379**

Total Project Cost	$735,873

		Allowable Incentive
% Incentives #1 of Utility Cost*	2.4%	$13,787
% Incentives #2 of Project Cost**	11.6%	$85,296
% Incentives #3 of Project Cost**	11.6%	$85,296
Total Eligible Incentives***	**$184,379**	
Project Cost w/ Incentives	$551,494	

Project Payback (years)	
w/o Incentives	w/ Incentives
7.9	5.9

* 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 - Science Park High School
CHA Project No.27999
Existing Lighting & Audit Input

Cost of Electricity: **$0.128** **$/kWh**
$4.35 **$/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	Basement Corridor	Custodian	25	W 32 W P 2 (ELE)	F42LL	60	1.50	SW	3400	5,100		NONE	
35LED	B19 Custodian Break Room	Custodian	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.36	SW	3400	1,224		NONE	
46LED	Basement Corridor #2	Custodian	2	W 32 C F 2 (ELE)	F42LL	60	0.12	SW	3400	408		NONE	
46LED	B20 Custodian Shop	Offices	6	W 32 C F 2 (ELE)	F42LL	60	0.36	C-OCC	2400	864		NONE	
46LED	B18 Admin Storage	Storage	2	W 32 C F 2 (ELE)	F42LL	60	0.12	BR	3200	384		NONE	
46LED	B17 Water Service	Storage	11	W 32 C F 2 (ELE)	F42LL	60	0.66	BR	3200	2,112		NONE	
46LED	B13 Storage	Storage	13	W 32 C F 2 (ELE)	F42LL	60	0.78	C-OCC	3200	2,496		NONE	
46LED	B12 Heating Plant	Boiler Room	15	W 32 C F 2 (ELE)	F42LL	60	0.90	SW	2000	1,800		NONE	
7LED	B14 Mens Locker Room	Locker	2	2T 32 R F 2 (u)	FU2LL	60	0.12	SW	2800	336		NONE	
35LED	B14 Mens Locker Room	Locker	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.09	SW	2800	252		NONE	
262LED	B14 Entrance Corridor	Locker	1	CF42/1	CF42/1-I	48	0.05	SW	2800	134		NONE	
7LED	B15 Womens Locker Room	Locker	2	2T 32 R F 2 (u)	FU2LL	60	0.12	C-OCC	2800	336		NONE	
35LED	B15 Womens Locker Room	Locker	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.09	BR	2800	252		NONE	
262LED	B15 Entrance Corridor	Locker	1	CF42/1	CF42/1-I	48	0.05	BR	2800	134		NONE	
35LED	B16 Custodians Office	Custodian	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.36	SW	3400	1,224		NONE	
X1	Basement Corridor	Emergency Lights	7	X 1.5 W LED	ELED1.5/1	1.5	0.01	SW	8760	92		NONE	
117	Elevator #1	Emergency Lights	8	CF 23	CFS23/1	23	0.18	SW	8760	1,612		NONE	
46LED	B11 Mechanical Room	Mechanical Room	7	W 32 C F 2 (ELE)	F42LL	60	0.42	SW	1600	672		NONE	
46LED	B10 Electric Service Room	Mechanical Room	11	W 32 C F 2 (ELE)	F42LL	60	0.66	SW	1600	1,056		NONE	
46LED	B10 Side Room	Mechanical Room	4	W 32 C F 2 (ELE)	F42LL	60	0.24	SW	1600	384		NONE	
46LED	B09	Storage	25	W 32 C F 2 (ELE)	F42LL	60	1.50	SW	3200	4,800		NONE	
46LED	B05 Storage	Storage	10	W 32 C F 2 (ELE)	F42LL	60	0.60	C-OCC	3200	1,920		NONE	
X1	B05 Storage	Emergency Lights	2	X 1.5 W LED	ELED1.5/1	1.5	0.00	SW	8760	26		NONE	
35LED	B05 Security	Custodian	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.36	SW	3400	1,224		NONE	
46LED	B05 Rear Secure Equipment	Custodian	4	W 32 C F 2 (ELE)	F42LL	60	0.24	SW	3400	816		NONE	
46LED	B03	Storage	12	W 32 C F 2 (ELE)	F42LL	60	0.72	C-OCC	3200	2,304		NONE	
46LED	B02 IT Storage	Storage	6	W 32 C F 2 (ELE)	F42LL	60	0.36	C-OCC	3200	1,152		NONE	
46LED	B01 Generator	Mechanical Room	8	W 32 C F 2 (ELE)	F42LL	60	0.48	C-OCC	1600	768		NONE	
46LED	B01 Generator Intake Room	Mechanical Room	4	W 32 C F 2 (ELE)	F42LL	60	0.24	C-OCC	1600	384		NONE	
50LED	North Stairs (3x)	Emergency Lights	3	W 32 W P 2 (ELE)	F42LL	60	0.18	BR	8760	1,577		NONE	
32LED	North Stairs (3x)	Emergency Lights	30	1T 32 R F 2 (ELE)	F42LL	60	1.80	BR	8760	15,768		NONE	
46LED	120A Electric	Mechanical Room	2	W 32 C F 2 (ELE)	F42LL	60	0.12	SW	1600	192		NONE	
262LED	Cafeteria	Cafeteria	140	CF42/1	CF42/1-I	48	6.72	SW	2000	13,440		NONE	
262LED	Cafeteria	Cafeteria	60	CF42/1	CF42/1-I	48	2.88	SW	2000	5,760		NONE	
262LED	Cafeteria	Cafeteria	20	CF42/1	CF42/1-I	48	0.96	SW	2000	1,920		NONE	
262LED	Kitchen Serving Area	Cafeteria	11	CF42/1	CF42/1-I	48	0.53	SW	2000	1,056		NONE	
35LED	Kitchen Serving Area	Cafeteria	7	T 32 R F 3 (ELE)	F43ILL/2	90	0.63	SW	2000	1,260		NONE	
35LED	Chair Storage Room	Storage	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	3200	576		NONE	
35LED	Kitchen	Cafeteria	20	T 32 R F 3 (ELE)	F43ILL/2	90	1.80	SW	2000	3,600		NONE	
35LED	Kitchen Office	Offices	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.09	SW	2400	216		NONE	
35LED	Kitchen Storage	Storage	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.09	SW	3200	288		NONE	
32LED	Loading Dock	Cafeteria	2	1T 32 R F 2 (ELE)	F42LL	60	0.12	SW	2000	240		NONE	
262LED	115 Common Suite Corridor	Hallways	13	CF42/1	CF42/1-I	48	0.62	SW	6240	3,894		NONE	
X1	115 Common Suite Corridor	Emergency Lights	5	X 1.5 W LED	ELED1.5/1	1.5	0.01	SW	8760	66		NONE	
32LED	115 Common Suite Corridor	Hallways	12	1T 32 R F 2 (ELE)	F42LL	60	0.72	SW	6240	4,493		NONE	
218LED	Development Center	Offices	14	W 32 C F 3 (ELE)	F43ILL/2	90	1.26	C-OCC	2400	3,024		NONE	
218LED	Common Suite	Offices	12	W 32 C F 3 (ELE)	F43ILL/2	90	1.08	C-OCC	2400	2,592		NONE	
218LED	107 Conference Room	Conference	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.54	C-OCC	1200	648		NONE	
218LED	108 Conference Room	Conference	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.54	C-OCC	1200	648		NONE	
35LED	112 Debate Room	Offices	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	2400	648		C-OCC	
35LED	109	Offices	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	2400	648		C-OCC	
35LED	110	Offices	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	2400	648		C-OCC	
35LED	111	Offices	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	2400	648		C-OCC	
218LED	104 Media Center	Offices	14	W 32 C F 3 (ELE)	F43ILL/2	90	1.26	C-OCC	2400	3,024		NONE	
218LED	Tech Center (in Lib)	Offices	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.54	C-OCC	2400	1,296		NONE	
218LED	Conference Room (in Lib)	Offices	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.54	C-OCC	2400	1,296		NONE	
262LED	Library	General Common	30	CF42/1	CF42/1-I	48	1.44	SW	1600	2,304		NONE	
X1	Library	Emergency Lights	4	X 1.5 W LED	ELED1.5/1	1.5	0.01	BR	8760	53		NONE	
262LED	Library	General Common	58	CF42/1	CF42/1-I	48	2.78	SW	1600	4,454		NONE	
35LED	Library Office	Offices	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	2400	648		C-OCC	
35LED	Library Office	Offices	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.54	SW	2400	1,296		C-OCC	
35LED	Library Storage	Storage	8	T 32 R F 3 (ELE)	F43ILL/2	90	0.72	SW	3200	2,304		C-OCC	
262LED	Library Rear Hall	Hallways	5	CF42/1	CF42/1-I	48	0.24	SW	6240	1,498		NONE	
X1	Library Rear Hall	Emergency Lights	2	X 1.5 W LED	ELED1.5/1	1.5	0.00	BR	8760	26		NONE	
35LED	105 Electrical Media Room	Mechanical Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	C-OCC	1600	288		NONE	
35LED	Server Room	Mechanical Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.36	C-OCC	1600	576		NONE	
35LED	105 Tech Workroom	Mechanical Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.36	SW	1600	576		NONE	
32LED	105A Electrical	Mechanical Room	1	1T 32 R F 2 (ELE)	F42LL	60	0.06	SW	1600	96		NONE	
35LED	Front Lobby Mens Room	Restroom	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	C-OCC	4300	774		NONE	
35LED	Front Lobby Womens Room	Restroom	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	C-OCC	4300	774		NONE	
46LED	117 Custodian	Custodian	1	W 32 C F 2 (ELE)	F42LL	60	0.06	SW	3400	204		NONE	

Energy Audit of Newark Public Schools - Science Park High School
CHA Project No.27999
Existing Lighting & Audit Input

Cost of Electricity: **$0.128** **$/kWh**
$4.35 **$/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
262LED	118 Storage	Storage	1	CF42/1	CF42/1-I	48	0.05	SW	3200	154	NONE	
32LED	122 Security	Custodian	2	1T 32 R F 2 (ELE)	F42LL	60	0.12	SW	3400	408	NONE	
262LED	121 Admin Lobby	Offices	17	CF42/1	CF42/1-I	48	0.82	SW	2400	1,958	NONE	
35LED	123 Files	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	C-OCC	2400	432	NONE	
262LED	Mail Room	Offices	1	CF42/1	CF42/1-I	48	0.05	SW	2400	115	NONE	
35LED	124	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	C-OCC	2400	432	NONE	
35LED	126	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	C-OCC	2400	432	NONE	
35LED	127	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	C-OCC	2400	432	NONE	
35LED	128	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	C-OCC	2400	432	NONE	
35LED	129 Principal	Offices	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.36	C-OCC	2400	864	NONE	
218LED	130 Int Staff	Offices	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.54	C-OCC	2400	1,296	NONE	
35LED	130 Rear Office	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	C-OCC	2400	432	NONE	
35LED	Copy Room	Offices	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	2400	648	NONE	
35LED	Main Office Open Area	Offices	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.54	C-OCC	2400	1,296	NONE	
218LED	133 Conference	Conference	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.54	C-OCC	1200	648	NONE	
X1	121 Lobby	Hallways	4	X 1.5 W LED	ELED1.5/1	1.5	0.01	BR	6240	37	NONE	
262LED	Main Office Mens Room	Restroom	1	CF42/1	CF42/1-I	48	0.05	SW	4300	206	C-OCC	
262LED	Main Office Womens Room	Restroom	1	CF42/1	CF42/1-I	48	0.05	SW	4300	206	C-OCC	
32LED	Guidance Hallway	Hallways	7	1T 32 R F 2 (ELE)	F42LL	60	0.42	SW	6240	2,621	NONE	
262LED	Guidance Hallway	Hallways	16	CF42/1	CF42/1-I	48	0.77	SW	6240	4,792	NONE	
35LED	Guidance Office Open	Offices	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	C-OCC	2400	2,592	NONE	
262LED	Guidance Office Open	Offices	10	CF42/1	CF42/1-I	48	0.48	C-OCC	2400	1,152	NONE	
X1	Guidance Office Open	Emergency Lights	4	X 1.5 W LED	ELED1.5/1	1.5	0.01	BR	8760	53	NONE	
32LED	Guidance Mens Room	Restroom	1	1T 32 R F 2 (ELE)	F42LL	60	0.06	SW	4300	258	NONE	
32LED	Guidance Womens Room	Restroom	1	1T 32 R F 2 (ELE)	F42LL	60	0.06	SW	4300	258	NONE	
35LED	Guidance Office #1	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
35LED	Guidance Office #2	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
35LED	Guidance Office #3	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
35LED	Guidance Office #4	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
35LED	Guidance Office #5	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
35LED	Guidance Office #6	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
35LED	Guidance Office #7	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
35LED	Guidance Office #8	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
35LED	Guidance Office #9	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
218LED	Conference Room	Conference	4	W 32 C F 3 (ELE)	F43ILL/2	90	0.36	C-OCC	1200	432	NONE	
35LED	135 Nurse Open Area	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	NONE	
32LED	Nurse Mens Room	Restroom	1	1T 32 R F 2 (ELE)	F42LL	60	0.06	SW	4300	258	NONE	
32LED	Nurse Womens Room	Restroom	1	1T 32 R F 2 (ELE)	F42LL	60	0.06	SW	4300	258	NONE	
35LED	Nurse Exam Room	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
35LED	Nurse Resting Room	Offices	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	2400	648	C-OCC	
35LED	Nurses Office	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432	C-OCC	
50LED	Nurses Office Storage	Offices	1	W 32 W P 2 (ELE)	F42LL	60	0.06	SW	2400	144	NONE	
50LED	Controls Room	Mechanical Room	1	W 32 W P 2 (ELE)	F42LL	60	0.06	SW	1600	96	NONE	
50LED	Elevator Machine Room	Mechanical Room	2	W 32 W P 2 (ELE)	F42LL	60	0.12	SW	1600	192	NONE	
32LED	Stair #5 Lobby	Hallways	8	1T 32 R F 2 (ELE)	F42LL	60	0.48	BR	6240	2,995	NONE	
262LED	Stair #5 Lobby	Hallways	2	CF42/1	CF42/1-I	48	0.10	BR	6240	599	NONE	
35LED	139 Faculty Dining	Break Room	8	T 32 R F 3 (ELE)	F43ILL/2	90	0.72	C-OCC	1700	1,224	NONE	
262LED	Side Entrance	Hallways	84	CF42/1	CF42/1-I	48	4.03	BR	6240	25,160	NONE	
X1	Side Entrance	Hallways	8	X 1.5 W LED	ELED1.5/1	1.5	0.01	BR	6240	75	NONE	
220LED	Side Entrance	Hallways	20	S 17 C F 1(ELE)	F21ILL	20	0.40	BR	6240	2,496	NONE	
261LED	153 Auditorium Hallway	Auditorium	2	PAR 38 SP	H100/1	100	0.20	SW	2000	400	NONE	
35LED	153 Auditorium Hallway	Auditorium	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2000	360	NONE	
220LED	153 Auditorium	Auditorium	60	S 17 C F 1(ELE)	F21ILL	20	1.20	SW	2000	2,400	NONE	
261LED	153 Auditorium	Auditorium	56	PAR 38 SP	H100/1	100	5.60	SW	2000	11,200	NONE	
220LED	153 Auditorium	Auditorium	60	S 17 C F 1(ELE)	F21ILL	20	1.20	SW	2000	2,400	NONE	
261LED	153 Auditorium	Auditorium	90	PAR 38 SP	H100/1	100	9.00	SW	2000	18,000	NONE	
X1	153 Auditorium	Auditorium	10	X 1.5 W LED	ELED1.5/1	1.5	0.02	SW	2000	30	NONE	
227LED	Auditorium Stage	Auditorium	4	70 W MH Wall Pack	MH70/1	95	0.38	SW	2000	760	NONE	
50LED	Auditorium Stage	Auditorium	3	W 32 W P 2 (ELE)	F42LL	60	0.18	SW	2000	360	NONE	
X1	Auditorium Stage	Auditorium	2	X 1.5 W LED	ELED1.5/1	1.5	0.00	SW	2000	6	NONE	
50LED	Auditorium Stage	Auditorium	2	W 32 W P 2 (ELE)	F42LL	60	0.12	SW	2000	240	NONE	
46LED	149 Rear Corridor Storage	Storage	15	W 32 C F 2 (ELE)	F42LL	60	0.90	SW	3200	2,880	NONE	
7LED	150 Mens Dress Room	Locker	1	2T 32 R F 2 (u)	FU2LL	60	0.06	C-OCC	2800	168	NONE	
35LED	150 Mens Dress Room	Locker	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.09	C-OCC	2800	252	NONE	
262LED	150 Mens Dress Room	Locker	1	CF42/1	CF42/1-I	48	0.05	C-OCC	2800	134	NONE	
7LED	150 Womens Dress Room	Locker	1	2T 32 R F 2 (u)	FU2LL	60	0.06	C-OCC	2800	168	NONE	
35LED	150 Womens Dress Room	Locker	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.09	C-OCC	2800	252	NONE	
262LED	150 Womens Dress Room	Locker	1	CF42/1	CF42/1-I	48	0.05	C-OCC	2800	134	NONE	
262LED	Rear Entrance	Hallways	16	CF42/1	CF42/1-I	48	0.77	SW	6240	4,792	NONE	
32LED	Rear Entrance	Hallways	20	1T 32 R F 2 (ELE)	F42LL	60	1.20	SW	6240	7,488	NONE	
262LED	Auditorium Rear Hall	Hallways	18	CF42/1	CF42/1-I	48	0.86	SW	6240	5,391	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
32LED	148 Music Room	Classrooms	2	1T 32 R F 2 (ELE)	F42LL	60	0.12	SW	2700	324		NONE	
35LED	Music Ensemble	Classrooms	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	2700	729		NONE	
46LED	Production class 1C	Classrooms	12	W 32 C F 2 (ELE)	F42LL	60	0.72	SW	2700	1,944		NONE	
262LED	Instructional Music 1B	Classrooms	16	CF42/1	CF42/1-I	48	0.77	SW	2700	2,074		NONE	
35LED	Music Storage	Storage	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	3200	864		NONE	
X1	Instructional Music 1B	Emergency Lights	3	X 1.5 W LED	ELED1.5/1	1.5	0.00	BR	8760	39		NONE	
35LED	Music Practice Room	Classrooms	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2700	486		C-OCC	
35LED	Music Practice Room	Classrooms	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2700	486		C-OCC	
35LED	Gown Storage	Storage	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	3200	864		C-OCC	
218LED	Music Vocals 1A	Classrooms	20	W 32 C F 3 (ELE)	F43ILL/2	90	1.80	C-OCC	2700	4,860		NONE	
X1	Music Vocals 1A	Classrooms	3	X 1.5 W LED	ELED1.5/1	1.5	0.00	BR	2700	12		NONE	
50LED	146 Electric Room	Mechanical Room	2	W 32 W P 2 (ELE)	F42LL	60	0.12	SW	1600	192		NONE	
50LED	145 Gym Storage	Storage	1	W 32 W P 2 (ELE)	F42LL	60	0.06	SW	3200	192		NONE	
46LED	154 Data Room	Mechanical Room	2	W 32 C F 2 (ELE)	F42LL	60	0.12	SW	1600	192		NONE	
46LED	141 Gym	Gymnasium	2	W 32 C F 2 (ELE)	F42LL	60	0.12	SW	1600	192		NONE	
35LED	Mens Room	Restroom	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.36	C-OCC	4300	1,548		NONE	
262LED	Mens Room	Restroom	1	CF42/1	CF42/1-I	48	0.05	C-OCC	4300	206		NONE	
35LED	Womens Room	Restroom	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.36	C-OCC	4300	1,548		NONE	
262LED	Womens Room	Restroom	1	CF42/1	CF42/1-I	48	0.05	C-OCC	4300	206		NONE	
50LED	143 Custodial Room	Storage	1	W 32 W P 2 (ELE)	F42LL	60	0.06	SW	3200	192		NONE	
263	Natatorium	Gymnasium	10	Pool MH1500 Fixt	MH1500/1	1610	16.10	SW	1600	25,760		NONE	
262LED	Natatorium	Gymnasium	70	CF42/1	CF42/1-I	48	3.36	SW	1600	5,376		NONE	
218LED	Natatorium	Gymnasium	2	W 32 C F 3 (ELE)	F43ILL/2	90	0.18	SW	1600	288		NONE	
227LED	Natatorium	Gymnasium	10	70 W MH Wall Pack	MH70/1	95	0.95	SW	1600	1,520		NONE	
X1	Natatorium	Gymnasium	9	X 1.5 W LED	ELED1.5/1	1.5	0.01	BR	1600	22		NONE	
7LED	B26 PE Office	Offices	4	2T 32 R F 2 (u)	FU2LL	60	0.24	SW	2400	576		NONE	
50LED	B27 Natatorium Laundry	Offices	2	W 32 W P 2 (ELE)	F42LL	60	0.12	SW	2400	288		NONE	
262LED	B28 Mens Locker Room	Locker	10	CF42/1	CF42/1-I	48	0.48	SW	2800	1,344		NONE	
35LED	B28 Mens Locker Room	Locker	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	2800	756		NONE	
262LED	B29 Womens Locker Room	Locker	10	CF42/1	CF42/1-I	48	0.48	SW	2800	1,344		NONE	
35LED	B29 Womens Locker Room	Locker	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	2800	756		NONE	
50LED	B25 Elevator Equipment Room	Mechanical Room	2	W 32 W P 2 (ELE)	F42LL	60	0.12	SW	1600	192		NONE	
264LED	Service Elevator	Emergency Lights	9	Elevator Halogen 20W	HLV20/1	30	0.27	BR	8760	2,365		NONE	
35LED	254 AV Storage	Storage	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	3200	864		NONE	
262LED	2nd Floor Lobby	Hallways	90	CF42/1	CF42/1-I	48	4.32	SW	6240	26,957		NONE	
220LED	2nd Floor Lobby	Hallways	45	S 17 C F 1(ELE)	F21ILL	20	0.90	SW	6240	5,616		NONE	
X1	2nd Floor Lobby	Emergency Lights	8	X 1.5 W LED	ELED1.5/1	1.5	0.01	BR	8760	105		NONE	
32LED	2nd Floor Lobby	Hallways	6	1T 32 R F 2 (ELE)	F42LL	60	0.36	SW	6240	2,246		NONE	
54LED	2nd Floor Lobby Display Cases	Hallways	24	S 34 W F 1 (MAG)	F41EE	43	1.03	SW	6240	6,440		NONE	
35LED	2nd Floor Lobby Mens Room	Restroom	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	C-OCC	4300	774		NONE	
35LED	2nd Floor Lobby Womens Room	Restroom	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	C-OCC	4300	774		NONE	
50LED	255 Gym Storage	Storage	3	W 32 W P 2 (ELE)	F42LL	60	0.18	SW	3200	576		NONE	
X1	255 Gym Storage	Emergency Lights	2	X 1.5 W LED	ELED1.5/1	1.5	0.00	BR	8760	26		NONE	
32LED	2nd Floor Front Hall South	Hallways	11	1T 32 R F 2 (ELE)	F42LL	60	0.66	SW	6240	4,118		NONE	
35LED	258 Athletic Directors Office	Offices	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.36	SW	2400	864		NONE	
35LED	257 Training	Offices	11	T 32 R F 3 (ELE)	F43ILL/2	90	0.99	SW	2400	2,376		NONE	
50LED	256 Athletic Equipment	Storage	4	W 32 W P 2 (ELE)	F42LL	60	0.24	SW	3200	768		NONE	
32LED	2nd Floor South Corr	Hallways	12	1T 32 R F 2 (ELE)	F42LL	60	0.72	SW	6240	4,493		NONE	
218LED	266 Health Class	Classrooms	14	W 32 C F 3 (ELE)	F43ILL/2	90	1.26	SW	2700	3,402		NONE	
35LED	265 Fitness Center	Classrooms	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.08	C-OCC	2700	2,916		NONE	
262LED	264 Mens Locker Room	Locker	10	CF42/1	CF42/1-I	48	0.48	C-OCC	2800	1,344		NONE	
35LED	264 Mens Locker Room	Locker	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.44	C-OCC	2800	4,032		NONE	
262LED	262 Womens Locker Room	Locker	10	CF42/1	CF42/1-I	48	0.48	C-OCC	2800	1,344		NONE	
35LED	262 Womens Locker Room	Locker	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.44	C-OCC	2800	4,032		NONE	
46LED	263 Custodial	Storage	1	W 32 C F 2 (ELE)	F42LL	60	0.06	SW	3200	192		NONE	
46LED	261 Electrical	Mechanical Room	1	W 32 C F 2 (ELE)	F42LL	60	0.06	SW	1600	96		NONE	
35LED	260 PE Office	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432		NONE	
35LED	260 PE Office Restroom	Restroom	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	4300	774		NONE	
35LED	259 PE Office	Offices	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	2400	432		NONE	
35LED	259 PE Office Restroom	Restroom	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.18	SW	4300	774		NONE	
265LED	Gym	Gymnasium	36	Gym HB 8L CFL	CF42/8-L	376	13.54	SW	1600	21,658		NONE	
46LED	360 IT Closet	Mechanical Room	1	W 32 C F 2 (ELE)	F42LL	60	0.06	SW	1600	96		NONE	
46LED	359 Mech Room 3	Mechanical Room	40	W 32 C F 2 (ELE)	F42LL	60	2.40	SW	1600	3,840		NONE	
X1	359 Mech Room 3	Emergency Lights	3	X 1.5 W LED	ELED1.5/1	1.5	0.00	BR	8760	39		NONE	
46LED	357 Storage	Storage	1	W 32 C F 2 (ELE)	F42LL	60	0.06	SW	3200	192		NONE	
262LED	3rd Floor South Hall	Hallways	4	CF42/1	CF42/1-I	48	0.19	SW	6240	1,198		NONE	
32LED	3rd Floor South Hall	Hallways	16	1T 32 R F 2 (ELE)	F42LL	60	0.96	SW	6240	5,990		NONE	
X1	3rd Floor South Hall	Emergency Lights	6	X 1.5 W LED	ELED1.5/1	1.5	0.01	BR	8760	79		NONE	
32LED	356 Greenhouse	Classrooms	6	1T 32 R F 2 (ELE)	F42LL	60	0.36	C-OCC	2700	972		NONE	
50LED	356 Greenhouse	Classrooms	2	W 32 W P 2 (ELE)	F42LL	60	0.12	C-OCC	2700	324		NONE	
218LED	355 Art Class	Classrooms	12	W 32 C F 3 (ELE)	F43ILL/2	90	1.08	C-OCC	2700	2,916		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
46LED	355 Art Class Stor	Storage	2	W 32 C F 2 (ELE)	F42LL	60	0.12	SW	3200	384		NONE	
50LED	355 Art Class Stor	Storage	4	W 32 W P 2 (ELE)	F42LL	60	0.24	SW	3200	768		NONE	
50LED	355 Art Class Kiln Room	Classrooms	2	W 32 W P 2 (ELE)	F42LL	60	0.12	SW	2700	324		NONE	
35LED	355 Art Class Darkroom	Classrooms	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	2700	729		NONE	
35LED	354 Video Edit	Classrooms	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.27	SW	2700	729		C-OCC	
54LED	3rd Floor Corridor Display	Hallways	12	S 34 W F 1 (MAG)	F41EE	43	0.52	SW	6240	3,220		NONE	
218LED	353 Cad Class	Classrooms	20	W 32 C F 3 (ELE)	F43ILL/2	90	1.80	SW	2700	4,860		C-OCC	
46LED	352 IT Closet	Mechanical Room	1	W 32 C F 2 (ELE)	F42LL	60	0.06	SW	1600	96		NONE	
46LED	351 IT Closet	Mechanical Room	1	W 32 C F 2 (ELE)	F42LL	60	0.06	SW	1600	96		NONE	
46LED	354 IT Closet	Mechanical Room	1	W 32 C F 2 (ELE)	F42LL	60	0.06	SW	1600	96		NONE	
50LED	North Electrical Rooms (8x)	Mechanical Room	8	W 32 W P 2 (ELE)	F42LL	60	0.48	SW	1600	768		NONE	
50LED	North Custodial Rooms (4x)	Mechanical Room	4	W 32 W P 2 (ELE)	F42LL	60	0.24	SW	1600	384		NONE	
50LED	North IT Closets (4x)	Mechanical Room	4	W 32 W P 2 (ELE)	F42LL	60	0.24	SW	1600	384		NONE	
262LED	North Chemical Storage Rooms	Storage	2	CF42/1	CF42/1-I	48	0.10	SW	3200	307		NONE	
262LED	Main Entrance First Floor	Hallways	98	CF42/1	CF42/1-I	48	4.70	SW	6240	29,353		NONE	
X1	Main Entrance First Floor	Emergency Lights	10	X 1.5 W LED	ELED1.5/1	1.5	0.02	BR	8760	131		NONE	
	Total		**2,235**				**156.04**			**453,774**			

Energy Audit of Newark Public Schools - Science Park High 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
50LED	Basement Corridor	25	W 32 W P 2 (ELE)	F42LL	60	1.5	SW	3400	5,100	25	4 ft LED Tube	200732x2	30	0.8	SW	3,400	2,550	2,550	0.8	$ 365.55	$ 4,083.75	$0	11.2	11.2
35LED	B19 Custodian Break Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	3400	1,224	4	T 59 R LED	RTLED38	38	0.2	SW	3,400	517	707	0.2	$ 101.38	$ 945.00	$0	9.3	9.3
46LED	Basement Corridor #2	2	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	3400	408	2	4 ft LED Tube	200732x2	30	0.1	SW	3,400	204	204	0.1	$ 29.24	$ 326.70	$0	11.2	11.2
46LED	B20 Custodian Shop	6	W 32 C F 2 (ELE)	F42LL	60	0.4	C-OCC	2400	864	6	4 ft LED Tube	200732x2	30	0.2	C-OCC	2,400	432	432	0.2	$ 64.69	$ 980.10	$0	15.2	15.2
46LED	B18 Admin Storage	2	W 32 C F 2 (ELE)	F42LL	60	0.1	BR	3200	384	2	4 ft LED Tube	200732x2	30	0.1	BR	3,200	192	192	0.1	$ 27.71	$ 326.70	$0	11.8	11.8
46LED	B17 Water Service	11	W 32 C F 2 (ELE)	F42LL	60	0.7	BR	3200	2,112	11	4 ft LED Tube	200732x2	30	0.3	BR	3,200	1,056	1,056	0.3	$ 152.39	$ 1,796.85	$0	11.8	11.8
46LED	B13 Storage	13	W 32 C F 2 (ELE)	F42LL	60	0.8	C-OCC	3200	2,496	13	4 ft LED Tube	200732x2	30	0.4	C-OCC	3,200	1,248	1,248	0.4	$ 180.10	$ 2,123.55	$0	11.8	11.8
46LED	B12 Heating Plant	15	W 32 C F 2 (ELE)	F42LL	60	0.9	SW	2000	1,800	15	4 ft LED Tube	200732x2	30	0.5	SW	2,000	900	900	0.5	$ 138.69	$ 2,450.25	$0	17.7	17.7
7LED	B14 Mens Locker Room	2	2T 32 R F 2 (u)	FU2LL	60	0.1	SW	2800	336	2	2T 46 R LED	2RTLED	25	0.1	SW	2,800	140	196	0.1	$ 28.74	$ 405.00	$0	14.1	14.1
35LED	B14 Mens Locker Room	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	2800	252	1	T 59 R LED	RTLED38	38	0.0	SW	2,800	106	146	0.1	$ 21.35	$ 236.25	$0	11.1	11.1
262LED	B14 Entrance Corridor	1	CF42/1	CF42/1-I	48	0.0	SW	2800	134	1	6BLMWLED	6BLMWLED	13	0.0	SW	2,800	36	98	0.0	$ 14.37	$ 162.00	$0	11.3	11.3
7LED	B15 Womens Locker Room	2	2T 32 R F 2 (u)	FU2LL	60	0.1	C-OCC	2800	336	2	2T 46 R LED	2RTLED	25	0.1	C-OCC	2,800	140	196	0.1	$ 28.74	$ 405.00	$0	14.1	14.1
35LED	B15 Womens Locker Room	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	BR	2800	252	1	T 59 R LED	RTLED38	38	0.0	BR	2,800	106	146	0.1	$ 21.35	$ 236.25	$0	11.1	11.1
262LED	B15 Entrance Corridor	1	CF42/1	CF42/1-I	48	0.0	BR	2800	134	1	6BLMWLED	6BLMWLED	13	0.0	BR	2,800	36	98	0.0	$ 14.37	$ 162.00	$0	11.3	11.3
35LED	B16 Custodians Office	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	3400	1,224	4	T 59 R LED	RTLED38	38	0.2	SW	3,400	517	707	0.2	$ 101.38	$ 945.00	$0	9.3	9.3
X1	Basement Corridor	7	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	8760	92	7	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	8,760	92	-	0.0	$ -	$ -	$0		#DIV/0!
117	Elevator #1	8	CF 23	CFS23/1	23	0.2	SW	8760	1,612	8	CF 23	CFS23/1	23	0.2	SW	8,760	1,612	-	0.0	$ -	$ -	$0		#DIV/0!
46LED	B11 Mechanical Room	7	W 32 C F 2 (ELE)	F42LL	60	0.4	SW	1600	672	7	4 ft LED Tube	200732x2	30	0.2	SW	1,600	336	336	0.2	$ 53.97	$ 1,143.45	$0	21.2	21.2
46LED	B10 Electric Service Room	11	W 32 C F 2 (ELE)	F42LL	60	0.7	SW	1600	1,056	11	4 ft LED Tube	200732x2	30	0.3	SW	1,600	528	528	0.3	$ 84.81	$ 1,796.85	$0	21.2	21.2
46LED	B10 Side Room	4	W 32 C F 2 (ELE)	F42LL	60	0.2	SW	1600	384	4	4 ft LED Tube	200732x2	30	0.1	SW	1,600	192	192	0.1	$ 30.84	$ 653.40	$0	21.2	21.2
46LED	B09	25	W 32 C F 2 (ELE)	F42LL	60	1.5	SW	3200	4,800	25	4 ft LED Tube	200732x2	30	0.8	SW	3,200	2,400	2,400	0.8	$ 346.35	$ 4,083.75	$0	11.8	11.8
46LED	B05 Storage	10	W 32 C F 2 (ELE)	F42LL	60	0.6	C-OCC	3200	1,920	10	4 ft LED Tube	200732x2	30	0.3	C-OCC	3,200	960	960	0.3	$ 138.54	$ 1,633.50	$0	11.8	11.8
X1	B05 Storage	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	8760	26	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	8,760	26	-	0.0	$ -	$ -	$0		#DIV/0!
35LED	B05 Security	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	3400	1,224	4	T 59 R LED	RTLED38	38	0.2	SW	3,400	517	707	0.2	$ 101.38	$ 945.00	$0	9.3	9.3
46LED	B05 Rear Secure Equipment	4	W 32 C F 2 (ELE)	F42LL	60	0.2	SW	3400	816	4	4 ft LED Tube	200732x2	30	0.1	SW	3,400	408	408	0.1	$ 58.49	$ 653.40	$0	11.2	11.2
46LED	B03	12	W 32 C F 2 (ELE)	F42LL	60	0.7	C-OCC	3200	2,304	12	4 ft LED Tube	200732x2	30	0.4	C-OCC	3,200	1,152	1,152	0.4	$ 166.25	$ 1,960.20	$0	11.8	11.8
46LED	B02 IT Storage	6	W 32 C F 2 (ELE)	F42LL	60	0.4	C-OCC	3200	1,152	6	4 ft LED Tube	200732x2	30	0.2	C-OCC	3,200	576	576	0.2	$ 83.12	$ 980.10	$0	11.8	11.8
46LED	B01 Generator	8	W 32 C F 2 (ELE)	F42LL	60	0.5	C-OCC	1600	768	8	4 ft LED Tube	200732x2	30	0.2	C-OCC	1,600	384	384	0.2	$ 61.68	$ 1,306.80	$0	21.2	21.2
46LED	B01 Generator Intake Room	4	W 32 C F 2 (ELE)	F42LL	60	0.2	C-OCC	1600	384	4	4 ft LED Tube	200732x2	30	0.1	C-OCC	1,600	192	192	0.1	$ 30.84	$ 653.40	$0	21.2	21.2
50LED	North Stairs (3x)	3	W 32 W P 2 (ELE)	F42LL	60	0.2	BR	8760	1,577	3	4 ft LED Tube	200732x2	30	0.1	BR	8,760	788	788	0.1	$ 105.61	$ 490.05	$0	4.6	4.6
32LED	North Stairs (3x)	30	1T 32 R F 2 (ELE)	F42LL	60	1.8	BR	8760	15,768	30	4 ft LED Tube	200732x2	30	0.9	BR	8,760	7,884	7,884	0.9	$ 1,056.13	$ 4,900.50	$0	4.6	4.6
46LED	120A Electric	2	W 32 C 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	$ 15.42	$ 326.70	$0	21.2	21.2
262LED	Cafeteria	140	CF42/1	CF42/1-I	48	6.7	SW	2000	13,440	140	6BLMWLED	6BLMWLED	13	1.8	SW	2,000	3,640	9,800	4.9	$ 1,510.18	$ 22,680.00	$0	15.0	15.0
262LED	Cafeteria	60	CF42/1	CF42/1-I	48	2.9	SW	2000	5,760	60	6BLMWLED	6BLMWLED	13	0.8	SW	2,000	1,560	4,200	2.1	$ 647.22	$ 9,720.00	$0	15.0	15.0
262LED	Cafeteria	20	CF42/1	CF42/1-I	48	1.0	SW	2000	1,920	20	6BLMWLED	6BLMWLED	13	0.3	SW	2,000	520	1,400	0.7	$ 215.74	$ 3,240.00	$0	15.0	15.0
262LED	Kitchen Serving Area	11	CF42/1	CF42/1-I	48	0.5	SW	2000	1,056	11	6BLMWLED	6BLMWLED	13	0.1	SW	2,000	286	770	0.4	$ 118.66	$ 1,782.00	$0	15.0	15.0
35LED	Kitchen Serving Area	7	T 32 R F 3 (ELE)	F43ILL/2	90	0.6	SW	2000	1,260	7	T 59 R LED	RTLED38	38	0.3	SW	2,000	532	728	0.4	$ 112.18	$ 1,653.75	$0	14.7	14.7
35LED	Chair Storage Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	3200	576	2	T 59 R LED	RTLED38	38	0.1	SW	3,200	243	333	0.1	$ 48.03	$ 472.50	$0	9.8	9.8
35LED	Kitchen	20	T 32 R F 3 (ELE)	F43ILL/2	90	1.8	SW	2000	3,600	20	T 59 R LED	RTLED38	38	0.8	SW	2,000	1,520	2,080	1.0	$ 320.53	$ 4,725.00	$0	14.7	14.7
35LED	Kitchen Office	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	2400	216	1	T 59 R LED	RTLED38	38	0.0	SW	2,400	91	125	0.1	$ 18.69	$ 236.25	$0	12.6	12.6
35LED	Kitchen Storage	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	3200	288	1	T 59 R LED	RTLED38	38	0.0	SW	3,200	122	166	0.1	$ 24.01	$ 236.25	$0	9.8	9.8
32LED	Loading Dock	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	240	2	4 ft LED Tube	200732x2	30	0.1	SW	2,000	120	120	0.1	$ 18.49	$ 326.70	$0	17.7	17.7
262LED	115 Common Suite Corridor	13	CF42/1	CF42/1-I	48	0.6	SW	6240	3,894	13	6BLMWLED	6BLMWLED	13	0.2	SW	6,240	1,055	2,839	0.5	$ 387.17	$ 2,106.00	$0	5.4	5.4
X1	115 Common Suite Corridor	5	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	8760	66	5	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	8,760	66	-	0.0	$ -	$ -	$0		#DIV/0!
32LED	115 Common Suite Corridor	12	1T 32 R F 2 (ELE)	F42LL	60	0.7	SW	6240	4,493	12	4 ft LED Tube	200732x2	30	0.4	SW	6,240	2,246	2,246	0.4	$ 306.33	$ 1,960.20	$0	6.4	6.4
218LED	Development Center	14	W 32 C F 3 (ELE)	F43ILL/2	90	1.3	C-OCC	2400	3,024	14	4 ft LED Tube	200732x3	45	0.6	C-OCC	2,400	1,512	1,512	0.6	$ 226.42	$ 3,430.35	$0	15.2	15.2
218LED	Common Suite	12	W 32 C F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	C-OCC	2,400	1,296	1,296	0.5	$ 194.08	$ 2,940.30	$0	15.2	15.2
218LED	107 Conference Room	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	1200	648	6	4 ft LED Tube	200732x3	45	0.3	C-OCC	1,200	324	324	0.3	$ 55.57	$ 1,470.15	$0	26.5	26.5
218LED	108 Conference Room	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	1200	648	6	4 ft LED Tube	200732x3	45	0.3	C-OCC	1,200	324	324	0.3	$ 55.57	$ 1,470.15	$0	26.5	26.5
35LED	112 Debate Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648	3	T 59 R LED	RTLED38	38	0.1	SW	2,400	274	374	0.2	$ 56.07	$ 708.75	$0	12.6	12.6
35LED	109	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648	3	T 59 R LED	RTLED38	38	0.1	SW	2,400	274	374	0.2	$ 56.07	$ 708.75	$0	12.6	12.6
35LED	110	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648	3	T 59 R LED	RTLED38	38	0.1	SW	2,400	274	374	0.2	$ 56.07	$ 708.75	$0	12.6	12.6
35LED	111	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648	3	T 59 R LED	RTLED38	38	0.1	SW	2,400	274	374	0.2	$ 56.07	$ 708.75	$0	12.6	12.6
218LED	104 Media Center	14	W 32 C F 3 (ELE)	F43ILL/2	90	1.3	C-OCC	2400	3,024	14	4 ft LED Tube	200732x3	45	0.6	C-OCC	2,400	1,512	1,512	0.6	$ 226.42	$ 3,430.35	$0	15.2	15.2
218LED	Tech Center (in Lib)	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	2400	1,296	6	4 ft LED Tube	200732x3	45	0.3	C-OCC	2,400	648	648	0.3	$ 97.04	$ 1,470.15	$0	15.2	15.2
218LED	Conference Room (in Lib)	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	2400	1,296	6	4 ft LED Tube	200732x3	45	0.3	C-OCC	2,400	648	648	0.3	$ 97.04	$ 1,470.15	$0	15.2	15.2
262LED	Library	30	CF42/1	CF42/1-I	48	1.4	SW	1600	2,304	30	6BLMWLED	6BLMWLED	13	0.4	SW	1,600	624	1,680	1.1	$ 269.85	$ 4,860.00	$0	18.0	18.0
X1	Library	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	53	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8,760	53	-	0.0	$ -	$ -	$0		#DIV/0!
262LED	Library	58	CF42/1	CF42/1-I	48	2.8	SW	1600	4,454	58	6BLMWLED	6BLMWLED	13	0.8	SW	1,600	1,206	3,248	2.0	$ 521.71	$ 9,396.00	$0	18.0	18.0
35LED	Library Office	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648	3	T 59 R LED	RTLED38	38	0.1	SW	2,400	274	374	0.2	$ 56.07	$ 708.75	$0	12.6	12.6
35LED	Library Office	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2400	1,296	6	T 59 R LED	RTLED38	38	0.2	SW	2,400	547	749	0.3	$ 112.13	$ 1,417.50	$0	12.6	12.6
35LED	Library Storage	8	T 32 R F 3 (ELE)	F43ILL/2	90	0.7	SW	3200	2,304	8	T 59 R LED	RTLED38	38	0.3	SW	3,200	973	1,331	0.4	$ 192.11	$ 1,890.00	$0	9.8	9.8
262LED	Library Rear Hall	5	CF42/1	CF42/1-I	48	0.2	SW	6240	1,498	5	6BLMWLED	6BLMWLED	13	0.1	SW	6,240	406	1,092	0.2	$ 148.91	$ 810.00	$0	5.4	5.4
X1	Library Rear Hall	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	26	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8,760	26	-	0.0	$ -	$ -	$0		#DIV/0!
35LED	105 Electrical Media Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	1600	288	2	T 59 R LED	RTLED38	38	0.1	C-OCC	1,600	122	166	0.1	$ 26.73	$ 472.50	$0	17.7	17.7
35LED	Server Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	1600	576	4	T 59 R LED	RTLED38	38	0.2	C-OCC	1,600	243	333	0.2	$ 53.46	$ 945.00	$0	17.7	17.7
35LED	105 Tech Workroom	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	1600	576	4	T 59 R LED	RTLED38	38	0.2	SW	1,600	243	333	0.2	$ 53.46	$ 945.00	$0	17.7	17.7
32LED	105A Electrical	1	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	1600	96	1	4 ft LED Tube	200732x2	30	0.0	SW	1,600	48	48	0.0	$ 7.71	$ 163.35	$0	21.2	21.2
35LED	Front Lobby Mens Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	4300	774	2	T 59 R LED	RTLED38	38	0.1	C-OCC	4,300	327	447	0.1	$ 62.67	$ 472.50	$0	7.5	7.5
35LED	Front Lobby Womens Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	4300	774	2	T 59 R LED	RTLED38	38	0.1	C-OCC	4,300	327	447	0.1	$ 62.67	$ 472.50	$0	7.5	7.5
46LED	117 Custodian	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	3400	204	1	4 ft LED Tube	200732x2	30	0.0	SW	3,400	102	102	0.0	$ 14.62	$ 163.35	$0	11.2	11.2
262LED	118 Storage	1	CF42/1	CF42/1-I	48	0.0	SW	3200	154	1	6BLMWLED	6BLMWLED	13	0.0	SW	3,200	42	112	0.0	$ 16.16	$ 162.00	$0	10.0	10.0
32LED	122 Security	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	3400	408	2	4 ft LED Tube	200732x2	30	0.1	SW	3,400	204	204	0.1	$ 29.24	$ 326.70	$0	11.2	11.2
262LED	121 Admin Lobby	17	CF42/1	CF42/1-I	48	0.8	SW	2400	1,958	17	6BLMWLED	6BLMWLED	13	0.2	SW	2,400	530	1,428	0.6	$ 213.84	$ 2,754.00	$0	12.9	12.9
35LED	123 Files	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	2400	432	2	T 59 R LED	RTLED38	38	0.1	C-OCC	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
262LED	Mail Room	1	CF42/1	CF42/1-I	48	0.0	SW	2400	115	1	6BLMWLED	6BLMWLED	13	0.0	SW	2,400	31	84	0.0	$ 12.58	$ 162.00	$0	12.9	12.9
35LED	124	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	2400	432	2	T 59 R LED	RTLED38	38	0.1	C-OCC	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
35LED	126	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	2400	432	2	T 59 R LED	RTLED38	38	0.1	C-OCC	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
35LED	127	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	2400	432	2	T 59 R LED	RTLED38	38	0.1	C-OCC	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
35LED	128	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	2400	432	2	T 59 R LED	RTLED38	38	0.1	C-OCC	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
35LED	129 Principal	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	2400	864	4	T 59 R LED	RTLED38	38	0.2	C-OCC	2,400	365	499	0.2	$ 74.76	$ 945.00	$0	12.6	12.6
218LED	130 Int Staff	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	2400	1,296	6	4 ft LED Tube	200732x3	45	0.3	C-OCC	2,400	648	648	0.3	$ 97.04	$ 1,470.15	$0	15.2	15.2
35LED	130 Rear Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	2400	432	2	T 59 R LED	RTLED38	38	0.1	C-OCC	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
35LED	Copy Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648	3	T 59 R LED	RTLED38	38	0.1	SW	2,400	274	374	0.2	$ 56.07	$ 708.75	$0	12.6	12.6
35LED	Main Office Open Area	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	2400	1,296	6	T 59 R LED	RTLED38	38	0.2	C-OCC	2,400	547	749	0.3	$ 112.13	$ 1,417.50	$0	12.6	12.6
218LED	133 Conference	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	1200	648	6	4 ft LED Tube	200732x3	45	0.3	C-OCC	1,200	324	324	0.3	$ 55.57	$ 1,470.15	$0	26.5	26.5
X1	121 Lobby	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	6240	37	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	6,240	37	-	0.0	$ -	$ -	$0		#DIV/0!
262LED	Main Office Mens Room	1	CF42/1	CF42/1-I	48	0.0	SW	4300	206	1	6BLMWLED	6BLMWLED	13	0.0	SW	4,300	56	151	0.0	$ 21.09	$ 162.00	$0	7.7	7.7
262LED	Main Office Womens Room	1	CF42/1	CF42/1-I	48	0.0	SW	4300	206	1	6BLMWLED	6BLMWLED	13	0.0	SW	4,300	56	151	0.0	$ 21.09	$ 162.00	$0	7.7	7.7
32LED	Guidance Hallway	7	1T 32 R F 2 (ELE)	F42LL	60	0.4	SW	6240	2,621	7	4 ft LED Tube	200732x2	30	0.2	SW	6,240	1,310	1,310	0.2	$ 178.69	$ 1,143.45	$0	6.4	6.4
262LED	Guidance Hallway	16	CF42/1	CF42/1-I	48	0.8	SW	6240	4,792	16	6BLMWLED	6BLMWLED	13	0.2	SW	6,240	1,298	3,494	0.6	$ 476.52	$ 2,592.00	$0	5.4	5.4
35LED	Guidance Office Open	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2400	2,592	12	T 59 R LED	RTLED38	38	0.5	C-OCC	2,400	1,094	1,498	0.6	$ 224.27	$ 2,835.00	$0	12.6	12.6
262LED	Guidance Office Open	10	CF42/1	CF42/1-I	48	0.5	C-OCC	2400	1,152	10	6BLMWLED	6BLMWLED	13	0.1	C-OCC	2,400	312	840	0.4	$ 125.79	$ 1,620.00	$0	12.9	12.9
X1	Guidance Office Open	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	53	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8,760	53	-	0.0	$ -	$ -	$0		#DIV/0!
32LED	Guidance Mens Room	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	$ 18.08	$ 163.35	$0	9.0	9.0
32LED	Guidance Womens Room	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	$ 18.08	$ 163.35	$0	9.0	9.0
35LED	Guidance Office #1	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	SW	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
35LED	Guidance Office #2	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	SW	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
35LED	Guidance Office #3	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	SW	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
35LED	Guidance Office #4	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	SW	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
35LED	Guidance Office #5	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	SW	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
35LED	Guidance Office #6	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	SW	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
35LED	Guidance Office #7	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	SW	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
35LED	Guidance Office #8	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	SW	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
35LED	Guidance Office #9	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	SW	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
218LED	Conference Room	4	W 32 C F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	1200	432	4	4 ft LED Tube	200732x3	45	0.2	C-OCC	1,200	216	216	0.2	$ 37.04	$ 980.10	$0	26.5	26.5
35LED	135 Nurse Open Area	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	SW	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
32LED	Nurse Mens Room	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	$ 18.08	$ 163.35	$0	9.0	9.0
32LED	Nurse Womens Room	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	$ 18.08	$ 163.35	$0	9.0	9.0
35LED	Nurse Exam Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	SW	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
35LED	Nurse Resting Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648	3	T 59 R LED	RTLED38	38	0.1	SW	2,400	274	374	0.2	$ 56.07	$ 708.75	$0	12.6	12.6
35LED	Nurses Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	SW	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
50LED	Nurses Office Storage	1	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	4 ft LED Tube	200732x2	30	0.0	SW	2,400	72	72	0.0	$ 10.78	$ 163.35	$0	15.2	15.2
50LED	Controls Room	1	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	1600	96	1	4 ft LED Tube	200732x2	30	0.0	SW	1,600	48	48	0.0	$ 7.71	$ 163.35	$0	21.2	21.2
50LED	Elevator Machine Room	2	W 32 W P 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	$ 15.42	$ 326.70	$0	21.2	21.2
32LED	Stair #5 Lobby	8	1T 32 R F 2 (ELE)	F42LL	60	0.5	BR	6240	2,995	8	4 ft LED Tube	200732x2	30	0.2	BR	6,240	1,498	1,498	0.2	$ 204.22	$ 1,306.80	$0	6.4	6.4
262LED	Stair #5 Lobby	2	CF42/1	CF42/1-I	48	0.1	BR	6240	599	2	6BLMWLED	6BLMWLED	13	0.0	BR	6,240	162	437	0.1	$ 59.56	$ 324.00	$0	5.4	5.4
35LED	139 Faculty Dining	8	T 32 R F 3 (ELE)	F43ILL/2	90	0.7	C-OCC	1700	1,224	8	T 59 R LED	RTLED38	38	0.3	C-OCC	1,700	517	707	0.4	$ 112.24	$ 1,890.00	$0	16.8	16.8
262LED	Side Entrance	84	CF42/1	CF42/1-I	48	4.0	BR	6240	25,160	84	6BLMWLED	6BLMWLED	13	1.1	BR	6,240	6,814	18,346	2.9	$ 2,501.70	$ 13,608.00	$0	5.4	5.4
X1	Side Entrance	8	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	6240	75	8	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	6,240	75	-	0.0	$ -	$ -	$0		#DIV/0!
220LED	Side Entrance	20	S 17 C F 1(ELE)	F21ILL	20	0.4	BR	6240	2,496	20	2 ft LED Tube	200714x2	16	0.3	BR	6,240	1,997	499	0.1	$ 68.07	$ 2,727.00	$0	40.1	40.1
261LED	153 Auditorium Hallway	2	PAR 38 SP	H100/1	100	0.2	SW	2000	400	2	EVO35/10	EVO35/10	39	0.1	SW	2,000	156	244	0.1	$ 37.60	$ 877.50	$0	23.3	23.3

Energy Audit of Newark Public Schools - Science Park High 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
35LED	153 Auditorium Hallway	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2000	360	2	T 59 R LED	RTLED38	38	0.1	SW	2,000	152	208	0.1	$ 32.05	$ 472.50	$0	14.7	14.7
220LED	153 Auditorium	60	S 17 C F 1(ELE)	F21ILL	20	1.2	SW	2000	2,400	60	2 ft LED Tube	200714x2	16	1.0	SW	2,000	1,920	480	0.2	$ 73.97	$ 8,181.00	$0	110.6	110.6
261LED	153 Auditorium	56	PAR 38 SP	H100/1	100	5.6	SW	2000	11,200	56	EVO35/10	EVO35/10	39	2.2	SW	2,000	4,368	6,832	3.4	$ 1,052.81	$ 24,570.00	$0	23.3	23.3
220LED	153 Auditorium	60	S 17 C F 1(ELE)	F21ILL	20	1.2	SW	2000	2,400	60	2 ft LED Tube	200714x2	16	1.0	SW	2,000	1,920	480	0.2	$ 73.97	$ 8,181.00	$0	110.6	110.6
261LED	153 Auditorium	90	PAR 38 SP	H100/1	100	9.0	SW	2000	18,000	90	EVO35/10	EVO35/10	39	3.5	SW	2,000	7,020	10,980	5.5	$ 1,692.02	$ 39,487.50	$0	23.3	23.3
X1	153 Auditorium	10	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2000	30	10	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2,000	30	-	0.0	$ -	$ -	$0		#DIV/0!
227LED	Auditorium Stage	4	70 W MH Wall Pack	MH70/1	95	0.4	SW	2000	760	4	FXLED18	FXLED18/1	18	0.1	SW	2,000	144	616	0.3	$ 94.93	$ 1,692.90	$400	17.8	13.6
50LED	Auditorium Stage	3	W 32 W P 2 (ELE)	F42LL	60	0.2	SW	2000	360	3	4 ft LED Tube	200732x2	30	0.1	SW	2,000	180	180	0.1	$ 27.74	$ 490.05	$0	17.7	17.7
X1	Auditorium Stage	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2000	6	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2,000	6	-	0.0	$ -	$ -	$0		#DIV/0!
50LED	Auditorium Stage	2	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	2000	240	2	4 ft LED Tube	200732x2	30	0.1	SW	2,000	120	120	0.1	$ 18.49	$ 326.70	$0	17.7	17.7
46LED	149 Rear Corridor Storage	15	W 32 C F 2 (ELE)	F42LL	60	0.9	SW	3200	2,880	15	4 ft LED Tube	200732x2	30	0.5	SW	3,200	1,440	1,440	0.5	$ 207.81	$ 2,450.25	$0	11.8	11.8
7LED	150 Mens Dress Room	1	2T 32 R F 2 (u)	FU2LL	60	0.1	C-OCC	2800	168	1	2T 46 R LED	2RTLED	25	0.0	C-OCC	2,800	70	98	0.0	$ 14.37	$ 202.50	$0	14.1	14.1
35LED	150 Mens Dress Room	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	C-OCC	2800	252	1	T 59 R LED	RTLED38	38	0.0	C-OCC	2,800	106	146	0.1	$ 21.35	$ 236.25	$0	11.1	11.1
262LED	150 Mens Dress Room	1	CF42/1	CF42/1-I	48	0.0	C-OCC	2800	134	1	6BLMWLED	6BLMWLED	13	0.0	C-OCC	2,800	36	98	0.0	$ 14.37	$ 162.00	$0	11.3	11.3
7LED	150 Womens Dress Room	1	2T 32 R F 2 (u)	FU2LL	60	0.1	C-OCC	2800	168	1	2T 46 R LED	2RTLED	25	0.0	C-OCC	2,800	70	98	0.0	$ 14.37	$ 202.50	$0	14.1	14.1
35LED	150 Womens Dress Room	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	C-OCC	2800	252	1	T 59 R LED	RTLED38	38	0.0	C-OCC	2,800	106	146	0.1	$ 21.35	$ 236.25	$0	11.1	11.1
262LED	150 Womens Dress Room	1	CF42/1	CF42/1-I	48	0.0	C-OCC	2800	134	1	6BLMWLED	6BLMWLED	13	0.0	C-OCC	2,800	36	98	0.0	$ 14.37	$ 162.00	$0	11.3	11.3
262LED	Rear Entrance	16	CF42/1	CF42/1-I	48	0.8	SW	6240	4,792	16	6BLMWLED	6BLMWLED	13	0.2	SW	6,240	1,298	3,494	0.6	$ 476.52	$ 2,592.00	$0	5.4	5.4
32LED	Rear Entrance	20	1T 32 R F 2 (ELE)	F42LL	60	1.2	SW	6240	7,488	20	4 ft LED Tube	200732x2	30	0.6	SW	6,240	3,744	3,744	0.6	$ 510.55	$ 3,267.00	$0	6.4	6.4
262LED	Auditorium Rear Hall	18	CF42/1	CF42/1-I	48	0.9	SW	6240	5,391	18	6BLMWLED	6BLMWLED	13	0.2	SW	6,240	1,460	3,931	0.6	$ 536.08	$ 2,916.00	$0	5.4	5.4
32LED	148 Music Room	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2700	324	2	4 ft LED Tube	200732x2	30	0.1	SW	2,700	162	162	0.1	$ 23.87	$ 326.70	$0	13.7	13.7
35LED	Music Ensemble	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2700	729	3	T 59 R LED	RTLED38	38	0.1	SW	2,700	308	421	0.2	$ 62.06	$ 708.75	$0	11.4	11.4
46LED	Production class 1C	12	W 32 C F 2 (ELE)	F42LL	60	0.7	SW	2700	1,944	12	4 ft LED Tube	200732x2	30	0.4	SW	2,700	972	972	0.4	$ 143.21	$ 1,960.20	$0	13.7	13.7
262LED	Instructional Music 1B	16	CF42/1	CF42/1-I	48	0.8	SW	2700	2,074	16	6BLMWLED	6BLMWLED	13	0.2	SW	2,700	562	1,512	0.6	$ 222.77	$ 2,592.00	$0	11.6	11.6
35LED	Music Storage	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	3200	864	3	T 59 R LED	RTLED38	38	0.1	SW	3,200	365	499	0.2	$ 72.04	$ 708.75	$0	9.8	9.8
X1	Instructional Music 1B	3	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	39	3	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8,760	39	-	0.0	$ -	$ -	$0		#DIV/0!
35LED	Music Practice Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2700	486	2	T 59 R LED	RTLED38	38	0.1	SW	2,700	205	281	0.1	$ 41.37	$ 472.50	$0	11.4	11.4
35LED	Music Practice Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2700	486	2	T 59 R LED	RTLED38	38	0.1	SW	2,700	205	281	0.1	$ 41.37	$ 472.50	$0	11.4	11.4
35LED	Gown Storage	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	3200	864	3	T 59 R LED	RTLED38	38	0.1	SW	3,200	365	499	0.2	$ 72.04	$ 708.75	$0	9.8	9.8
218LED	Music Vocals 1A	20	W 32 C F 3 (ELE)	F43ILL/2	90	1.8	C-OCC	2700	4,860	20	4 ft LED Tube	200732x3	45	0.9	C-OCC	2,700	2,430	2,430	0.9	$ 358.02	$ 4,900.50	$0	13.7	13.7
X1	Music Vocals 1A	3	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	2700	12	3	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	2,700	12	-	0.0	$ -	$ -	$0		#DIV/0!
50LED	146 Electric Room	2	W 32 W P 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	$ 15.42	$ 326.70	$0	21.2	21.2
50LED	145 Gym Storage	1	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	3200	192	1	4 ft LED Tube	200732x2	30	0.0	SW	3,200	96	96	0.0	$ 13.85	$ 163.35	$0	11.8	11.8
46LED	154 Data Room	2	W 32 C 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	$ 15.42	$ 326.70	$0	21.2	21.2
46LED	141 Gym	2	W 32 C 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	$ 15.42	$ 326.70	$0	21.2	21.2
35LED	Mens Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	4300	1,548	4	T 59 R LED	RTLED38	38	0.2	C-OCC	4,300	654	894	0.2	$ 125.34	$ 945.00	$0	7.5	7.5
262LED	Mens Room	1	CF42/1	CF42/1-I	48	0.0	C-OCC	4300	206	1	6BLMWLED	6BLMWLED	13	0.0	C-OCC	4,300	56	151	0.0	$ 21.09	$ 162.00	$0	7.7	7.7
35LED	Womens Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	4300	1,548	4	T 59 R LED	RTLED38	38	0.2	C-OCC	4,300	654	894	0.2	$ 125.34	$ 945.00	$0	7.5	7.5
262LED	Womens Room	1	CF42/1	CF42/1-I	48	0.0	C-OCC	4300	206	1	6BLMWLED	6BLMWLED	13	0.0	C-OCC	4,300	56	151	0.0	$ 21.09	$ 162.00	$0	7.7	7.7
50LED	143 Custodial Room	1	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	3200	192	1	4 ft LED Tube	200732x2	30	0.0	SW	3,200	96	96	0.0	$ 13.85	$ 163.35	$0	11.8	11.8
263	Natatorium	10	Pool MH1500 Fixt	MH1500/1	1610	16.1	SW	1600	25,760	10	Pool MH1500 Fixt	MH1500/1	1610	16.1	SW	1,600	25,760	-	0.0	$ -	$ -	$0		#DIV/0!
262LED	Natatorium	70	CF42/1	CF42/1-I	48	3.4	SW	1600	5,376	70	6BLMWLED	6BLMWLED	13	0.9	SW	1,600	1,456	3,920	2.5	$ 629.65	$ 11,340.00	$0	18.0	18.0
218LED	Natatorium	2	W 32 C F 3 (ELE)	F43ILL/2	90	0.2	SW	1600	288	2	4 ft LED Tube	200732x3	45	0.1	SW	1,600	144	144	0.1	$ 23.13	$ 490.05	$0	21.2	21.2
227LED	Natatorium	10	70 W MH Wall Pack	MH70/1	95	1.0	SW	1600	1,520	10	FXLED18	FXLED18/1	18	0.2	SW	1,600	288	1,232	0.8	$ 197.89	$ 4,232.25	$1,000	21.4	16.3
X1	Natatorium	9	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	1600	22	9	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	1,600	22	-	0.0	$ -	$ -	$0		#DIV/0!
7LED	B26 PE Office	4	2T 32 R F 2 (u)	FU2LL	60	0.2	SW	2400	576	4	2T 46 R LED	2RTLED	25	0.1	SW	2,400	240	336	0.1	$ 50.32	$ 810.00	$0	16.1	16.1
50LED	B27 Natatorium Laundry	2	W 32 W P 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	$ 21.56	$ 326.70	$0	15.2	15.2
262LED	B28 Mens Locker Room	10	CF42/1	CF42/1-I	48	0.5	SW	2800	1,344	10	6BLMWLED	6BLMWLED	13	0.1	SW	2,800	364	980	0.4	$ 143.71	$ 1,620.00	$0	11.3	11.3
35LED	B28 Mens Locker Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2800	756	3	T 59 R LED	RTLED38	38	0.1	SW	2,800	319	437	0.2	$ 64.05	$ 708.75	$0	11.1	11.1
262LED	B29 Womens Locker Room	10	CF42/1	CF42/1-I	48	0.5	SW	2800	1,344	10	6BLMWLED	6BLMWLED	13	0.1	SW	2,800	364	980	0.4	$ 143.71	$ 1,620.00	$0	11.3	11.3
35LED	B29 Womens Locker Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2800	756	3	T 59 R LED	RTLED38	38	0.1	SW	2,800	319	437	0.2	$ 64.05	$ 708.75	$0	11.1	11.1
50LED	B25 Elevator Equipment Room	2	W 32 W P 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	$ 15.42	$ 326.70	$0	21.2	21.2
264LED	Service Elevator	9	Elevator Halogen 20W	HLV20/1	30	0.3	BR	8760	2,365	9	TCP2W	H20LED	2	0.0	BR	8,760	158	2,208	0.3	$ 295.72	$ 425.25	$0	1.4	1.4
35LED	254 AV Storage	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	3200	864	3	T 59 R LED	RTLED38	38	0.1	SW	3,200	365	499	0.2	$ 72.04	$ 708.75	$0	9.8	9.8
262LED	2nd Floor Lobby	90	CF42/1	CF42/1-I	48	4.3	SW	6240	26,957	90	6BLMWLED	6BLMWLED	13	1.2	SW	6,240	7,301	19,656	3.2	$ 2,680.40	$ 14,580.00	$0	5.4	5.4
220LED	2nd Floor Lobby	45	S 17 C F 1(ELE)	F21ILL	20	0.9	SW	6240	5,616	45	2 ft LED Tube	200714x2	16	0.7	SW	6,240	4,493	1,123	0.2	$ 153.17	$ 6,135.75	$0	40.1	40.1
X1	2nd Floor Lobby	8	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	105	8	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8,760	105	-	0.0	$ -	$ -	$0		#DIV/0!
32LED	2nd Floor Lobby	6	1T 32 R F 2 (ELE)	F42LL	60	0.4	SW	6240	2,246	6	4 ft LED Tube	200732x2	30	0.2	SW	6,240	1,123	1,123	0.2	$ 153.17	$ 980.10	$0	6.4	6.4
54LED	2nd Floor Lobby Display Cases	24	S 34 W F 1 (MAG)	F41EE	43	1.0	SW	6240	6,440	24	4 ft LED Tube	200732x1	15	0.4	SW	6,240	2,246	4,193	0.7	$ 571.82	$ 1,960.20	$0	3.4	3.4
35LED	2nd Floor Lobby Mens Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	4300	774	2	T 59 R LED	RTLED38	38	0.1	C-OCC	4,300	327	447	0.1	$ 62.67	$ 472.50	$0	7.5	7.5
35LED	2nd Floor Lobby Womens Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	4300	774	2	T 59 R LED	RTLED38	38	0.1	C-OCC	4,300	327	447	0.1	$ 62.67	$ 472.50	$0	7.5	7.5
50LED	255 Gym Storage	3	W 32 W P 2 (ELE)	F42LL	60	0.2	SW	3200	576	3	4 ft LED Tube	200732x2	30	0.1	SW	3,200	288	288	0.1	$ 41.56	$ 490.05	$0	11.8	11.8
X1	255 Gym Storage	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	26	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8,760	26	-	0.0	$ -	$ -	$0		#DIV/0!
32LED	2nd Floor Front Hall South	11	1T 32 R F 2 (ELE)	F42LL	60	0.7	SW	6240	4,118	11	4 ft LED Tube	200732x2	30	0.3	SW	6,240	2,059	2,059	0.3	$ 280.80	$ 1,796.85	$0	6.4	6.4
35LED	258 Athletic Directors Office	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	2400	864	4	T 59 R LED	RTLED38	38	0.2	SW	2,400	365	499	0.2	$ 74.76	$ 945.00	$0	12.6	12.6
35LED	257 Training	11	T 32 R F 3 (ELE)	F43ILL/2	90	1.0	SW	2400	2,376	11	T 59 R LED	RTLED38	38	0.4	SW	2,400	1,003	1,373	0.6	$ 205.58	$ 2,598.75	$0	12.6	12.6
50LED	256 Athletic Equipment	4	W 32 W P 2 (ELE)	F42LL	60	0.2	SW	3200	768	4	4 ft LED Tube	200732x2	30	0.1	SW	3,200	384	384	0.1	$ 55.42	$ 653.40	$0	11.8	11.8
32LED	2nd Floor South Corr	12	1T 32 R F 2 (ELE)	F42LL	60	0.7	SW	6240	4,493	12	4 ft LED Tube	200732x2	30	0.4	SW	6,240	2,246	2,246	0.4	$ 306.33	$ 1,960.20	$0	6.4	6.4
218LED	266 Health Class	14	W 32 C F 3 (ELE)	F43ILL/2	90	1.3	SW	2700	3,402	14	4 ft LED Tube	200732x3	45	0.6	SW	2,700	1,701	1,701	0.6	$ 250.61	$ 3,430.35	$0	13.7	13.7
35LED	265 Fitness Center	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2700	2,916	12	T 59 R LED	RTLED38	38	0.5	C-OCC	2,700	1,231	1,685	0.6	$ 248.23	$ 2,835.00	$0	11.4	11.4
262LED	264 Mens Locker Room	10	CF42/1	CF42/1-I	48	0.5	C-OCC	2800	1,344	10	6BLMWLED	6BLMWLED	13	0.1	C-OCC	2,800	364	980	0.4	$ 143.71	$ 1,620.00	$0	11.3	11.3
35LED	264 Mens Locker Room	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	C-OCC	2800	4,032	16	T 59 R LED	RTLED38	38	0.6	C-OCC	2,800	1,702	2,330	0.8	$ 341.62	$ 3,780.00	$0	11.1	11.1
262LED	262 Womens Locker Room	10	CF42/1	CF42/1-I	48	0.5	C-OCC	2800	1,344	10	6BLMWLED	6BLMWLED	13	0.1	C-OCC	2,800	364	980	0.4	$ 143.71	$ 1,620.00	$0	11.3	11.3
35LED	262 Womens Locker Room	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	C-OCC	2800	4,032	16	T 59 R LED	RTLED38	38	0.6	C-OCC	2,800	1,702	2,330	0.8	$ 341.62	$ 3,780.00	$0	11.1	11.1
46LED	263 Custodial	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	3200	192	1	4 ft LED Tube	200732x2	30	0.0	SW	3,200	96	96	0.0	$ 13.85	$ 163.35	$0	11.8	11.8
46LED	261 Electrical	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	1600	96	1	4 ft LED Tube	200732x2	30	0.0	SW	1,600	48	48	0.0	$ 7.71	$ 163.35	$0	21.2	21.2
35LED	260 PE Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	SW	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
35LED	260 PE Office Restroom	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	4300	774	2	T 59 R LED	RTLED38	38	0.1	SW	4,300	327	447	0.1	$ 62.67	$ 472.50	$0	7.5	7.5
35LED	259 PE Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	SW	2,400	182	250	0.1	$ 37.38	$ 472.50	$0	12.6	12.6
35LED	259 PE Office Restroom	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	4300	774	2	T 59 R LED	RTLED38	38	0.1	SW	4,300	327	447	0.1	$ 62.67	$ 472.50	$0	7.5	7.5
265LED	Gym	36	Gym HB 8L CFL	CF42/8-L	376	13.5	SW	1600	21,658	36	BAYLED78W	BAYLED78W	93	3.3	SW	1,600	5,357	16,301	10.2	$ 2,618.32	$ -	$3,600	0.0	-1.4
46LED	360 IT Closet	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	1600	96	1	4 ft LED Tube	200732x2	30	0.0	SW	1,600	48	48	0.0	$ 7.71	$ 163.35	$0	21.2	21.2
46LED	359 Mech Room 3	40	W 32 C F 2 (ELE)	F42LL	60	2.4	SW	1600	3,840	40	4 ft LED Tube	200732x2	30	1.2	SW	1,600	1,920	1,920	1.2	$ 308.40	$ 6,534.00	$0	21.2	21.2
X1	359 Mech Room 3	3	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	39	3	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8,760	39	-	0.0	$ -	$ -	$0		#DIV/0!
46LED	357 Storage	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	3200	192	1	4 ft LED Tube	200732x2	30	0.0	SW	3,200	96	96	0.0	$ 13.85	$ 163.35	$0	11.8	11.8
262LED	3rd Floor South Hall	4	CF42/1	CF42/1-I	48	0.2	SW	6240	1,198	4	6BLMWLED	6BLMWLED	13	0.1	SW	6,240	324	874	0.1	$ 119.13	$ 648.00	$0	5.4	5.4
32LED	3rd Floor South Hall	16	1T 32 R F 2 (ELE)	F42LL	60	1.0	SW	6240	5,990	16	4 ft LED Tube	200732x2	30	0.5	SW	6,240	2,995	2,995	0.5	$ 408.44	$ 2,613.60	$0	6.4	6.4
X1	3rd Floor South Hall	6	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	79	6	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8,760	79	-	0.0	$ -	$ -	$0		#DIV/0!
32LED	356 Greenhouse	6	1T 32 R F 2 (ELE)	F42LL	60	0.4	C-OCC	2700	972	6	4 ft LED Tube	200732x2	30	0.2	C-OCC	2,700	486	486	0.2	$ 71.60	$ 980.10	$0	13.7	13.7
50LED	356 Greenhouse	2	W 32 W P 2 (ELE)	F42LL	60	0.1	C-OCC	2700	324	2	4 ft LED Tube	200732x2	30	0.1	C-OCC	2,700	162	162	0.1	$ 23.87	$ 326.70	$0	13.7	13.7
218LED	355 Art Class	12	W 32 C F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2700	2,916	12	4 ft LED Tube	200732x3	45	0.5	C-OCC	2,700	1,458	1,458	0.5	$ 214.81	$ 2,940.30	$0	13.7	13.7
46LED	355 Art Class Stor	2	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	3200	384	2	4 ft LED Tube	200732x2	30	0.1	SW	3,200	192	192	0.1	$ 27.71	$ 326.70	$0	11.8	11.8
50LED	355 Art Class Stor	4	W 32 W P 2 (ELE)	F42LL	60	0.2	SW	3200	768	4	4 ft LED Tube	200732x2	30	0.1	SW	3,200	384	384	0.1	$ 55.42	$ 653.40	$0	11.8	11.8
50LED	355 Art Class Kiln Room	2	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	2700	324	2	4 ft LED Tube	200732x2	30	0.1	SW	2,700	162	162	0.1	$ 23.87	$ 326.70	$0	13.7	13.7
35LED	355 Art Class Darkroom	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2700	729	3	T 59 R LED	RTLED38	38	0.1	SW	2,700	308	421	0.2	$ 62.06	$ 708.75	$0	11.4	11.4
35LED	354 Video Edit	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2700	729	3	T 59 R LED	RTLED38	38	0.1	SW	2,700	308	421	0.2	$ 62.06	$ 708.75	$0	11.4	11.4
54LED	3rd Floor Corridor Display	12	S 34 W F 1 (MAG)	F41EE	43	0.5	SW	6240	3,220	12	4 ft LED Tube	200732x1	15	0.2	SW	6,240	1,123	2,097	0.3	$ 285.91	$ 980.10	$0	3.4	3.4
218LED	353 Cad Class	20	W 32 C F 3 (ELE)	F43ILL/2	90	1.8	SW	2700	4,860	20	4 ft LED Tube	200732x3	45	0.9	SW	2,700	2,430	2,430	0.9	$ 358.02	$ 4,900.50	$0	13.7	13.7
46LED	352 IT Closet	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	1600	96	1	4 ft LED Tube	200732x2	30	0.0	SW	1,600	48	48	0.0	$ 7.71	$ 163.35	$0	21.2	21.2
46LED	351 IT Closet	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	1600	96	1	4 ft LED Tube	200732x2	30	0.0	SW	1,600	48	48	0.0	$ 7.71	$ 163.35	$0	21.2	21.2
46LED	354 IT Closet	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	1600	96	1	4 ft LED Tube	200732x2	30	0.0	SW	1,600	48	48	0.0	$ 7.71	$ 163.35	$0	21.2	21.2
50LED	North Electrical Rooms (8x	8	W 32 W P 2 (ELE)	F42LL	60	0.5	SW	1600	768	8	4 ft LED Tube	200732x2	30	0.2	SW	1,600	384	384	0.2	$ 61.68	$ 1,306.80	$0	21.2	21.2
50LED	North Custodial Rooms (4x	4	W 32 W P 2 (ELE)	F42LL	60	0.2	SW	1600	384	4	4 ft LED Tube	200732x2	30	0.1	SW	1,600	192	192	0.1	$ 30.84	$ 653.40	$0	21.2	21.2
50LED	North IT Closets (4x)	4	W 32 W P 2 (ELE)	F42LL	60	0.2	SW	1600	384	4	4 ft LED Tube	200732x2	30	0.1	SW	1,600	192	192	0.1	$ 30.84	$ 653.40	$0	21.2	21.2
262LED	North Chemical Storage Rooms	2	CF42/1	CF42/1-I	48	0.1	SW	3200	307	2	6BLMWLED	6BLMWLED	13	0.0	SW	3,200	83	224	0.1	$ 32.33	$ 324.00	$0	10.0	10.0
262LED	Main Entrance First Floor	98	CF42/1	CF42/1-I	48	4.7	SW	6240	29,353	98	6BLMWLED	6BLMWLED	13	1.3	SW	6,240	7,950	21,403	3.4	$ 2,918.66	$ 15,876.00	$0	5.4	5.4
X1	Main Entrance First Floor	10	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	131	10	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8,760	131	-	0.0	$ -	$ -	$0		#DIV/0!
	Total	2,235				156.0			453,774	2,235			8,063	70.5			193,367	260,407	85.6	$37,800	$407,770	$5,000		
																	Demand Savings			85.6	$4,468			
																	kWh Savings			260,407	$33,332			
																	Total savings				$37,800		10.8	10.7

Energy Audit of Newark Public Schools - Science Park High 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 Saved) * ($/kWh)	Cost for renovations to lighting system		Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered
50LED	Basement Corridor	25	W 32 W P 2 (ELE)	F42LL	60	1.5	SW	3400	5,100.0	25	W 32 W P 2 (ELE)	F42LL	60	1.5	NONE	3400	5,100.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	B19 Custodian Break Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	3400	1,224.0	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	NONE	3400	1,224.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	Basement Corridor #2	2	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	3400	408.0	2	W 32 C F 2 (ELE)	F42LL	60	0.1	NONE	3400	408.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	B20 Custodian Shop	6	W 32 C F 2 (ELE)	F42LL	60	0.4	C-OCC	2400	864.0	6	W 32 C F 2 (ELE)	F42LL	60	0.4	NONE	2400	864.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	B18 Admin Storage	2	W 32 C F 2 (ELE)	F42LL	60	0.1	BR	3200	384.0	2	W 32 C F 2 (ELE)	F42LL	60	0.1	NONE	3200	384.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	B17 Water Service	11	W 32 C F 2 (ELE)	F42LL	60	0.7	BR	3200	2,112.0	11	W 32 C F 2 (ELE)	F42LL	60	0.7	NONE	3200	2,112.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	B13 Storage	13	W 32 C F 2 (ELE)	F42LL	60	0.8	C-OCC	3200	2,496.0	13	W 32 C F 2 (ELE)	F42LL	60	0.8	NONE	3200	2,496.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	B12 Heating Plant	15	W 32 C F 2 (ELE)	F42LL	60	0.9	SW	2000	1,800.0	15	W 32 C F 2 (ELE)	F42LL	60	0.9	NONE	2000	1,800.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
7LED	B14 Mens Locker Room	2	2T 32 R F 2 (u)	FU2LL	60	0.1	SW	2800	336.0	2	2T 32 R F 2 (u)	FU2LL	60	0.1	NONE	2800	336.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	B14 Mens Locker Room	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	2800	252.0	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	NONE	2800	252.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	B14 Entrance Corridor	1	CF42/1	CF42/1-I	48	0.0	SW	2800	134.4	1	CF42/1	CF42/1-I	48	0.0	NONE	2800	134.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
7LED	B15 Womens Locker Room	2	2T 32 R F 2 (u)	FU2LL	60	0.1	C-OCC	2800	336.0	2	2T 32 R F 2 (u)	FU2LL	60	0.1	NONE	2800	336.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	B15 Womens Locker Room	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	BR	2800	252.0	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	NONE	2800	252.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	B15 Entrance Corridor	1	CF42/1	CF42/1-I	48	0.0	BR	2800	134.4	1	CF42/1	CF42/1-I	48	0.0	NONE	2800	134.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	B16 Custodians Office	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	3400	1,224.0	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	NONE	3400	1,224.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	Basement Corridor	7	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	8760	92.0	7	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8760	92.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
117	Elevator #1	8	CF 23	CFS23/1	23	0.2	SW	8760	1,611.8	8	CF 23	CFS23/1	23	0.2	NONE	8760	1,611.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	B11 Mechanical Room	7	W 32 C F 2 (ELE)	F42LL	60	0.4	SW	1600	672.0	7	W 32 C F 2 (ELE)	F42LL	60	0.4	NONE	1600	672.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	B10 Electric Service Room	11	W 32 C F 2 (ELE)	F42LL	60	0.7	SW	1600	1,056.0	11	W 32 C F 2 (ELE)	F42LL	60	0.7	NONE	1600	1,056.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	B10 Side Room	4	W 32 C F 2 (ELE)	F42LL	60	0.2	SW	1600	384.0	4	W 32 C F 2 (ELE)	F42LL	60	0.2	NONE	1600	384.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	B09	25	W 32 C F 2 (ELE)	F42LL	60	1.5	SW	3200	4,800.0	25	W 32 C F 2 (ELE)	F42LL	60	1.5	NONE	3200	4,800.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	B05 Storage	10	W 32 C F 2 (ELE)	F42LL	60	0.6	C-OCC	3200	1,920.0	10	W 32 C F 2 (ELE)	F42LL	60	0.6	NONE	3200	1,920.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	B05 Storage	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	8760	26.3	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8760	26.3	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	B05 Security	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	3400	1,224.0	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	NONE	3400	1,224.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	B05 Rear Secure Equipment	4	W 32 C F 2 (ELE)	F42LL	60	0.2	SW	3400	816.0	4	W 32 C F 2 (ELE)	F42LL	60	0.2	NONE	3400	816.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	B03	12	W 32 C F 2 (ELE)	F42LL	60	0.7	C-OCC	3200	2,304.0	12	W 32 C F 2 (ELE)	F42LL	60	0.7	NONE	3200	2,304.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	B02 IT Storage	6	W 32 C F 2 (ELE)	F42LL	60	0.4	C-OCC	3200	1,152.0	6	W 32 C F 2 (ELE)	F42LL	60	0.4	NONE	3200	1,152.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	B01 Generator	8	W 32 C F 2 (ELE)	F42LL	60	0.5	C-OCC	1600	768.0	8	W 32 C F 2 (ELE)	F42LL	60	0.5	NONE	1600	768.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	B01 Generator Intake Room	4	W 32 C F 2 (ELE)	F42LL	60	0.2	C-OCC	1600	384.0	4	W 32 C F 2 (ELE)	F42LL	60	0.2	NONE	1600	384.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	North Stairs (3x)	3	W 32 W P 2 (ELE)	F42LL	60	0.2	BR	8760	1,576.8	3	W 32 W P 2 (ELE)	F42LL	60	0.2	NONE	8760	1,576.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
32LED	North Stairs (3x)	30	1T 32 R F 2 (ELE)	F42LL	60	1.8	BR	8760	15,768.0	30	1T 32 R F 2 (ELE)	F42LL	60	1.8	NONE	8760	15,768.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	120A Electric	2	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	1600	192.0	2	W 32 C F 2 (ELE)	F42LL	60	0.1	NONE	1600	192.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	Cafeteria	140	CF42/1	CF42/1-I	48	6.7	SW	2000	13,440.0	140	CF42/1	CF42/1-I	48	6.7	NONE	2000	13,440.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	Cafeteria	60	CF42/1	CF42/1-I	48	2.9	SW	2000	5,760.0	60	CF42/1	CF42/1-I	48	2.9	NONE	2000	5,760.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	Cafeteria	20	CF42/1	CF42/1-I	48	1.0	SW	2000	1,920.0	20	CF42/1	CF42/1-I	48	1.0	NONE	2000	1,920.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	Kitchen Serving Area	11	CF42/1	CF42/1-I	48	0.5	SW	2000	1,056.0	11	CF42/1	CF42/1-I	48	0.5	NONE	2000	1,056.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	Kitchen Serving Area	7	T 32 R F 3 (ELE)	F43ILL/2	90	0.6	SW	2000	1,260.0	7	T 32 R F 3 (ELE)	F43ILL/2	90	0.6	NONE	2000	1,260.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	Chair Storage Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	3200	576.0	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	NONE	3200	576.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	Kitchen	20	T 32 R F 3 (ELE)	F43ILL/2	90	1.8	SW	2000	3,600.0	20	T 32 R F 3 (ELE)	F43ILL/2	90	1.8	NONE	2000	3,600.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	Kitchen Office	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	2400	216.0	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	NONE	2400	216.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	Kitchen Storage	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	3200	288.0	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	NONE	3200	288.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
32LED	Loading Dock	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	240.0	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	NONE	2000	240.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	115 Common Suite Corridor	13	CF42/1	CF42/1-I	48	0.6	SW	6240	3,893.8	13	CF42/1	CF42/1-I	48	0.6	NONE	6240	3,893.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	115 Common Suite Corridor	5	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	8760	65.7	5	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8760	65.7	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
32LED	115 Common Suite Corridor	12	1T 32 R F 2 (ELE)	F42LL	60	0.7	SW	6240	4,492.8	12	1T 32 R F 2 (ELE)	F42LL	60	0.7	NONE	6240	4,492.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
218LED	Development Center	14	W 32 C F 3 (ELE)	F43ILL/2	90	1.3	C-OCC	2400	3,024.0	14	W 32 C F 3 (ELE)	F43ILL/2	90	1.3	NONE	2400	3,024.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
218LED	Common Suite	12	W 32 C F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2400	2,592.0	12	W 32 C F 3 (ELE)	F43ILL/2	90	1.1	NONE	2400	2,592.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
218LED	107 Conference Room	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	1200	648.0	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	NONE	1200	648.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
218LED	108 Conference Room	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	1200	648.0	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	NONE	1200	648.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	112 Debate Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	C-OCC	1200	324.0	324.0	0.0	$41.47	$270.00	$35.00	6.5	5.7
35LED	109	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	C-OCC	1200	324.0	324.0	0.0	$41.47	$270.00	$35.00	6.5	5.7
35LED	110	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	C-OCC	1200	324.0	324.0	0.0	$41.47	$270.00	$35.00	6.5	5.7
35LED	111	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	C-OCC	1200	324.0	324.0	0.0	$41.47	$270.00	$35.00	6.5	5.7
218LED	104 Media Center	14	W 32 C F 3 (ELE)	F43ILL/2	90	1.3	C-OCC	2400	3,024.0	14	W 32 C F 3 (ELE)	F43ILL/2	90	1.3	NONE	2400	3,024.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
218LED	Tech Center (in Lib)	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	2400	1,296.0	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	NONE	2400	1,296.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
218LED	Conference Room (in Lib	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	2400	1,296.0	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	NONE	2400	1,296.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	Library	30	CF42/1	CF42/1-I	48	1.4	SW	1600	2,304.0	30	CF42/1	CF42/1-I	48	1.4	NONE	1600	2,304.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	Library	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	52.6	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8760	52.6	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	Library	58	CF42/1	CF42/1-I	48	2.8	SW	1600	4,454.4	58	CF42/1	CF42/1-I	48	2.8	NONE	1600	4,454.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	Library Office	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	C-OCC	1200	324.0	324.0	0.0	$41.47	$270.00	$35.00	6.5	5.7
35LED	Library Office	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	1200	648.0	648.0	0.0	$82.94	$270.00	$35.00	3.3	2.8
35LED	Library Storage	8	T 32 R F 3 (ELE)	F43ILL/2	90	0.7	SW	3200	2,304.0	8	T 32 R F 3 (ELE)	F43ILL/2	90	0.7	C-OCC	3200	2,304.0	0.0	0.0	$0.00	$270.00	$35.00		#DIV/0!
262LED	Library Rear Hall	5	CF42/1	CF42/1-I	48	0.2	SW	6240	1,497.6	5	CF42/1	CF42/1-I	48	0.2	NONE	6240	1,497.6	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	Library Rear Hall	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	26.3	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8760	26.3	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	105 Electrical Media Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	1600	288.0	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	NONE	1600	288.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	Server Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	1600	576.0	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	NONE	1600	576.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	105 Tech Workroom	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	1600	576.0	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	NONE	1600	576.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
32LED	105A Electrical	1	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	1600	96.0	1	1T 32 R F 2 (ELE)	F42LL	60	0.1	NONE	1600	96.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	Front Lobby Mens Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	4300	774.0	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	NONE	4300	774.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	Front Lobby Womens Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	4300	774.0	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	NONE	4300	774.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	117 Custodian	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	3400	204.0	1	W 32 C F 2 (ELE)	F42LL	60	0.1	NONE	3400	204.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	118 Storage	1	CF42/1	CF42/1-I	48	0.0	SW	3200	153.6	1	CF42/1	CF42/1-I	48	0.0	NONE	3200	153.6	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
32LED	122 Security	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	3400	408.0	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	NONE	3400	408.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	121 Admin Lobby	17	CF42/1	CF42/1-I	48	0.8	SW	2400	1,958.4	17	CF42/1	CF42/1-I	48	0.8	NONE	2400	1,958.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	123 Files	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	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!
262LED	Mail Room	1	CF42/1	CF42/1-I	48	0.0	SW	2400	115.2	1	CF42/1	CF42/1-I	48	0.0	NONE	2400	115.2	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	124	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	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!
35LED	126	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	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!
35LED	127	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	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!
35LED	128	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	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!
35LED	129 Principal	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	2400	864.0	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	NONE	2400	864.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
218LED	130 Int Staff	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	2400	1,296.0	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	NONE	2400	1,296.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	130 Rear Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	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!
35LED	Copy Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	NONE	2400	648.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	Main Office Open Area	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	2400	1,296.0	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	NONE	2400	1,296.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
218LED	133 Conference	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	1200	648.0	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	NONE	1200	648.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	121 Lobby	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	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!
262LED	Main Office Mens Room	1	CF42/1	CF42/1-I	48	0.0	SW	4300	206.4	1	CF42/1	CF42/1-I	48	0.0	C-OCC	3000	144.0	62.4	0.0	$7.99	$270.00	$35.00	33.8	29.4
262LED	Main Office Womens Room	1	CF42/1	CF42/1-I	48	0.0	SW	4300	206.4	1	CF42/1	CF42/1-I	48	0.0	C-OCC	3000	144.0	62.4	0.0	$7.99	$270.00	$35.00	33.8	29.4
32LED	Guidance Hallway	7	1T 32 R F 2 (ELE)	F42LL	60	0.4	SW	6240	2,620.8	7	1T 32 R F 2 (ELE)	F42LL	60	0.4	NONE	6240	2,620.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	Guidance Hallway	16	CF42/1	CF42/1-I	48	0.8	SW	6240	4,792.3	16	CF42/1	CF42/1-I	48	0.8	NONE	6240	4,792.3	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	Guidance Office Open	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2400	2,592.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	NONE	2400	2,592.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	Guidance Office Open	10	CF42/1	CF42/1-I	48	0.5	C-OCC	2400	1,152.0	10	CF42/1	CF42/1-I	48	0.5	NONE	2400	1,152.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	Guidance Office Open	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	52.6	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8760	52.6	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
32LED	Guidance Mens Room	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!
32LED	Guidance Womens Room	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!
35LED	Guidance Office #1	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	$27.65	$270.00	$35.00	9.8	8.5
35LED	Guidance Office #2	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	$27.65	$270.00	$35.00	9.8	8.5
35LED	Guidance Office #3	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	$27.65	$270.00	$35.00	9.8	8.5
35LED	Guidance Office #4	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	$27.65	$270.00	$35.00	9.8	8.5
35LED	Guidance Office #5	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	$27.65	$270.00	$35.00	9.8	8.5
35LED	Guidance Office #6	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	$27.65	$270.00	$35.00	9.8	8.5
35LED	Guidance Office #7	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	$27.65	$270.00	$35.00	9.8	8.5
35LED	Guidance Office #8	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	$27.65	$270.00	$35.00	9.8	8.5
35LED	Guidance Office #9	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	$27.65	$270.00	$35.00	9.8	8.5
218LED	Conference Room	4	W 32 C F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	1200	432.0	4	W 32 C F 3 (ELE)	F43ILL/2	90	0.4	NONE	1200	432.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	135 Nurse Open Area	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!
32LED	Nurse Mens Room	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!
32LED	Nurse Womens Room	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!
35LED	Nurse Exam Room	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	$27.65	$270.00	$35.00	9.8	8.5
35LED	Nurse Resting Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	C-OCC	1200	324.0	324.0	0.0	$41.47	$270.00	$35.00	6.5	5.7
35LED	Nurses 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	$27.65	$270.00	$35.00	9.8	8.5
50LED	Nurses Office Storage	1	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	2400	144.0	1	W 32 W P 2 (ELE)	F42LL	60	0.1	NONE	2400	144.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	Controls Room	1	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	1600	96.0	1	W 32 W P 2 (ELE)	F42LL	60	0.1	NONE	1600	96.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	Elevator Machine Room	2	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	1600	192.0	2	W 32 W P 2 (ELE)	F42LL	60	0.1	NONE	1600	192.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
32LED	Stair #5 Lobby	8	1T 32 R F 2 (ELE)	F42LL	60	0.5	BR	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!
262LED	Stair #5 Lobby	2	CF42/1	CF42/1-I	48	0.1	BR	6240	599.0	2	CF42/1	CF42/1-I	48	0.1	NONE	6240	599.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	139 Faculty Dining	8	T 32 R F 3 (ELE)	F43ILL/2	90	0.7	C-OCC	1700	1,224.0	8	T 32 R F 3 (ELE)	F43ILL/2	90	0.7	NONE	1700	1,224.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	Side Entrance	84	CF42/1	CF42/1-I	48	4.0	BR	6240	25,159.7	84	CF42/1	CF42/1-I	48	4.0	NONE	6240	25,159.7	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	Side Entrance	8	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	6240	74.9	8	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	6240	74.9	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
220LED	Side Entrance	20	S 17 C F 1(ELE)	F21ILL	20	0.4	BR	6240	2,496.0	20	S 17 C F 1(ELE)	F21ILL	20	0.4	NONE	6240	2,496.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
261LED	153 Auditorium Hallway	2	PAR 38 SP	H100/1	100	0.2	SW	2000	400.0	2	PAR 38 SP	H100/1	100	0.2	NONE	2000	400.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!

Energy Audit of Newark Public Schools - Science Park High 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 Saved) * ($/kWh)	Cost for renovations to lighting system		Length of time for renovations cost to be recovered	Length of time for renovations cost to be recovered
35LED	153 Auditorium Hallway	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2000	360.0	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	NONE	2000	360.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
220LED	153 Auditorium	60	S 17 C F 1(ELE)	F21ILL	20	1.2	SW	2000	2,400.0	60	S 17 C F 1(ELE)	F21ILL	20	1.2	NONE	2000	2,400.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
261LED	153 Auditorium	56	PAR 38 SP	H100/1	100	5.6	SW	2000	11,200.0	56	PAR 38 SP	H100/1	100	5.6	NONE	2000	11,200.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
220LED	153 Auditorium	60	S 17 C F 1(ELE)	F21ILL	20	1.2	SW	2000	2,400.0	60	S 17 C F 1(ELE)	F21ILL	20	1.2	NONE	2000	2,400.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
261LED	153 Auditorium	90	PAR 38 SP	H100/1	100	9.0	SW	2000	18,000.0	90	PAR 38 SP	H100/1	100	9.0	NONE	2000	18,000.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	153 Auditorium	10	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2000	30.0	10	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	2000	30.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
227LED	Auditorium Stage	4	70 W MH Wall Pack	MH70/1	95	0.4	SW	2000	760.0	4	70 W MH Wall Pack	MH70/1	95	0.4	NONE	2000	760.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	Auditorium Stage	3	W 32 W P 2 (ELE)	F42LL	60	0.2	SW	2000	360.0	3	W 32 W P 2 (ELE)	F42LL	60	0.2	NONE	2000	360.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	Auditorium Stage	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2000	6.0	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	2000	6.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	Auditorium Stage	2	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	2000	240.0	2	W 32 W P 2 (ELE)	F42LL	60	0.1	NONE	2000	240.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	149 Rear Corridor Storage	15	W 32 C F 2 (ELE)	F42LL	60	0.9	SW	3200	2,880.0	15	W 32 C F 2 (ELE)	F42LL	60	0.9	NONE	3200	2,880.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
7LED	150 Mens Dress Room	1	2T 32 R F 2 (u)	FU2LL	60	0.1	C-OCC	2800	168.0	1	2T 32 R F 2 (u)	FU2LL	60	0.1	NONE	2800	168.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	150 Mens Dress Room	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	C-OCC	2800	252.0	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	NONE	2800	252.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	150 Mens Dress Room	1	CF42/1	CF42/1-I	48	0.0	C-OCC	2800	134.4	1	CF42/1	CF42/1-I	48	0.0	NONE	2800	134.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
7LED	150 Womens Dress Room	1	2T 32 R F 2 (u)	FU2LL	60	0.1	C-OCC	2800	168.0	1	2T 32 R F 2 (u)	FU2LL	60	0.1	NONE	2800	168.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	150 Womens Dress Room	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	C-OCC	2800	252.0	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	NONE	2800	252.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	150 Womens Dress Room	1	CF42/1	CF42/1-I	48	0.0	C-OCC	2800	134.4	1	CF42/1	CF42/1-I	48	0.0	NONE	2800	134.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	Rear Entrance	16	CF42/1	CF42/1-I	48	0.8	SW	6240	4,792.3	16	CF42/1	CF42/1-I	48	0.8	NONE	6240	4,792.3	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
32LED	Rear Entrance	20	1T 32 R F 2 (ELE)	F42LL	60	1.2	SW	6240	7,488.0	20	1T 32 R F 2 (ELE)	F42LL	60	1.2	NONE	6240	7,488.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	Auditorium Rear Hal	18	CF42/1	CF42/1-I	48	0.9	SW	6240	5,391.4	18	CF42/1	CF42/1-I	48	0.9	NONE	6240	5,391.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
32LED	148 Music Room	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2700	324.0	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	NONE	2700	324.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	Music Ensemble	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2700	729.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	NONE	2700	729.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	Production class 1C	12	W 32 C F 2 (ELE)	F42LL	60	0.7	SW	2700	1,944.0	12	W 32 C F 2 (ELE)	F42LL	60	0.7	NONE	2700	1,944.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	Instructional Music 1B	16	CF42/1	CF42/1-I	48	0.8	SW	2700	2,073.6	16	CF42/1	CF42/1-I	48	0.8	NONE	2700	2,073.6	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	Music Storage	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	3200	864.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	NONE	3200	864.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	Instructional Music 1B	3	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	39.4	3	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8760	39.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	Music Practice Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2700	486.0	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	1890	340.2	145.8	0.0	$18.66	$270.00	$35.00	14.5	12.6
35LED	Music Practice Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2700	486.0	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	1890	340.2	145.8	0.0	$18.66	$270.00	$35.00	14.5	12.6
35LED	Gown Storage	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	3200	864.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	C-OCC	3200	864.0	0.0	0.0	$0.00	$270.00	$35.00		#DIV/0!
218LED	Music Vocals 1A	20	W 32 C F 3 (ELE)	F43ILL/2	90	1.8	C-OCC	2700	4,860.0	20	W 32 C F 3 (ELE)	F43ILL/2	90	1.8	NONE	2700	4,860.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	Music Vocals 1A	3	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	2700	12.2	3	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	2700	12.2	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	146 Electric Room	2	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	1600	192.0	2	W 32 W P 2 (ELE)	F42LL	60	0.1	NONE	1600	192.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	145 Gym Storage	1	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	3200	192.0	1	W 32 W P 2 (ELE)	F42LL	60	0.1	NONE	3200	192.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	154 Data Room	2	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	1600	192.0	2	W 32 C F 2 (ELE)	F42LL	60	0.1	NONE	1600	192.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	141 Gym	2	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	1600	192.0	2	W 32 C F 2 (ELE)	F42LL	60	0.1	NONE	1600	192.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	Mens Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	4300	1,548.0	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	NONE	4300	1,548.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	Mens Room	1	CF42/1	CF42/1-I	48	0.0	C-OCC	4300	206.4	1	CF42/1	CF42/1-I	48	0.0	NONE	4300	206.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	Womens Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	4300	1,548.0	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	NONE	4300	1,548.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	Womens Room	1	CF42/1	CF42/1-I	48	0.0	C-OCC	4300	206.4	1	CF42/1	CF42/1-I	48	0.0	NONE	4300	206.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	143 Custodial Room	1	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	3200	192.0	1	W 32 W P 2 (ELE)	F42LL	60	0.1	NONE	3200	192.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
263	Natatorium	10	Pool MH1500 Fixt	MH1500/1	1610	16.1	SW	1600	25,760.0	10	Pool MH1500 Fixt	MH1500/1	1610	16.1	NONE	1600	25,760.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	Natatorium	70	CF42/1	CF42/1-I	48	3.4	SW	1600	5,376.0	70	CF42/1	CF42/1-I	48	3.4	NONE	1600	5,376.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
218LED	Natatorium	2	W 32 C F 3 (ELE)	F43ILL/2	90	0.2	SW	1600	288.0	2	W 32 C F 3 (ELE)	F43ILL/2	90	0.2	NONE	1600	288.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
227LED	Natatorium	10	70 W MH Wall Pack	MH70/1	95	1.0	SW	1600	1,520.0	10	70 W MH Wall Pack	MH70/1	95	1.0	NONE	1600	1,520.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	Natatorium	9	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	1600	21.6	9	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	1600	21.6	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
7LED	B26 PE Office	4	2T 32 R F 2 (u)	FU2LL	60	0.2	SW	2400	576.0	4	2T 32 R F 2 (u)	FU2LL	60	0.2	NONE	2400	576.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	B27 Natatorium Laundry	2	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	2400	288.0	2	W 32 W P 2 (ELE)	F42LL	60	0.1	NONE	2400	288.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	B28 Mens Locker Room	10	CF42/1	CF42/1-I	48	0.5	SW	2800	1,344.0	10	CF42/1	CF42/1-I	48	0.5	NONE	2800	1,344.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	B28 Mens Locker Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2800	756.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	NONE	2800	756.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	B29 Womens Locker Room	10	CF42/1	CF42/1-I	48	0.5	SW	2800	1,344.0	10	CF42/1	CF42/1-I	48	0.5	NONE	2800	1,344.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	B29 Womens Locker Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2800	756.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	NONE	2800	756.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	B25 Elevator Equipment Room	2	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	1600	192.0	2	W 32 W P 2 (ELE)	F42LL	60	0.1	NONE	1600	192.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
264LED	Service Elevator	9	Elevator Halogen 20W	HLV20/1	30	0.3	BR	8760	2,365.2	9	Elevator Halogen 20W	HLV20/1	30	0.3	NONE	8760	2,365.2	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	254 AV Storage	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	3200	864.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	NONE	3200	864.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	2nd Floor Lobby	90	CF42/1	CF42/1-I	48	4.3	SW	6240	26,956.8	90	CF42/1	CF42/1-I	48	4.3	NONE	6240	26,956.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
220LED	2nd Floor Lobby	45	S 17 C F 1(ELE)	F21ILL	20	0.9	SW	6240	5,616.0	45	S 17 C F 1(ELE)	F21ILL	20	0.9	NONE	6240	5,616.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	2nd Floor Lobby	8	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	105.1	8	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8760	105.1	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
32LED	2nd Floor Lobby	6	1T 32 R F 2 (ELE)	F42LL	60	0.4	SW	6240	2,246.4	6	1T 32 R F 2 (ELE)	F42LL	60	0.4	NONE	6240	2,246.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
54LED	2nd Floor Lobby Display Cases	24	S 34 W F 1 (MAG)	F41EE	43	1.0	SW	6240	6,439.7	24	S 34 W F 1 (MAG)	F41EE	43	1.0	NONE	6240	6,439.7	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	2nd Floor Lobby Mens Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	4300	774.0	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	NONE	4300	774.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	2nd Floor Lobby Womens Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	4300	774.0	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	NONE	4300	774.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	255 Gym Storage	3	W 32 W P 2 (ELE)	F42LL	60	0.2	SW	3200	576.0	3	W 32 W P 2 (ELE)	F42LL	60	0.2	NONE	3200	576.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	255 Gym Storage	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	26.3	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8760	26.3	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
32LED	2nd Floor Front Hall South	11	1T 32 R F 2 (ELE)	F42LL	60	0.7	SW	6240	4,118.4	11	1T 32 R F 2 (ELE)	F42LL	60	0.7	NONE	6240	4,118.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	258 Athletic Directors Office	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	NONE	2400	864.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	257 Training	11	T 32 R F 3 (ELE)	F43ILL/2	90	1.0	SW	2400	2,376.0	11	T 32 R F 3 (ELE)	F43ILL/2	90	1.0	NONE	2400	2,376.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	256 Athletic Equipment	4	W 32 W P 2 (ELE)	F42LL	60	0.2	SW	3200	768.0	4	W 32 W P 2 (ELE)	F42LL	60	0.2	NONE	3200	768.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
32LED	2nd Floor South Corr	12	1T 32 R F 2 (ELE)	F42LL	60	0.7	SW	6240	4,492.8	12	1T 32 R F 2 (ELE)	F42LL	60	0.7	NONE	6240	4,492.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
218LED	266 Health Class	14	W 32 C F 3 (ELE)	F43ILL/2	90	1.3	SW	2700	3,402.0	14	W 32 C F 3 (ELE)	F43ILL/2	90	1.3	NONE	2700	3,402.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	265 Fitness Center	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2700	2,916.0	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	NONE	2700	2,916.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	264 Mens Locker Room	10	CF42/1	CF42/1-I	48	0.5	C-OCC	2800	1,344.0	10	CF42/1	CF42/1-I	48	0.5	NONE	2800	1,344.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	264 Mens Locker Room	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	C-OCC	2800	4,032.0	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	NONE	2800	4,032.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	262 Womens Locker Room	10	CF42/1	CF42/1-I	48	0.5	C-OCC	2800	1,344.0	10	CF42/1	CF42/1-I	48	0.5	NONE	2800	1,344.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	262 Womens Locker Room	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	C-OCC	2800	4,032.0	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	NONE	2800	4,032.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	263 Custodial	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	3200	192.0	1	W 32 C F 2 (ELE)	F42LL	60	0.1	NONE	3200	192.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	261 Electrical	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	1600	96.0	1	W 32 C F 2 (ELE)	F42LL	60	0.1	NONE	1600	96.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	260 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	NONE	2400	432.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	260 PE Office 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	NONE	4300	774.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	259 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	NONE	2400	432.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	259 PE Office 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	NONE	4300	774.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
265LED	Gym	36	Gym HB 8L CFL	CF42/8-L	376	13.5	SW	1600	21,657.6	36	Gym HB 8L CFL	CF42/8-L	376	13.5	NONE	1600	21,657.6	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	360 IT Closet	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	1600	96.0	1	W 32 C F 2 (ELE)	F42LL	60	0.1	NONE	1600	96.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	359 Mech Room 3	40	W 32 C F 2 (ELE)	F42LL	60	2.4	SW	1600	3,840.0	40	W 32 C F 2 (ELE)	F42LL	60	2.4	NONE	1600	3,840.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	359 Mech Room 3	3	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	39.4	3	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8760	39.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	357 Storage	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	3200	192.0	1	W 32 C F 2 (ELE)	F42LL	60	0.1	NONE	3200	192.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	3rd Floor South Hal	4	CF42/1	CF42/1-I	48	0.2	SW	6240	1,198.1	4	CF42/1	CF42/1-I	48	0.2	NONE	6240	1,198.1	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
32LED	3rd Floor South Hal	16	1T 32 R F 2 (ELE)	F42LL	60	1.0	SW	6240	5,990.4	16	1T 32 R F 2 (ELE)	F42LL	60	1.0	NONE	6240	5,990.4	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	3rd Floor South Hal	6	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	78.8	6	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8760	78.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
32LED	356 Greenhouse	6	1T 32 R F 2 (ELE)	F42LL	60	0.4	C-OCC	2700	972.0	6	1T 32 R F 2 (ELE)	F42LL	60	0.4	NONE	2700	972.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	356 Greenhouse	2	W 32 W P 2 (ELE)	F42LL	60	0.1	C-OCC	2700	324.0	2	W 32 W P 2 (ELE)	F42LL	60	0.1	NONE	2700	324.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
218LED	355 Art Class	12	W 32 C F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2700	2,916.0	12	W 32 C F 3 (ELE)	F43ILL/2	90	1.1	NONE	2700	2,916.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	355 Art Class Stor	2	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	3200	384.0	2	W 32 C F 2 (ELE)	F42LL	60	0.1	NONE	3200	384.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	355 Art Class Stor	4	W 32 W P 2 (ELE)	F42LL	60	0.2	SW	3200	768.0	4	W 32 W P 2 (ELE)	F42LL	60	0.2	NONE	3200	768.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	355 Art Class Kiln Room	2	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	2700	324.0	2	W 32 W P 2 (ELE)	F42LL	60	0.1	NONE	2700	324.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	355 Art Class Darkroom	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2700	729.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	NONE	2700	729.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
35LED	354 Video Edit	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2700	729.0	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	C-OCC	1890	510.3	218.7	0.0	$27.99	$270.00	$35.00	9.6	8.4
54LED	3rd Floor Corridor Display	12	S 34 W F 1 (MAG)	F41EE	43	0.5	SW	6240	3,219.8	12	S 34 W F 1 (MAG)	F41EE	43	0.5	NONE	6240	3,219.8	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
218LED	353 Cad Class	20	W 32 C F 3 (ELE)	F43ILL/2	90	1.8	SW	2700	4,860.0	20	W 32 C F 3 (ELE)	F43ILL/2	90	1.8	C-OCC	1890	3,402.0	1,458.0	0.0	$186.62	$270.00	$35.00	1.4	1.3
46LED	352 IT Closet	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	1600	96.0	1	W 32 C F 2 (ELE)	F42LL	60	0.1	NONE	1600	96.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	351 IT Closet	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	1600	96.0	1	W 32 C F 2 (ELE)	F42LL	60	0.1	NONE	1600	96.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
46LED	354 IT Closet	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	1600	96.0	1	W 32 C F 2 (ELE)	F42LL	60	0.1	NONE	1600	96.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	North Electrical Rooms (8x	8	W 32 W P 2 (ELE)	F42LL	60	0.5	SW	1600	768.0	8	W 32 W P 2 (ELE)	F42LL	60	0.5	NONE	1600	768.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	North Custodial Rooms (4x	4	W 32 W P 2 (ELE)	F42LL	60	0.2	SW	1600	384.0	4	W 32 W P 2 (ELE)	F42LL	60	0.2	NONE	1600	384.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
50LED	North IT Closets (4x)	4	W 32 W P 2 (ELE)	F42LL	60	0.2	SW	1600	384.0	4	W 32 W P 2 (ELE)	F42LL	60	0.2	NONE	1600	384.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	North Chemical Storage Rooms	2	CF42/1	CF42/1-I	48	0.1	SW	3200	307.2	2	CF42/1	CF42/1-I	48	0.1	NONE	3200	307.2	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
262LED	Main Entrance First Floo	98	CF42/1	CF42/1-I	48	4.7	SW	6240	29,353.0	98	CF42/1	CF42/1-I	48	4.7	NONE	6240	29,353.0	0.0	0.0	$0.00	$0.00	$0.00		#DIV/0!
X1	Main Entrance First Floo	10	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	131.4	10	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8760	131.4	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!
															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
															0	#N/A	#VALUE!	#VALUE!	#N/A	#VALUE!			#VALUE!	#VALUE!
	Total	2,235				156.0			453774.2	2235.0				156.0			446713.1	7061.1	0.0	903.8	7020.0	910.0		
																	Demand Savings			0.0	$0			
																	kWh Savings			7,061	$904			
																	Total Savings				$904		7.8	6.8

Energy Audit of Newark Public Schools - Science Park High 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
50LED	Basement Corridor	25	W 32 W P 2 (ELE)	F42LL	60	1.5	SW	3400	5,100	25	4 ft LED Tube	200732x2	30	0.8	NONE	3,400	2,550	2,550	0.8	$ 365.55	$ 4,083.75	$ -	11.2	11.2
35LED	B19 Custodian Break Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	3400	1,224	4	T 59 R LED	RTLED38	38	0.2	NONE	3,400	517	707	0.2	$ 101.38	$ 945.00	$ -	9.3	9.3
46LED	Basement Corridor #2	2	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	3400	408	2	4 ft LED Tube	200732x2	30	0.1	NONE	3,400	204	204	0.1	$ 29.24	$ 326.70	$ -	11.2	11.2
46LED	B20 Custodian Shop	6	W 32 C F 2 (ELE)	F42LL	60	0.4	C-OCC	2400	864	6	4 ft LED Tube	200732x2	30	0.2	NONE	2,400	432	432	0.2	$ 64.69	$ 980.10	$ -	15.2	15.2
46LED	B18 Admin Storage	2	W 32 C F 2 (ELE)	F42LL	60	0.1	BR	3200	384	2	4 ft LED Tube	200732x2	30	0.1	NONE	3,200	192	192	0.1	$ 27.71	$ 326.70	$ -	11.8	11.8
46LED	B17 Water Service	11	W 32 C F 2 (ELE)	F42LL	60	0.7	BR	3200	2,112	11	4 ft LED Tube	200732x2	30	0.3	NONE	3,200	1,056	1,056	0.3	$ 152.39	$ 1,796.85	$ -	11.8	11.8
46LED	B13 Storage	13	W 32 C F 2 (ELE)	F42LL	60	0.8	C-OCC	3200	2,496	13	4 ft LED Tube	200732x2	30	0.4	NONE	3,200	1,248	1,248	0.4	$ 180.10	$ 2,123.55	$ -	11.8	11.8
46LED	B12 Heating Plant	15	W 32 C F 2 (ELE)	F42LL	60	0.9	SW	2000	1,800	15	4 ft LED Tube	200732x2	30	0.5	NONE	2,000	900	900	0.5	$ 138.69	$ 2,450.25	$ -	17.7	17.7
7LED	B14 Mens Locker Room	2	2T 32 R F 2 (u)	FU2LL	60	0.1	SW	2800	336	2	2T 46 R LED	2RTLED	25	0.1	NONE	2,800	140	196	0.1	$ 28.74	$ 405.00	$ -	14.1	14.1
35LED	B14 Mens Locker Room	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	2800	252	1	T 59 R LED	RTLED38	38	0.0	NONE	2,800	106	146	0.1	$ 21.35	$ 236.25	$ -	11.1	11.1
262LED	B14 Entrance Corridor	1	CF42/1	CF42/1-I	48	0.0	SW	2800	134	1	6BLMWLED	6BLMWLED	13	0.0	NONE	2,800	36	98	0.0	$ 14.37	$ 162.00	$ -	11.3	11.3
7LED	B15 Womens Locker Room	2	2T 32 R F 2 (u)	FU2LL	60	0.1	C-OCC	2800	336	2	2T 46 R LED	2RTLED	25	0.1	NONE	2,800	140	196	0.1	$ 28.74	$ 405.00	$ -	14.1	14.1
35LED	B15 Womens Locker Room	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	BR	2800	252	1	T 59 R LED	RTLED38	38	0.0	NONE	2,800	106	146	0.1	$ 21.35	$ 236.25	$ -	11.1	11.1
262LED	B15 Entrance Corridor	1	CF42/1	CF42/1-I	48	0.0	BR	2800	134	1	6BLMWLED	6BLMWLED	13	0.0	NONE	2,800	36	98	0.0	$ 14.37	$ 162.00	$ -	11.3	11.3
35LED	B16 Custodians Office	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	3400	1,224	4	T 59 R LED	RTLED38	38	0.2	NONE	3,400	517	707	0.2	$ 101.38	$ 945.00	$ -	9.3	9.3
X1	Basement Corridor	7	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	8760	92	7	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8,760	92	-	0.0	$ -	$ -	$ -		
117	Elevator #1	8	CF 23	CFS23/1	23	0.2	SW	8760	1,612	8	CF 23	CFS23/1	23	0.2	NONE	8,760	1,612	-	0.0	$ -	$ -	$ -		
46LED	B11 Mechanical Room	7	W 32 C F 2 (ELE)	F42LL	60	0.4	SW	1600	672	7	4 ft LED Tube	200732x2	30	0.2	NONE	1,600	336	336	0.2	$ 53.97	$ 1,143.45	$ -	21.2	21.2
46LED	B10 Electric Service Room	11	W 32 C F 2 (ELE)	F42LL	60	0.7	SW	1600	1,056	11	4 ft LED Tube	200732x2	30	0.3	NONE	1,600	528	528	0.3	$ 84.81	$ 1,796.85	$ -	21.2	21.2
46LED	B10 Side Room	4	W 32 C F 2 (ELE)	F42LL	60	0.2	SW	1600	384	4	4 ft LED Tube	200732x2	30	0.1	NONE	1,600	192	192	0.1	$ 30.84	$ 653.40	$ -	21.2	21.2
46LED	B09	25	W 32 C F 2 (ELE)	F42LL	60	1.5	SW	3200	4,800	25	4 ft LED Tube	200732x2	30	0.8	NONE	3,200	2,400	2,400	0.8	$ 346.35	$ 4,083.75	$ -	11.8	11.8
46LED	B05 Storage	10	W 32 C F 2 (ELE)	F42LL	60	0.6	C-OCC	3200	1,920	10	4 ft LED Tube	200732x2	30	0.3	NONE	3,200	960	960	0.3	$ 138.54	$ 1,633.50	$ -	11.8	11.8
X1	B05 Storage	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	8760	26	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8,760	26	-	0.0	$ -	$ -	$ -		
35LED	B05 Security	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	3400	1,224	4	T 59 R LED	RTLED38	38	0.2	NONE	3,400	517	707	0.2	$ 101.38	$ 945.00	$ -	9.3	9.3
46LED	B05 Rear Secure Equipment	4	W 32 C F 2 (ELE)	F42LL	60	0.2	SW	3400	816	4	4 ft LED Tube	200732x2	30	0.1	NONE	3,400	408	408	0.1	$ 58.49	$ 653.40	$ -	11.2	11.2
46LED	B03	12	W 32 C F 2 (ELE)	F42LL	60	0.7	C-OCC	3200	2,304	12	4 ft LED Tube	200732x2	30	0.4	NONE	3,200	1,152	1,152	0.4	$ 166.25	$ 1,960.20	$ -	11.8	11.8
46LED	B02 IT Storage	6	W 32 C F 2 (ELE)	F42LL	60	0.4	C-OCC	3200	1,152	6	4 ft LED Tube	200732x2	30	0.2	NONE	3,200	576	576	0.2	$ 83.12	$ 980.10	$ -	11.8	11.8
46LED	B01 Generator	8	W 32 C F 2 (ELE)	F42LL	60	0.5	C-OCC	1600	768	8	4 ft LED Tube	200732x2	30	0.2	NONE	1,600	384	384	0.2	$ 61.68	$ 1,306.80	$ -	21.2	21.2
46LED	B01 Generator Intake Room	4	W 32 C F 2 (ELE)	F42LL	60	0.2	C-OCC	1600	384	4	4 ft LED Tube	200732x2	30	0.1	NONE	1,600	192	192	0.1	$ 30.84	$ 653.40	$ -	21.2	21.2
50LED	North Stairs (3x)	3	W 32 W P 2 (ELE)	F42LL	60	0.2	BR	8760	1,577	3	4 ft LED Tube	200732x2	30	0.1	NONE	8,760	788	788	0.1	$ 105.61	$ 490.05	$ -	4.6	4.6
32LED	North Stairs (3x)	30	1T 32 R F 2 (ELE)	F42LL	60	1.8	BR	8760	15,768	30	4 ft LED Tube	200732x2	30	0.9	NONE	8,760	7,884	7,884	0.9	$ 1,056.13	$ 4,900.50	$ -	4.6	4.6
46LED	120A Electric	2	W 32 C 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	$ 15.42	$ 326.70	$ -	21.2	21.2
262LED	Cafeteria	140	CF42/1	CF42/1-I	48	6.7	SW	2000	13,440	140	6BLMWLED	6BLMWLED	13	1.8	NONE	2,000	3,640	9,800	4.9	$ 1,510.18	$ 22,680.00	$ -	15.0	15.0
262LED	Cafeteria	60	CF42/1	CF42/1-I	48	2.9	SW	2000	5,760	60	6BLMWLED	6BLMWLED	13	0.8	NONE	2,000	1,560	4,200	2.1	$ 647.22	$ 9,720.00	$ -	15.0	15.0
262LED	Cafeteria	20	CF42/1	CF42/1-I	48	1.0	SW	2000	1,920	20	6BLMWLED	6BLMWLED	13	0.3	NONE	2,000	520	1,400	0.7	$ 215.74	$ 3,240.00	$ -	15.0	15.0
262LED	Kitchen Serving Area	11	CF42/1	CF42/1-I	48	0.5	SW	2000	1,056	11	6BLMWLED	6BLMWLED	13	0.1	NONE	2,000	286	770	0.4	$ 118.66	$ 1,782.00	$ -	15.0	15.0
35LED	Kitchen Serving Area	7	T 32 R F 3 (ELE)	F43ILL/2	90	0.6	SW	2000	1,260	7	T 59 R LED	RTLED38	38	0.3	NONE	2,000	532	728	0.4	$ 112.18	$ 1,653.75	$ -	14.7	14.7
35LED	Chair Storage Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	3200	576	2	T 59 R LED	RTLED38	38	0.1	NONE	3,200	243	333	0.1	$ 48.03	$ 472.50	$ -	9.8	9.8
35LED	Kitchen	20	T 32 R F 3 (ELE)	F43ILL/2	90	1.8	SW	2000	3,600	20	T 59 R LED	RTLED38	38	0.8	NONE	2,000	1,520	2,080	1.0	$ 320.53	$ 4,725.00	$ -	14.7	14.7
35LED	Kitchen Office	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	2400	216	1	T 59 R LED	RTLED38	38	0.0	NONE	2,400	91	125	0.1	$ 18.69	$ 236.25	$ -	12.6	12.6
35LED	Kitchen Storage	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	SW	3200	288	1	T 59 R LED	RTLED38	38	0.0	NONE	3,200	122	166	0.1	$ 24.01	$ 236.25	$ -	9.8	9.8
32LED	Loading Dock	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2000	240	2	4 ft LED Tube	200732x2	30	0.1	NONE	2,000	120	120	0.1	$ 18.49	$ 326.70	$ -	17.7	17.7
262LED	115 Common Suite Corrido	13	CF42/1	CF42/1-I	48	0.6	SW	6240	3,894	13	6BLMWLED	6BLMWLED	13	0.2	NONE	6,240	1,055	2,839	0.5	$ 387.17	$ 2,106.00	$ -	5.4	5.4
X1	115 Common Suite Corrido	5	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	8760	66	5	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8,760	66	-	0.0	$ -	$ -	$ -		
32LED	115 Common Suite Corrido	12	1T 32 R F 2 (ELE)	F42LL	60	0.7	SW	6240	4,493	12	4 ft LED Tube	200732x2	30	0.4	NONE	6,240	2,246	2,246	0.4	$ 306.33	$ 1,960.20	$ -	6.4	6.4
218LED	Development Center	14	W 32 C F 3 (ELE)	F43ILL/2	90	1.3	C-OCC	2400	3,024	14	4 ft LED Tube	200732x3	45	0.6	NONE	2,400	1,512	1,512	0.6	$ 226.42	$ 3,430.35	$ -	15.2	15.2
218LED	Common Suite	12	W 32 C F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2400	2,592	12	4 ft LED Tube	200732x3	45	0.5	NONE	2,400	1,296	1,296	0.5	$ 194.08	$ 2,940.30	$ -	15.2	15.2
218LED	107 Conference Room	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	1200	648	6	4 ft LED Tube	200732x3	45	0.3	NONE	1,200	324	324	0.3	$ 55.57	$ 1,470.15	$ -	26.5	26.5
218LED	108 Conference Room	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	1200	648	6	4 ft LED Tube	200732x3	45	0.3	NONE	1,200	324	324	0.3	$ 55.57	$ 1,470.15	$ -	26.5	26.5
35LED	112 Debate Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648	3	T 59 R LED	RTLED38	38	0.1	C-OCC	1,200	137	511	0.2	$ 73.58	$ 978.75	$ 35	13.3	12.8
35LED	109	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648	3	T 59 R LED	RTLED38	38	0.1	C-OCC	1,200	137	511	0.2	$ 73.58	$ 978.75	$ 35	13.3	12.8
35LED	110	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648	3	T 59 R LED	RTLED38	38	0.1	C-OCC	1,200	137	511	0.2	$ 73.58	$ 978.75	$ 35	13.3	12.8
35LED	111	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648	3	T 59 R LED	RTLED38	38	0.1	C-OCC	1,200	137	511	0.2	$ 73.58	$ 978.75	$ 35	13.3	12.8
218LED	104 Media Center	14	W 32 C F 3 (ELE)	F43ILL/2	90	1.3	C-OCC	2400	3,024	14	4 ft LED Tube	200732x3	45	0.6	NONE	2,400	1,512	1,512	0.6	$ 226.42	$ 3,430.35	$ -	15.2	15.2
218LED	Tech Center (in Lib)	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	2400	1,296	6	4 ft LED Tube	200732x3	45	0.3	NONE	2,400	648	648	0.3	$ 97.04	$ 1,470.15	$ -	15.2	15.2
218LED	Conference Room (in Lib	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	2400	1,296	6	4 ft LED Tube	200732x3	45	0.3	NONE	2,400	648	648	0.3	$ 97.04	$ 1,470.15	$ -	15.2	15.2
262LED	Library	30	CF42/1	CF42/1-I	48	1.4	SW	1600	2,304	30	6BLMWLED	6BLMWLED	13	0.4	NONE	1,600	624	1,680	1.1	$ 269.85	$ 4,860.00	$ -	18.0	18.0
X1	Library	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	53	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8,760	53	-	0.0	$ -	$ -	$ -		
262LED	Library	58	CF42/1	CF42/1-I	48	2.8	SW	1600	4,454	58	6BLMWLED	6BLMWLED	13	0.8	NONE	1,600	1,206	3,248	2.0	$ 521.71	$ 9,396.00	$ -	18.0	18.0
35LED	Library Office	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648	3	T 59 R LED	RTLED38	38	0.1	C-OCC	1,200	137	511	0.2	$ 73.58	$ 978.75	$ 35	13.3	12.8
35LED	Library Office	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	SW	2400	1,296	6	T 59 R LED	RTLED38	38	0.2	C-OCC	1,200	274	1,022	0.3	$ 147.15	$ 1,687.50	$ 35	11.5	11.2
35LED	Library Storage	8	T 32 R F 3 (ELE)	F43ILL/2	90	0.7	SW	3200	2,304	8	T 59 R LED	RTLED38	38	0.3	C-OCC	3,200	973	1,331	0.4	$ 192.11	$ 2,160.00	$ 35	11.2	11.1
262LED	Library Rear Hall	5	CF42/1	CF42/1-I	48	0.2	SW	6240	1,498	5	6BLMWLED	6BLMWLED	13	0.1	NONE	6,240	406	1,092	0.2	$ 148.91	$ 810.00	$ -	5.4	5.4
X1	Library Rear Hall	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	26	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8,760	26	-	0.0	$ -	$ -	$ -		
35LED	105 Electrical Media Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	1600	288	2	T 59 R LED	RTLED38	38	0.1	NONE	1,600	122	166	0.1	$ 26.73	$ 472.50	$ -	17.7	17.7
35LED	Server Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	1600	576	4	T 59 R LED	RTLED38	38	0.2	NONE	1,600	243	333	0.2	$ 53.46	$ 945.00	$ -	17.7	17.7
35LED	105 Tech Workroom	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	1600	576	4	T 59 R LED	RTLED38	38	0.2	NONE	1,600	243	333	0.2	$ 53.46	$ 945.00	$ -	17.7	17.7
32LED	105A Electrical	1	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	1600	96	1	4 ft LED Tube	200732x2	30	0.0	NONE	1,600	48	48	0.0	$ 7.71	$ 163.35	$ -	21.2	21.2
35LED	Front Lobby Mens Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	4300	774	2	T 59 R LED	RTLED38	38	0.1	NONE	4,300	327	447	0.1	$ 62.67	$ 472.50	$ -	7.5	7.5
35LED	Front Lobby Womens Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	4300	774	2	T 59 R LED	RTLED38	38	0.1	NONE	4,300	327	447	0.1	$ 62.67	$ 472.50	$ -	7.5	7.5
46LED	117 Custodian	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	3400	204	1	4 ft LED Tube	200732x2	30	0.0	NONE	3,400	102	102	0.0	$ 14.62	$ 163.35	$ -	11.2	11.2
262LED	118 Storage	1	CF42/1	CF42/1-I	48	0.0	SW	3200	154	1	6BLMWLED	6BLMWLED	13	0.0	NONE	3,200	42	112	0.0	$ 16.16	$ 162.00	$ -	10.0	10.0
32LED	122 Security	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	3400	408	2	4 ft LED Tube	200732x2	30	0.1	NONE	3,400	204	204	0.1	$ 29.24	$ 326.70	$ -	11.2	11.2
262LED	121 Admin Lobby	17	CF42/1	CF42/1-I	48	0.8	SW	2400	1,958	17	6BLMWLED	6BLMWLED	13	0.2	NONE	2,400	530	1,428	0.6	$ 213.84	$ 2,754.00	$ -	12.9	12.9
35LED	123 Files	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	2400	432	2	T 59 R LED	RTLED38	38	0.1	NONE	2,400	182	250	0.1	$ 37.38	$ 472.50	$ -	12.6	12.6
262LED	Mail Room	1	CF42/1	CF42/1-I	48	0.0	SW	2400	115	1	6BLMWLED	6BLMWLED	13	0.0	NONE	2,400	31	84	0.0	$ 12.58	$ 162.00	$ -	12.9	12.9
35LED	124	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	2400	432	2	T 59 R LED	RTLED38	38	0.1	NONE	2,400	182	250	0.1	$ 37.38	$ 472.50	$ -	12.6	12.6
35LED	126	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	2400	432	2	T 59 R LED	RTLED38	38	0.1	NONE	2,400	182	250	0.1	$ 37.38	$ 472.50	$ -	12.6	12.6
35LED	127	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	2400	432	2	T 59 R LED	RTLED38	38	0.1	NONE	2,400	182	250	0.1	$ 37.38	$ 472.50	$ -	12.6	12.6
35LED	128	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	2400	432	2	T 59 R LED	RTLED38	38	0.1	NONE	2,400	182	250	0.1	$ 37.38	$ 472.50	$ -	12.6	12.6
35LED	129 Principal	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	2400	864	4	T 59 R LED	RTLED38	38	0.2	NONE	2,400	365	499	0.2	$ 74.76	$ 945.00	$ -	12.6	12.6
218LED	130 Int Staff	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	2400	1,296	6	4 ft LED Tube	200732x3	45	0.3	NONE	2,400	648	648	0.3	$ 97.04	$ 1,470.15	$ -	15.2	15.2
35LED	130 Rear Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	2400	432	2	T 59 R LED	RTLED38	38	0.1	NONE	2,400	182	250	0.1	$ 37.38	$ 472.50	$ -	12.6	12.6
35LED	Copy Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648	3	T 59 R LED	RTLED38	38	0.1	NONE	2,400	274	374	0.2	$ 56.07	$ 708.75	$ -	12.6	12.6
35LED	Main Office Open Area	6	T 32 R F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	2400	1,296	6	T 59 R LED	RTLED38	38	0.2	NONE	2,400	547	749	0.3	$ 112.13	$ 1,417.50	$ -	12.6	12.6
218LED	133 Conference	6	W 32 C F 3 (ELE)	F43ILL/2	90	0.5	C-OCC	1200	648	6	4 ft LED Tube	200732x3	45	0.3	NONE	1,200	324	324	0.3	$ 55.57	$ 1,470.15	$ -	26.5	26.5
X1	121 Lobby	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	6240	37	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	6,240	37	-	0.0	$ -	$ -	$ -		
262LED	Main Office Mens Room	1	CF42/1	CF42/1-I	48	0.0	SW	4300	206	1	6BLMWLED	6BLMWLED	13	0.0	C-OCC	3,000	39	167	0.0	$ 23.25	$ 432.00	$ 35	18.6	17.1
262LED	Main Office Womens Room	1	CF42/1	CF42/1-I	48	0.0	SW	4300	206	1	6BLMWLED	6BLMWLED	13	0.0	C-OCC	3,000	39	167	0.0	$ 23.25	$ 432.00	$ 35	18.6	17.1
32LED	Guidance Hallway	7	1T 32 R F 2 (ELE)	F42LL	60	0.4	SW	6240	2,621	7	4 ft LED Tube	200732x2	30	0.2	NONE	6,240	1,310	1,310	0.2	$ 178.69	$ 1,143.45	$ -	6.4	6.4
262LED	Guidance Hallway	16	CF42/1	CF42/1-I	48	0.8	SW	6240	4,792	16	6BLMWLED	6BLMWLED	13	0.2	NONE	6,240	1,298	3,494	0.6	$ 476.52	$ 2,592.00	$ -	5.4	5.4
35LED	Guidance Office Open	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2400	2,592	12	T 59 R LED	RTLED38	38	0.5	NONE	2,400	1,094	1,498	0.6	$ 224.27	$ 2,835.00	$ -	12.6	12.6
262LED	Guidance Office Open	10	CF42/1	CF42/1-I	48	0.5	C-OCC	2400	1,152	10	6BLMWLED	6BLMWLED	13	0.1	NONE	2,400	312	840	0.4	$ 125.79	$ 1,620.00	$ -	12.9	12.9
X1	Guidance Office Open	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	53	4	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8,760	53	-	0.0	$ -	$ -	$ -		
32LED	Guidance Mens Room	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	$ 18.08	$ 163.35	$ -	9.0	9.0
32LED	Guidance Womens Room	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	$ 18.08	$ 163.35	$ -	9.0	9.0
35LED	Guidance Office #1	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	C-OCC	1,200	91	341	0.1	$ 49.05	$ 742.50	$ 35	15.1	14.4
35LED	Guidance Office #2	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	C-OCC	1,200	91	341	0.1	$ 49.05	$ 742.50	$ 35	15.1	14.4
35LED	Guidance Office #3	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	C-OCC	1,200	91	341	0.1	$ 49.05	$ 742.50	$ 35	15.1	14.4
35LED	Guidance Office #4	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	C-OCC	1,200	91	341	0.1	$ 49.05	$ 742.50	$ 35	15.1	14.4
35LED	Guidance Office #5	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	C-OCC	1,200	91	341	0.1	$ 49.05	$ 742.50	$ 35	15.1	14.4
35LED	Guidance Office #6	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	C-OCC	1,200	91	341	0.1	$ 49.05	$ 742.50	$ 35	15.1	14.4
35LED	Guidance Office #7	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	C-OCC	1,200	91	341	0.1	$ 49.05	$ 742.50	$ 35	15.1	14.4
35LED	Guidance Office #8	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	C-OCC	1,200	91	341	0.1	$ 49.05	$ 742.50	$ 35	15.1	14.4
35LED	Guidance Office #9	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	C-OCC	1,200	91	341	0.1	$ 49.05	$ 742.50	$ 35	15.1	14.4
218LED	Conference Room	4	W 32 C F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	1200	432	4	4 ft LED Tube	200732x3	45	0.2	NONE	1,200	216	216	0.2	$ 37.04	$ 980.10	$ -	26.5	26.5
35LED	135 Nurse Open Area	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	NONE	2,400	182	250	0.1	$ 37.38	$ 472.50	$ -	12.6	12.6
32LED	Nurse Mens Room	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	$ 18.08	$ 163.35	$ -	9.0	9.0
32LED	Nurse Womens Room	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	$ 18.08	$ 163.35	$ -	9.0	9.0
35LED	Nurse Exam Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	C-OCC	1,200	91	341	0.1	$ 49.05	$ 742.50	$ 35	15.1	14.4
35LED	Nurse Resting Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2400	648	3	T 59 R LED	RTLED38	38	0.1	C-OCC	1,200	137	511	0.2	$ 73.58	$ 978.75	$ 35	13.3	12.8
35LED	Nurses Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	C-OCC	1,200	91	341	0.1	$ 49.05	$ 742.50	$ 35	15.1	14.4
50LED	Nurses Office Storage	1	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	2400	144	1	4 ft LED Tube	200732x2	30	0.0	NONE	2,400	72	72	0.0	$ 10.78	$ 163.35	$ -	15.2	15.2
50LED	Controls Room	1	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	1600	96	1	4 ft LED Tube	200732x2	30	0.0	NONE	1,600	48	48	0.0	$ 7.71	$ 163.35	$ -	21.2	21.2
50LED	Elevator Machine Room	2	W 32 W P 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	$ 15.42	$ 326.70	$ -	21.2	21.2
32LED	Stair #5 Lobby	8	1T 32 R F 2 (ELE)	F42LL	60	0.5	BR	6240	2,995	8	4 ft LED Tube	200732x2	30	0.2	NONE	6,240	1,498	1,498	0.2	$ 204.22	$ 1,306.80	$ -	6.4	6.4
262LED	Stair #5 Lobby	2	CF42/1	CF42/1-I	48	0.1	BR	6240	599	2	6BLMWLED	6BLMWLED	13	0.0	NONE	6,240	162	437	0.1	$ 59.56	$ 324.00	$ -	5.4	5.4
35LED	139 Faculty Dining	8	T 32 R F 3 (ELE)	F43ILL/2	90	0.7	C-OCC	1700	1,224	8	T 59 R LED	RTLED38	38	0.3	NONE	1,700	517	707	0.4	$ 112.24	$ 1,890.00	$ -	16.8	16.8
262LED	Side Entrance	84	CF42/1	CF42/1-I	48	4.0	BR	6240	25,160	84	6BLMWLED	6BLMWLED	13	1.1	NONE	6,240	6,814	18,346	2.9	$ 2,501.70	$ 13,608.00	$ -	5.4	5.4
X1	Side Entrance	8	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	6240	75	8	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	6,240	75	-	0.0	$ -	$ -	$ -		
220LED	Side Entrance	20	S 17 C F 1(ELE)	F21ILL	20	0.4	BR	6240	2,496	20	2 ft LED Tube	200714x2	16	0.3	NONE	6,240	1,997	499	0.1	$ 68.07	$ 2,727.00	$ -	40.1	40.1
261LED	153 Auditorium Hallway	2	PAR 38 SP	H100/1	100	0.2	SW	2000	400	2	EVO35/10	EVO35/10	39	0.1	NONE	2,000	156	244	0.1	$ 37.60	$ 877.50	$ -	23.3	23.3

Energy Audit of Newark Public Schools - Science Park High School
CHA Project No.27999
ECM-L3 Lighting Replacements with Occupancy Sensors

Field Code	Area Description: Unique description of the location - Room number/Room name: Floor number (if applicable)	No. of Fixtures: No. of fixtures before the retrofit	Standard Fixture Code: Lighting Fixture Code	Fixture Code: Code from Table of Standard Fixture Wattages	Watts per Fixture: Value from Table of Standard Fixture Wattages	kW/Space: (Watts/Fixt) * (Fixt No.)	Exist Control: Pre-inst. control device	Annual Hours: Estimated daily hours for the usage group	Annual kWh: (kW/space) * (Annual Hours)	Number of Fixtures: No. of fixtures after the retrofit	Standard Fixture Code: Lighting Fixture Code	Fixture Code: Code from Table of Standard Fixture Wattages	Watts per Fixture: Value from Table of Standard Fixture Wattages	kW/Space: (Watts/Fixt) * (Number of Fixtures)	Retrofit Control: Retrofit control device	Annual Hours: Estimated annual hours for the usage group	Annual kWh: (kW/space) * (Annual Hours)	Annual kWh Saved: (Original Annual kWh) - (Retrofit Annual kWh)	Annual kW Saved: (Original Annual kW) - (Retrofit Annual kW)	Annual $ Saved: (kWh Saved) * ($/kWh)	Retrofit Cost: Cost for renovations to lighting system	NJ Smart Start Lighting Incentive: Prescriptive Lighting Measures	Simple Payback With Out Incentive: Length of time for renovations cost to be recovered	Simple Payback: Length of time for renovations cost to be recovered
		EXISTING CONDITIONS								RETROFIT CONDITIONS								COST & SAVINGS ANALYSIS						
35LED	153 Auditorium Hallway	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2000	360	2	T 59 R LED	RTLED38	38	0.1	NONE	2,000	152	208	0.1	$ 32.05	$ 472.50	$ -	14.7	14.7
220LED	153 Auditorium	60	S 17 C F 1(ELE)	F21ILL	20	1.2	SW	2000	2,400	60	2 ft LED Tube	200714x2	16	1.0	NONE	2,000	1,920	480	0.2	$ 73.97	$ 8,181.00	$ -	110.6	110.6
261LED	153 Auditorium	56	PAR 38 SP	H100/1	100	5.6	SW	2000	11,200	56	EVO35/10	EVO35/10	39	2.2	NONE	2,000	4,368	6,832	3.4	$ 1,052.81	$ 24,570.00	$ -	23.3	23.3
220LED	153 Auditorium	60	S 17 C F 1(ELE)	F21ILL	20	1.2	SW	2000	2,400	60	2 ft LED Tube	200714x2	16	1.0	NONE	2,000	1,920	480	0.2	$ 73.97	$ 8,181.00	$ -	110.6	110.6
261LED	153 Auditorium	90	PAR 38 SP	H100/1	100	9.0	SW	2000	18,000	90	EVO35/10	EVO35/10	39	3.5	NONE	2,000	7,020	10,980	5.5	$ 1,692.02	$ 39,487.50	$ -	23.3	23.3
X1	153 Auditorium	10	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2000	30	10	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	2,000	30	-	0.0	$ -	$ -	$ -		
227LED	Auditorium Stage	4	70 W MH Wall Pack	MH70/1	95	0.4	SW	2000	760	4	FXLED18	FXLED18/1	18	0.1	NONE	2,000	144	616	0.3	$ 94.93	$ 1,692.90	$ 400	17.8	13.6
50LED	Auditorium Stage	3	W 32 W P 2 (ELE)	F42LL	60	0.2	SW	2000	360	3	4 ft LED Tube	200732x2	30	0.1	NONE	2,000	180	180	0.1	$ 27.74	$ 490.05	$ -	17.7	17.7
X1	Auditorium Stage	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	SW	2000	6	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	2,000	6	-	0.0	$ -	$ -	$ -		
50LED	Auditorium Stage	2	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	2000	240	2	4 ft LED Tube	200732x2	30	0.1	NONE	2,000	120	120	0.1	$ 18.49	$ 326.70	$ -	17.7	17.7
46LED	149 Rear Corridor Storage	15	W 32 C F 2 (ELE)	F42LL	60	0.9	SW	3200	2,880	15	4 ft LED Tube	200732x2	30	0.5	NONE	3,200	1,440	1,440	0.5	$ 207.81	$ 2,450.25	$ -	11.8	11.8
7LED	150 Mens Dress Room	1	2T 32 R F 2 (u)	FU2LL	60	0.1	C-OCC	2800	168	1	2T 46 R LED	2RTLED	25	0.0	NONE	2,800	70	98	0.0	$ 14.37	$ 202.50	$ -	14.1	14.1
35LED	150 Mens Dress Room	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	C-OCC	2800	252	1	T 59 R LED	RTLED38	38	0.0	NONE	2,800	106	146	0.1	$ 21.35	$ 236.25	$ -	11.1	11.1
262LED	150 Mens Dress Room	1	CF42/1	CF42/1-I	48	0.0	C-OCC	2800	134	1	6BLMWLED	6BLMWLED	13	0.0	NONE	2,800	36	98	0.0	$ 14.37	$ 162.00	$ -	11.3	11.3
7LED	150 Womens Dress Room	1	2T 32 R F 2 (u)	FU2LL	60	0.1	C-OCC	2800	168	1	2T 46 R LED	2RTLED	25	0.0	NONE	2,800	70	98	0.0	$ 14.37	$ 202.50	$ -	14.1	14.1
35LED	150 Womens Dress Room	1	T 32 R F 3 (ELE)	F43ILL/2	90	0.1	C-OCC	2800	252	1	T 59 R LED	RTLED38	38	0.0	NONE	2,800	106	146	0.1	$ 21.35	$ 236.25	$ -	11.1	11.1
262LED	150 Womens Dress Room	1	CF42/1	CF42/1-I	48	0.0	C-OCC	2800	134	1	6BLMWLED	6BLMWLED	13	0.0	NONE	2,800	36	98	0.0	$ 14.37	$ 162.00	$ -	11.3	11.3
262LED	Rear Entrance	16	CF42/1	CF42/1-I	48	0.8	SW	6240	4,792	16	6BLMWLED	6BLMWLED	13	0.2	NONE	6,240	1,298	3,494	0.6	$ 476.52	$ 2,592.00	$ -	5.4	5.4
32LED	Rear Entrance	20	1T 32 R F 2 (ELE)	F42LL	60	1.2	SW	6240	7,488	20	4 ft LED Tube	200732x2	30	0.6	NONE	6,240	3,744	3,744	0.6	$ 510.55	$ 3,267.00	$ -	6.4	6.4
262LED	Auditorium Rear Hall	18	CF42/1	CF42/1-I	48	0.9	SW	6240	5,391	18	6BLMWLED	6BLMWLED	13	0.2	NONE	6,240	1,460	3,931	0.6	$ 536.08	$ 2,916.00	$ -	5.4	5.4
32LED	148 Music Room	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2700	324	2	4 ft LED Tube	200732x2	30	0.1	NONE	2,700	162	162	0.1	$ 23.87	$ 326.70	$ -	13.7	13.7
35LED	Music Ensemble	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2700	729	3	T 59 R LED	RTLED38	38	0.1	NONE	2,700	308	421	0.2	$ 62.06	$ 708.75	$ -	11.4	11.4
46LED	Production class 1C	12	W 32 C F 2 (ELE)	F42LL	60	0.7	SW	2700	1,944	12	4 ft LED Tube	200732x2	30	0.4	NONE	2,700	972	972	0.4	$ 143.21	$ 1,960.20	$ -	13.7	13.7
262LED	Instructional Music 1B	16	CF42/1	CF42/1-I	48	0.8	SW	2700	2,074	16	6BLMWLED	6BLMWLED	13	0.2	NONE	2,700	562	1,512	0.6	$ 222.77	$ 2,592.00	$ -	11.6	11.6
35LED	Music Storage	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	3200	864	3	T 59 R LED	RTLED38	38	0.1	NONE	3,200	365	499	0.2	$ 72.04	$ 708.75	$ -	9.8	9.8
X1	Instructional Music 1B	3	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	39	3	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8,760	39	-	0.0	$ -	$ -	$ -		
35LED	Music Practice Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2700	486	2	T 59 R LED	RTLED38	38	0.1	C-OCC	1,890	144	342	0.1	$ 49.25	$ 742.50	$ 35	15.1	14.4
35LED	Music Practice Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2700	486	2	T 59 R LED	RTLED38	38	0.1	C-OCC	1,890	144	342	0.1	$ 49.25	$ 742.50	$ 35	15.1	14.4
35LED	Gown Storage	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	3200	864	3	T 59 R LED	RTLED38	38	0.1	C-OCC	3,200	365	499	0.2	$ 72.04	$ 978.75	$ 35	13.6	13.1
218LED	Music Vocals 1A	20	W 32 C F 3 (ELE)	F43ILL/2	90	1.8	C-OCC	2700	4,860	20	4 ft LED Tube	200732x3	45	0.9	NONE	2,700	2,430	2,430	0.9	$ 358.02	$ 4,900.50	$ -	13.7	13.7
X1	Music Vocals 1A	3	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	2700	12	3	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	2,700	12	-	0.0	$ -	$ -	$ -		
50LED	146 Electric Room	2	W 32 W P 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	$ 15.42	$ 326.70	$ -	21.2	21.2
50LED	145 Gym Storage	1	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	3200	192	1	4 ft LED Tube	200732x2	30	0.0	NONE	3,200	96	96	0.0	$ 13.85	$ 163.35	$ -	11.8	11.8
46LED	154 Data Room	2	W 32 C 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	$ 15.42	$ 326.70	$ -	21.2	21.2
46LED	141 Gym	2	W 32 C 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	$ 15.42	$ 326.70	$ -	21.2	21.2
35LED	Mens Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	4300	1,548	4	T 59 R LED	RTLED38	38	0.2	NONE	4,300	654	894	0.2	$ 125.34	$ 945.00	$ -	7.5	7.5
262LED	Mens Room	1	CF42/1	CF42/1-I	48	0.0	C-OCC	4300	206	1	6BLMWLED	6BLMWLED	13	0.0	NONE	4,300	56	151	0.0	$ 21.09	$ 162.00	$ -	7.7	7.7
35LED	Womens Room	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	C-OCC	4300	1,548	4	T 59 R LED	RTLED38	38	0.2	NONE	4,300	654	894	0.2	$ 125.34	$ 945.00	$ -	7.5	7.5
262LED	Womens Room	1	CF42/1	CF42/1-I	48	0.0	C-OCC	4300	206	1	6BLMWLED	6BLMWLED	13	0.0	NONE	4,300	56	151	0.0	$ 21.09	$ 162.00	$ -	7.7	7.7
50LED	143 Custodial Room	1	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	3200	192	1	4 ft LED Tube	200732x2	30	0.0	NONE	3,200	96	96	0.0	$ 13.85	$ 163.35	$ -	11.8	11.8
263	Natatorium	10	Pool MH1500 Fixt	MH1500/1	1610	16.1	SW	1600	25,760	10	Pool MH1500 Fixt	MH1500/1	1610	16.1	NONE	1,600	25,760	-	0.0	$ -	$ -	$ -		
262LED	Natatorium	70	CF42/1	CF42/1-I	48	3.4	SW	1600	5,376	70	6BLMWLED	6BLMWLED	13	0.9	NONE	1,600	1,456	3,920	2.5	$ 629.65	$ 11,340.00	$ -	18.0	18.0
218LED	Natatorium	2	W 32 C F 3 (ELE)	F43ILL/2	90	0.2	SW	1600	288	2	4 ft LED Tube	200732x3	45	0.1	NONE	1,600	144	144	0.1	$ 23.13	$ 490.05	$ -	21.2	21.2
227LED	Natatorium	10	70 W MH Wall Pack	MH70/1	95	1.0	SW	1600	1,520	10	FXLED18	FXLED18/1	18	0.2	NONE	1,600	288	1,232	0.8	$ 197.89	$ 4,232.25	$ 1,000	21.4	16.3
X1	Natatorium	9	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	1600	22	9	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	1,600	22	-	0.0	$ -	$ -	$ -		
7LED	B26 PE Office	4	2T 32 R F 2 (u)	FU2LL	60	0.2	SW	2400	576	4	2T 46 R LED	2RTLED	25	0.1	NONE	2,400	240	336	0.1	$ 50.32	$ 810.00	$ -	16.1	16.1
50LED	B27 Natatorium Laundry	2	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	2400	288	2	4 ft LED Tube	200732x2	30	0.1	NONE	2,400	144	144	0.1	$ 21.56	$ 326.70	$ -	15.2	15.2
262LED	B28 Mens Locker Room	10	CF42/1	CF42/1-I	48	0.5	SW	2800	1,344	10	6BLMWLED	6BLMWLED	13	0.1	NONE	2,800	364	980	0.4	$ 143.71	$ 1,620.00	$ -	11.3	11.3
35LED	B28 Mens Locker Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2800	756	3	T 59 R LED	RTLED38	38	0.1	NONE	2,800	319	437	0.2	$ 64.05	$ 708.75	$ -	11.1	11.1
262LED	B29 Womens Locker Room	10	CF42/1	CF42/1-I	48	0.5	SW	2800	1,344	10	6BLMWLED	6BLMWLED	13	0.1	NONE	2,800	364	980	0.4	$ 143.71	$ 1,620.00	$ -	11.3	11.3
35LED	B29 Womens Locker Room	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2800	756	3	T 59 R LED	RTLED38	38	0.1	NONE	2,800	319	437	0.2	$ 64.05	$ 708.75	$ -	11.1	11.1
50LED	B25 Elevator Equipment Room	2	W 32 W P 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	$ 15.42	$ 326.70	$ -	21.2	21.2
264LED	Service Elevator	9	Elevator Halogen 20W	HLV20/1	30	0.3	BR	8760	2,365	9	TCP2W	H20LED	2	0.0	NONE	8,760	158	2,208	0.3	$ 295.72	$ 425.25	$ -	1.4	1.4
35LED	254 AV Storage	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	3200	864	3	T 59 R LED	RTLED38	38	0.1	NONE	3,200	365	499	0.2	$ 72.04	$ 708.75	$ -	9.8	9.8
262LED	2nd Floor Lobby	90	CF42/1	CF42/1-I	48	4.3	SW	6240	26,957	90	6BLMWLED	6BLMWLED	13	1.2	NONE	6,240	7,301	19,656	3.2	$ 2,680.40	$ 14,580.00	$ -	5.4	5.4
220LED	2nd Floor Lobby	45	S 17 C F 1(ELE)	F21ILL	20	0.9	SW	6240	5,616	45	2 ft LED Tube	200714x2	16	0.7	NONE	6,240	4,493	1,123	0.2	$ 153.17	$ 6,135.75	$ -	40.1	40.1
X1	2nd Floor Lobby	8	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	105	8	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8,760	105	-	0.0	$ -	$ -	$ -		
32LED	2nd Floor Lobby	6	1T 32 R F 2 (ELE)	F42LL	60	0.4	SW	6240	2,246	6	4 ft LED Tube	200732x2	30	0.2	NONE	6,240	1,123	1,123	0.2	$ 153.17	$ 980.10	$ -	6.4	6.4
54LED	2nd Floor Lobby Display Cases	24	S 34 W F 1 (MAG)	F41EE	43	1.0	SW	6240	6,440	24	4 ft LED Tube	200732x1	15	0.4	NONE	6,240	2,246	4,193	0.7	$ 571.82	$ 1,960.20	$ -	3.4	3.4
35LED	2nd Floor Lobby Mens Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	4300	774	2	T 59 R LED	RTLED38	38	0.1	NONE	4,300	327	447	0.1	$ 62.67	$ 472.50	$ -	7.5	7.5
35LED	2nd Floor Lobby Womens Room	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	C-OCC	4300	774	2	T 59 R LED	RTLED38	38	0.1	NONE	4,300	327	447	0.1	$ 62.67	$ 472.50	$ -	7.5	7.5
50LED	255 Gym Storage	3	W 32 W P 2 (ELE)	F42LL	60	0.2	SW	3200	576	3	4 ft LED Tube	200732x2	30	0.1	NONE	3,200	288	288	0.1	$ 41.56	$ 490.05	$ -	11.8	11.8
X1	255 Gym Storage	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	26	2	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8,760	26	-	0.0	$ -	$ -	$ -		
32LED	2nd Floor Front Hall South	11	1T 32 R F 2 (ELE)	F42LL	60	0.7	SW	6240	4,118	11	4 ft LED Tube	200732x2	30	0.3	NONE	6,240	2,059	2,059	0.3	$ 280.80	$ 1,796.85	$ -	6.4	6.4
35LED	258 Athletic Directors Office	4	T 32 R F 3 (ELE)	F43ILL/2	90	0.4	SW	2400	864	4	T 59 R LED	RTLED38	38	0.2	NONE	2,400	365	499	0.2	$ 74.76	$ 945.00	$ -	12.6	12.6
35LED	257 Training	11	T 32 R F 3 (ELE)	F43ILL/2	90	1.0	SW	2400	2,376	11	T 59 R LED	RTLED38	38	0.4	NONE	2,400	1,003	1,373	0.6	$ 205.58	$ 2,598.75	$ -	12.6	12.6
50LED	256 Athletic Equipment	4	W 32 W P 2 (ELE)	F42LL	60	0.2	SW	3200	768	4	4 ft LED Tube	200732x2	30	0.1	NONE	3,200	384	384	0.1	$ 55.42	$ 653.40	$ -	11.8	11.8
32LED	2nd Floor South Corr	12	1T 32 R F 2 (ELE)	F42LL	60	0.7	SW	6240	4,493	12	4 ft LED Tube	200732x2	30	0.4	NONE	6,240	2,246	2,246	0.4	$ 306.33	$ 1,960.20	$ -	6.4	6.4
218LED	266 Health Class	14	W 32 C F 3 (ELE)	F43ILL/2	90	1.3	SW	2700	3,402	14	4 ft LED Tube	200732x3	45	0.6	NONE	2,700	1,701	1,701	0.6	$ 250.61	$ 3,430.35	$ -	13.7	13.7
35LED	265 Fitness Center	12	T 32 R F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2700	2,916	12	T 59 R LED	RTLED38	38	0.5	NONE	2,700	1,231	1,685	0.6	$ 248.23	$ 2,835.00	$ -	11.4	11.4
262LED	264 Mens Locker Room	10	CF42/1	CF42/1-I	48	0.5	C-OCC	2800	1,344	10	6BLMWLED	6BLMWLED	13	0.1	NONE	2,800	364	980	0.4	$ 143.71	$ 1,620.00	$ -	11.3	11.3
35LED	264 Mens Locker Room	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	C-OCC	2800	4,032	16	T 59 R LED	RTLED38	38	0.6	NONE	2,800	1,702	2,330	0.8	$ 341.62	$ 3,780.00	$ -	11.1	11.1
262LED	262 Womens Locker Room	10	CF42/1	CF42/1-I	48	0.5	C-OCC	2800	1,344	10	6BLMWLED	6BLMWLED	13	0.1	NONE	2,800	364	980	0.4	$ 143.71	$ 1,620.00	$ -	11.3	11.3
35LED	262 Womens Locker Room	16	T 32 R F 3 (ELE)	F43ILL/2	90	1.4	C-OCC	2800	4,032	16	T 59 R LED	RTLED38	38	0.6	NONE	2,800	1,702	2,330	0.8	$ 341.62	$ 3,780.00	$ -	11.1	11.1
46LED	263 Custodial	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	3200	192	1	4 ft LED Tube	200732x2	30	0.0	NONE	3,200	96	96	0.0	$ 13.85	$ 163.35	$ -	11.8	11.8
46LED	261 Electrical	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	1600	96	1	4 ft LED Tube	200732x2	30	0.0	NONE	1,600	48	48	0.0	$ 7.71	$ 163.35	$ -	21.2	21.2
35LED	260 PE Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	NONE	2,400	182	250	0.1	$ 37.38	$ 472.50	$ -	12.6	12.6
35LED	260 PE Office Restroom	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	4300	774	2	T 59 R LED	RTLED38	38	0.1	NONE	4,300	327	447	0.1	$ 62.67	$ 472.50	$ -	7.5	7.5
35LED	259 PE Office	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	2400	432	2	T 59 R LED	RTLED38	38	0.1	NONE	2,400	182	250	0.1	$ 37.38	$ 472.50	$ -	12.6	12.6
35LED	259 PE Office Restroom	2	T 32 R F 3 (ELE)	F43ILL/2	90	0.2	SW	4300	774	2	T 59 R LED	RTLED38	38	0.1	NONE	4,300	327	447	0.1	$ 62.67	$ 472.50	$ -	7.5	7.5
265LED	Gym	36	Gym HB 8L CFL	CF42/8-L	376	13.5	SW	1600	21,658	36	BAYLED78W	BAYLED78W	93	3.3	NONE	1,600	5,357	16,301	10.2	$ 2,618.32	$ -	$ 3,600	0.0	-1.4
46LED	360 IT Closet	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	1600	96	1	4 ft LED Tube	200732x2	30	0.0	NONE	1,600	48	48	0.0	$ 7.71	$ 163.35	$ -	21.2	21.2
46LED	359 Mech Room 3	40	W 32 C F 2 (ELE)	F42LL	60	2.4	SW	1600	3,840	40	4 ft LED Tube	200732x2	30	1.2	NONE	1,600	1,920	1,920	1.2	$ 308.40	$ 6,534.00	$ -	21.2	21.2
X1	359 Mech Room 3	3	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	39	3	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8,760	39	-	0.0	$ -	$ -	$ -		
46LED	357 Storage	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	3200	192	1	4 ft LED Tube	200732x2	30	0.0	NONE	3,200	96	96	0.0	$ 13.85	$ 163.35	$ -	11.8	11.8
262LED	3rd Floor South Hall	4	CF42/1	CF42/1-I	48	0.2	SW	6240	1,198	4	6BLMWLED	6BLMWLED	13	0.1	NONE	6,240	324	874	0.1	$ 119.13	$ 648.00	$ -	5.4	5.4
32LED	3rd Floor South Hall	16	1T 32 R F 2 (ELE)	F42LL	60	1.0	SW	6240	5,990	16	4 ft LED Tube	200732x2	30	0.5	NONE	6,240	2,995	2,995	0.5	$ 408.44	$ 2,613.60	$ -	6.4	6.4
X1	3rd Floor South Hall	6	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	79	6	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8,760	79	-	0.0	$ -	$ -	$ -		
32LED	356 Greenhouse	6	1T 32 R F 2 (ELE)	F42LL	60	0.4	C-OCC	2700	972	6	4 ft LED Tube	200732x2	30	0.2	NONE	2,700	486	486	0.2	$ 71.60	$ 980.10	$ -	13.7	13.7
50LED	356 Greenhouse	2	W 32 W P 2 (ELE)	F42LL	60	0.1	C-OCC	2700	324	2	4 ft LED Tube	200732x2	30	0.1	NONE	2,700	162	162	0.1	$ 23.87	$ 326.70	$ -	13.7	13.7
218LED	355 Art Class	12	W 32 C F 3 (ELE)	F43ILL/2	90	1.1	C-OCC	2700	2,916	12	4 ft LED Tube	200732x3	45	0.5	NONE	2,700	1,458	1,458	0.5	$ 214.81	$ 2,940.30	$ -	13.7	13.7
46LED	355 Art Class Stor	2	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	3200	384	2	4 ft LED Tube	200732x2	30	0.1	NONE	3,200	192	192	0.1	$ 27.71	$ 326.70	$ -	11.8	11.8
50LED	355 Art Class Stor	4	W 32 W P 2 (ELE)	F42LL	60	0.2	SW	3200	768	4	4 ft LED Tube	200732x2	30	0.1	NONE	3,200	384	384	0.1	$ 55.42	$ 653.40	$ -	11.8	11.8
50LED	355 Art Class Kiln Room	2	W 32 W P 2 (ELE)	F42LL	60	0.1	SW	2700	324	2	4 ft LED Tube	200732x2	30	0.1	NONE	2,700	162	162	0.1	$ 23.87	$ 326.70	$ -	13.7	13.7
35LED	355 Art Class Darkroom	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2700	729	3	T 59 R LED	RTLED38	38	0.1	NONE	2,700	308	421	0.2	$ 62.06	$ 708.75	$ -	11.4	11.4
35LED	354 Video Edit	3	T 32 R F 3 (ELE)	F43ILL/2	90	0.3	SW	2700	729	3	T 59 R LED	RTLED38	38	0.1	C-OCC	1,890	215	514	0.2	$ 73.88	$ 978.75	$ 35	13.2	12.8
54LED	3rd Floor Corridor Display	12	S 34 W F 1 (MAG)	F41EE	43	0.5	SW	6240	3,220	12	4 ft LED Tube	200732x1	15	0.2	NONE	6,240	1,123	2,097	0.3	$ 285.91	$ 980.10	$ -	3.4	3.4
218LED	353 Cad Class	20	W 32 C F 3 (ELE)	F43ILL/2	90	1.8	SW	2700	4,860	20	4 ft LED Tube	200732x3	45	0.9	C-OCC	1,890	1,701	3,159	0.9	$ 451.33	$ 5,170.50	$ 35	11.5	11.4
46LED	352 IT Closet	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	1600	96	1	4 ft LED Tube	200732x2	30	0.0	NONE	1,600	48	48	0.0	$ 7.71	$ 163.35	$ -	21.2	21.2
46LED	351 IT Closet	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	1600	96	1	4 ft LED Tube	200732x2	30	0.0	NONE	1,600	48	48	0.0	$ 7.71	$ 163.35	$ -	21.2	21.2
46LED	354 IT Closet	1	W 32 C F 2 (ELE)	F42LL	60	0.1	SW	1600	96	1	4 ft LED Tube	200732x2	30	0.0	NONE	1,600	48	48	0.0	$ 7.71	$ 163.35	$ -	21.2	21.2
50LED	North Electrical Rooms (8x	8	W 32 W P 2 (ELE)	F42LL	60	0.5	SW	1600	768	8	4 ft LED Tube	200732x2	30	0.2	NONE	1,600	384	384	0.2	$ 61.68	$ 1,306.80	$ -	21.2	21.2
50LED	North Custodial Rooms (4x	4	W 32 W P 2 (ELE)	F42LL	60	0.2	SW	1600	384	4	4 ft LED Tube	200732x2	30	0.1	NONE	1,600	192	192	0.1	$ 30.84	$ 653.40	$ -	21.2	21.2
50LED	North IT Closets (4x)	4	W 32 W P 2 (ELE)	F42LL	60	0.2	SW	1600	384	4	4 ft LED Tube	200732x2	30	0.1	NONE	1,600	192	192	0.1	$ 30.84	$ 653.40	$ -	21.2	21.2
262LED	North Chemical Storage Rooms	2	CF42/1	CF42/1-I	48	0.1	SW	3200	307	2	6BLMWLED	6BLMWLED	13	0.0	NONE	3,200	83	224	0.1	$ 32.33	$ 324.00	$ -	10.0	10.0
262LED	Main Entrance First Floor	98	CF42/1	CF42/1-I	48	4.7	SW	6240	29,353	98	6BLMWLED	6BLMWLED	13	1.3	NONE	6,240	7,950	21,403	3.4	$ 2,918.66	$ 15,876.00	$ -	5.4	5.4
X1	Main Entrance First Floor	10	X 1.5 W LED	ELED1.5/1	1.5	0.0	BR	8760	131	10	X 1.5 W LED	ELED1.5/1	1.5	0.0	NONE	8,760	131	-	0.0	$ -	$ -	$ -		
															0	#N/A								#VALUE!
															0	#N/A								#VALUE!
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															0	#N/A								#VALUE!
S	**Total**	**2,235**				**156.0**			**453,774**	**2,235**				**70.5**			**190,291**		**85.6**	**38,193**	**414,790**	**$5,910**		
S																	**Demand Savings**			**85.6**	**$4,468**			
S																	**kWh Savings**			**263,483**	**$33,726**			
S																	**Total Savings**				**$38,193**		**10.9**	**10.7**

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

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LOCAL GOVERNMENT ENERGY AUDIT

LARGE ENERGY USERS PROGRAM

ENERGY SAVINGS IMPROVEMENT PROGRAM

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SBC CREDIT PROGRAM

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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

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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 prograi 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

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PARTICIPATING CONTRACTORS

SUSTAINABLE JERSEY

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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,

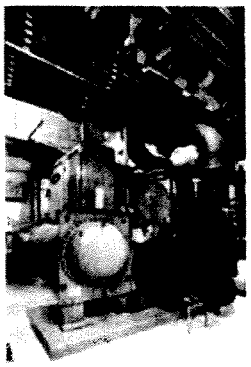
III. PAY FOR PERFORMANCE (P4P)

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

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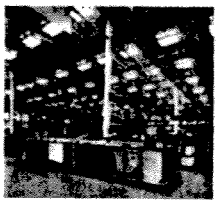
Pay for Performance incentives are awarded upon the satisfactory completion of three p milestones:

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



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

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

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

Steps to Participation

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

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

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

BPU

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

*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

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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
SCIENCE PARK HIGH SCHOOL

Cost of Electricity	$0.14	/kWh
Electricity Usage	3,493,842	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
$240,000	**60.0**	**74,938**	**0**	**$10,491**	**0**	**$10,491**	**$0**	**$11,615**	**22.9**	**10.9**

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

Area Output*
2,451 m2
26,379 ft2

Perimeter Output*
527 m
1,728 ft

Available Roof Space for PV:
(Area Output - 10 ft x Perimeter) x 85%
7,737 ft2

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

8	watt/ft2	
61,896	DC watts	
60	kW	Enter into PV Watts

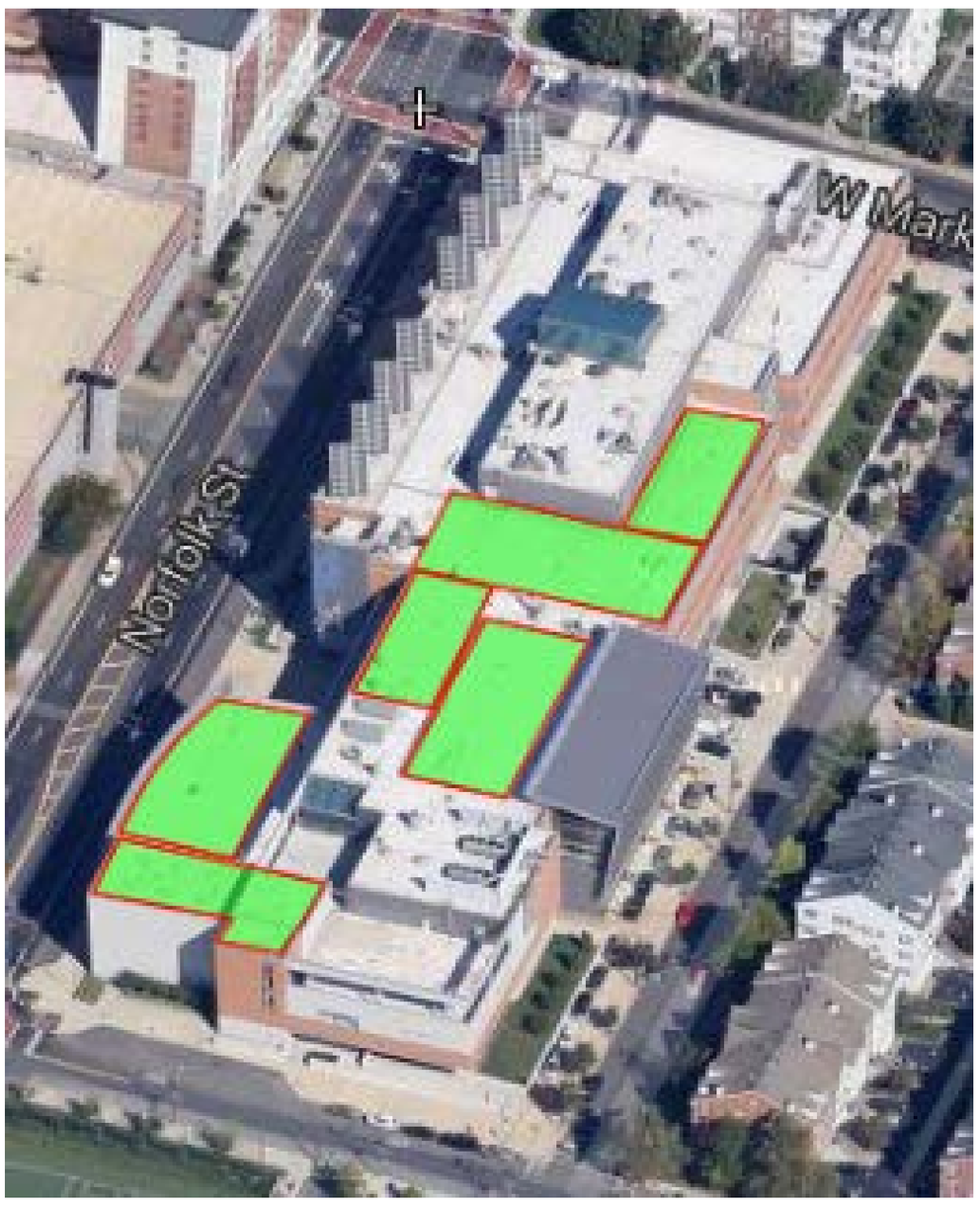
PV Watts Inputs***

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
74,938 annual kWh calculated in PV Watts program

% Offset Calc

Usage	3,493,842	(from utilities)
PV Generation	74,938	(generated using PV Watts)
% offset	2%	



* 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

Science Park High School

Station Identification	
City:	Newark
State:	New_Jersey
Latitude:	40.70° N
Longitude:	74.17° W
Elevation:	9 m
PV System Specifications	
DC Rating:	60.0 kW
DC to AC Derate Factor:	0.830
AC Rating:	49.8 kW
Array Type:	Fixed Tilt
Array Tilt:	20.0°
Array Azimuth:	180.0°
Energy Specifications	
Cost of Electricity:	14.0 ¢/kWh

Results			
Month	Solar Radiation (kWh/m ^{2}/day)	AC Energy (kWh)	Energy Value ($)
1	2.78	4383	613.62
2	3.54	5050	707.00
3	4.35	6685	935.90
4	4.95	7086	992.04
5	5.69	8227	1151.78
6	5.86	7958	1114.12
7	5.73	7945	1112.30
8	5.47	7506	1050.84
9	4.91	6724	941.36
10	3.99	5833	816.62
11	2.68	3915	548.10
12	2.35	3625	507.50
Year	4.36	74938	10491.32

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)

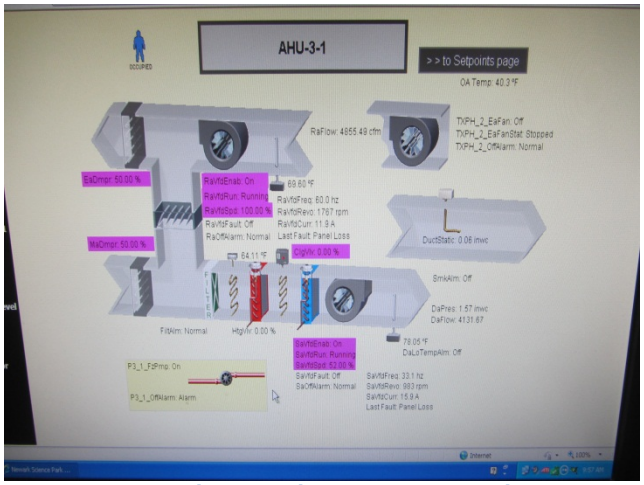
Please send questions and comments regarding PVWATTS to Webmaster

Disclaimer and copyright notice

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

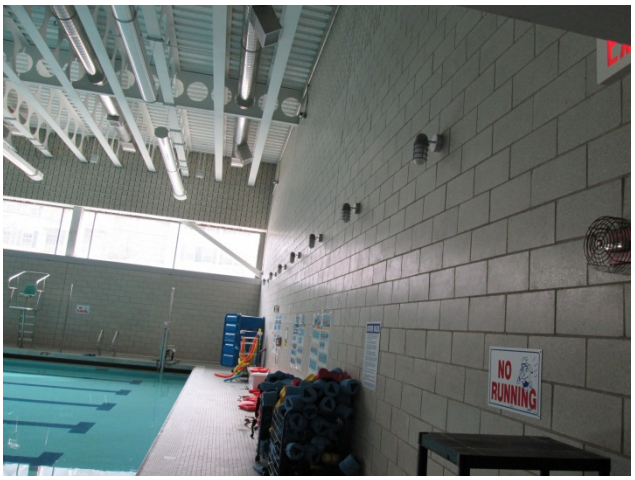
APPENDIX F

Photos



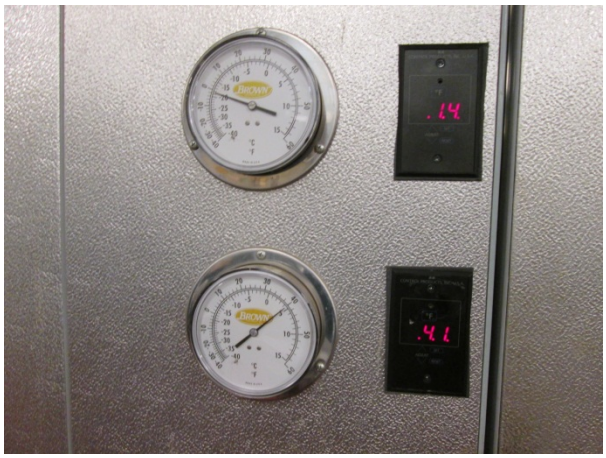
1: Sample controls system screenshot

2: Typical Water Source Heat Pump



3: Natatorium

4: Two 600 gal domestic hot water boilers with 80% efficient burners



5: Walk-In freezer

6: Typical Vending Machines

7: Decorative atrium lighting

APPENDIX G

EPA Portfolio Manager

ENERGY STAR® Statement of Energy Performance

33

ENERGY STAR® Score[1]

Science Park High School

Primary Property Function: K-12 School
Gross Floor Area (ft²): 270,000
Built: 2007

For Year Ending: August 31, 2011
Date Generated: May 23, 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	Property Owner	Primary Contact
Science Park High School 260 Norfolk Street Newark, New Jersey 07102	_____ , (____)____-_____	LGEA LGEA 900 ROUTE 9 NORTH SUITE 404 WOODBRIDGE, NJ 07095 732-855-2864 amiller@trcsolutions.com

Property ID: 3877106

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
75 kBtu/ft²

Source EUI
176.4 kBtu/ft²

Annual Energy by Fuel	
Natural Gas (kBtu)	7,619,526 (38%)
Electric - Grid (kBtu)	12,620,306 (62%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	66.2
National Median Source EUI (kBtu/ft²)	155.8
% Diff from National Median Source EUI	13%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	2,003

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)