THE NEWARK PUBLIC SCHOOLS

Group 3 Buildings

EAST SIDE HIGH SCHOOL

238 Van Buren St, Newark, NJ 07105

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

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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
East Side High School	238 Van Buren St, Newark, NJ 07105	302,353	1911

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)
East Side High School	416,394	42,292	98,767	13.1

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
1A	Replace Steam to Hot Water Heat Exchanger w/ Dedicated Hot Water Boilers	450,541	14,047	32.1	12,000	31.2	Y
1B**	Convert Steam Heating System to Hydronic Heat w/ High Efficiency Condensing Boilers	3,006,712	11,864	253.4	12,000	252.4	N
2	Install Premium Efficiency Motors	7,275	212	34.4	0	34.4	Υ
3	Install Window AC Controllers	10,000	5,859	1.7	0	1.7	Υ
4A	Install Basic Controls	21,309	23,084	0.9	0	0.9	Υ
4B**	Install Full DDC Controls	1,295,684	44,718	29.0	0	29.0	N
5	Domestic Hot Water System Improvements	17,937	1,354	13.2	700	12.7	Υ
6	Install Walk-In Cooler/Freezer Controls	41,250	1,280	32.2	0	32.2	Υ
7	Install Vending Machine Occupancy Sensors	1,120	1,441	0.8	0	0.8	Υ
8	Install Low Flow Plumbing Fixtures	590,264	18,263	32.3	0	32.3	N
L1**	Lighting Replacements / Upgrades	690,686	44,074	15.7	4,800	15.6	N
L2**	Install Lighting Controls (Add Occupancy Sensors)	49,997	14,285	3.5	6,660	3.0	N
L3	Lighting Replacements with Controls (Occupancy Sensors)	740,684	51,489	14.4	11,460	14.2	Υ
	Total**	1,880,380	117,029	16.1	24,160	15.9	
	Total (Recommended)	1,290,116	98,767	13.1	24,160	12.8	

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

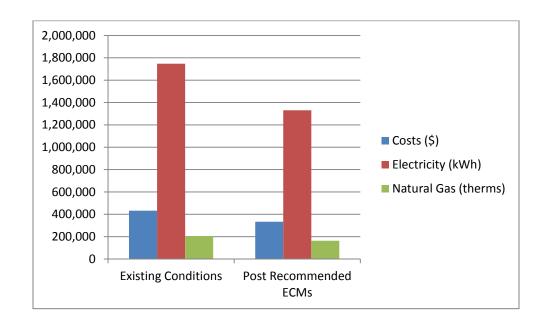
Photovoltaic (PV) Rooftop Solar Power Generation – 130 kW System

^{*} Incentive shown is per the New Jersey SmartStart Program.

** These ECMs are not included in the Total, as they are alternate measures not recommended.

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

	Existing Conditions	Post Recommended ECMs	Percent Savings
Costs (\$)	432,109	333,342	23%
Electricity (kWh)	1,747,200	1,330,806	24%
Natural Gas (therms)	205,673	163,381	21%
Site EUI (kbtu/SF/Yr)	87.7	69.1	



2.0 BUILDING INFORMATION AND EXISTING CONDITIONS

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

Building Name: East Side High School (Index No. 26)

Address: 238 Van Buren St, Newark NJ 07105 Gross Floor Area: 302,353 Square Feet

Number of Floors: 6 Year Built: 1911 (A-wing)

Additions: 1916 (B-wing), 1925 (C-wing), 1979 (D-wing)



Description of Spaces: Classrooms, offices, cafeteria, kitchen, two gymnasiums, weight room, auditorium with a stage, auto-shop, library, computer labs, science labs, storage rooms, toilet rooms and a mechanical room.

Description of Occupancy: The school serves 1467 students from 9th to 12th grade. There are 110 school faculty and staff members.

Number of Computers: The school has approximately 75 desktop and laptop computers.

Building Usage: Hours of operation are 6:30 AM – 3:00 PM Monday through Friday, with various after-school activities until 9:00 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 brick and concrete masonry units (CMU) with steel framing and insulation only in vintages where it was required by building code (1979). The interior walls are a mixture of brick and plaster.

Façade: Brick

Roof: The roof is flat with about 3" of sprayed high density closed cell polyurethane spray foam coated with an enriched polyuria coating to prevent leaks and seal the roof. Although well insulated, the roof appeared to be in need of some patching.

Windows: The windows throughout the building are double hung single pane aluminum framed windows. Windows are in good condition and no ECMs associated with window replacement were evaluated.

Exterior Doors: Exterior doors throughout the school are FRP with double pane safety glass. The door seals and sweeps are in good condition; there are no ECMs associated with the exterior doors.

Heating Ventilation & Air Conditioning (HVAC) Systems

Heating: Heating in this building is generated by three (3) natural gas fired Trane packaged fire tube steam boilers with capacities of 13,390 lbs/hr each located in the boiler room in the Abuilding. The custodian on staff indicated that only one boiler was needed on average to maintain the heat within the buildings, however a second was always on standby in the event more heat is needed. All three boilers never run at the same time. Boiler blow-down is performed once per day and a steam trap survey and steam system inspection is performed once per year. There are two uninsulated heat exchangers mounted from the ceiling which convert roughly 75% of the steam to hot water (HW) which is circulated throughout the B, C and D wings by three (3) 7.5 HP pumps. The custodian on staff noted that the steam pressure is normally maintained at 4psi, while the target HW temperature is usually 200-205F. Steam is distributed to steam radiators in corridors and rooms in the A-wing. HW is distributed to heating and ventilation (HV) units in the B-wing and to unit ventilators (UV) and HW radiators in B, C and D-wings.

In general a steam heating system is less efficient and consumes more energy than that of a hot water heating system. For the portion of the steam which is used to generate HW for heating, it would be far more efficient to generate HW directly from high efficiency condensing hot water boilers. We have included two ECM's to address this issue, one replaces the heat exchangers with high efficiency hot water boilers and the second ECM replaces the entire steam heating system with a high efficiency hot water system.

A separate ECM has also been included which evaluates replacing the existing pump motors with premium efficiency motors.

Cooling: This building has no central cooling system of any kind. There are roughly 52 window air conditioning units which make up an estimated 5% of the building which is cooled. Since there is not automated control, occasionally window ACs may be left on while the building is unoccupied. There is an ECM included which evaluates using window AC controllers.

Ventilation: There are two McQuay HVs located in a penthouse on the top floor of B-wing which supply 100% ventilation air and contain HW coils for heating. The units supply fresh air to the gymnasium and cafeteria.

There are also two (2) HV units with HW coils located in C-wing penthouse which used to bring in fresh air and supply UVs in the ceiling of the corridors, but are no longer functioning.

Other ventilation in classrooms is achieved by either UVs which bring in a small amount of ventilation air, or through teachers opening windows.

There are no ECMs associated with the ventilation system.

Exhaust: There are several small fractional horsepower exhaust fans located throughout the school which provide general exhaust, exhaust for restrooms and some specialty exhaust for science rooms with fume hoods. There is also two (2) exhaust fans estimated to be 1 HP each which provide exhaust for the kitchen hoods and are controllable from switches in the kitchen.

Normally a kitchen hood controller would be recommended any time there is a kitchen hood in use; however kitchen staff indicated that the hood is almost never used; therefore there would be no savings for implementing this measure.

Controls Systems

The boilers for the most part are manually controlled by the head custodian on staff. There is a Johnson Controls Metasys control system which can automatically fire the back-up boiler if there is a flame failure on the lead boiler, but is otherwise not reliable. The radiators in the classrooms and corridors have no control valves whatsoever. UVs in classrooms also have no controls unless the panel is open, in which case teachers can dial back the fan if desired. It was observed that windows were open throughout the school during the facility visit which is an indication of overheating. In general heating in the building is regulated by teachers opening and closing the windows. The boilers are typically turned on in October and off in April. UVs in rooms which have them are manually controlled on each unit. In general there are no thermostats in the class rooms and corridors and therefore no set points. The gymnasium and cafeteria HV units are controlled by thermostats and appeared to be set at 70F during the facility visit. A Basic Controls ECM is included to address the boiler/ steam valve operation. An alternate ECM is also included that evaluates the energy savings potential of adding a full DDC controls system that will control all terminal units as well as the boilers.

Domestic Hot Water Systems

Domestic hot water (DHW) is generated by one (1) 85 gallon natural gas fired AO Smith DHW heater with an input capacity of 365,000 btu/h which is connected to two (2) 119 gallon storage tanks. DHW is used throughout the school for restroom faucets, custodial mop sinks and the kitchen scullery sinks. ECM is included to evaluate the replacement of this water heater and connected storage tanks with a smaller capacity condensing gas domestic water heater.

Kitchen Equipment

The kitchen at East Side High School is only used to reheat food (cooking is performed elsewhere). Kitchen equipment includes two (2) double convection ovens, one (1) deep fryer, two (2) three door steam pressure cookers and two (2) kettles; however kitchen staff noted that none of the cooking equipment is used except for the ovens. In addition there are four (4) double door reach-in coolers, three (3) double door freezer, one (1) 15'x15' walk-in cooler and one (1) 8'x6' walk-in freezer. There is no dishwasher in this school and therefore no dishwasher booster heater. All pots and pans are washed by hand in the kitchen scullery sinks. An ECM has been included which evaluates installing walk-in cooler / freezer controls. The remainder of the kitchen equipment appeared to be in good condition and is not recommended for replacement.

Plug Load

This school has computers, audio/video equipment, copiers, smart boards, residential appliances (microwave, refrigerator), printers and vending machines which contribute to the plug load in the building. An ECM has been included to install vending machine occupancy sensors.

Plumbing Systems

The plumbing fixtures (i.e., toilets and urinals) appear to be high flow and lavatory faucets have metering-type faucets. Older ceramic drinking fountains are present in corridors. An ECM is included to evaluate the water savings potential of installing low- flow water closet and urinals.

Lighting Systems

The lighting in the building is primarily 4' ceiling/flush, pendant or recessed mounted linear fluorescent T8 fixtures with either one or two lamps each. The gymnasium has 200W metal halide (MH) fixtures. In general all fixtures are controlled by switches mounted on the wall; although the corridors are controlled by breaker.

Exterior lighting consists of 70W metal halide wall packs. Exterior fixtures are likely controlled by photo-sensors mounted on the lighting fixtures. Three lighting ECM options have been included to evaluate adding occupancy sensors to the existing lighting; replacing the existing lighting with LED lighting and a third ECM which assesses the savings of occupancy sensors installed on the proposed LED lights.

3.0 UTILITIES

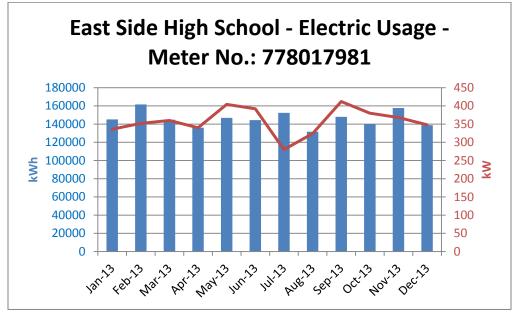
Utilities used by the building are delivered and supplied by the following utility companies:

	Electric	Natural Gas
Deliverer	PSEG	PSEG
Supplier	Nextera Energy Services	PSEG

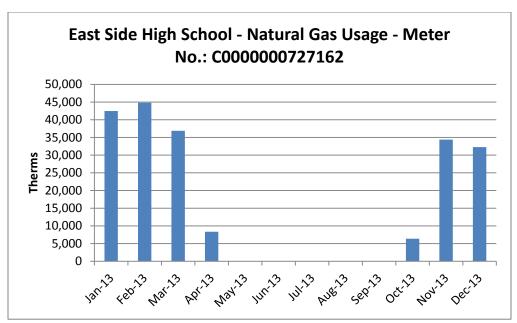
For the 12-month period ending in December 2013, the utilities usages and costs for the building were as follows:

El	ectric				
Annual Consumption	1,747,200	kWh			
Annual Cost	244,221	\$			
Blended Unit Rate	0.14	\$/kWh			
Supply Rate	0.12	\$/kWh			
Demand Rate	6.29	\$/kW			
Peak Demand	412	kW			
Natural Gas					
Annual Consumption	205,673	Therms			
Annual Cost	187,888	\$			
Unit Rate	0.91	\$/therm			

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



The electric usage remains constant all year round which is expected from this type of school which does not have any major cooling systems. There is a small rise in demand during the summer months which could be attributed to window ACs; but drops off in July and August when school is not in session.



Natural gas is used primarily for space heating during the winter months which can be easily seen in the chart above. The small amount of baseline usage during the summer months is attributed to the domestic hot water system as well as kitchen equipment.

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.

Com	Comparison of Utility Rates to NJ State Average Rates*						
Utility	Utility Units School Average Rate NJ Average Rate						
	Party Supplier?						
Electricity	\$/kWh	\$0.124	\$0.128	N			
Natural Gas	\$/Therm	\$0.914	\$0.955	N			

^{*} Per U.S. Energy Information Administration (Annual 2013 data – Electricity and Natural Gas)

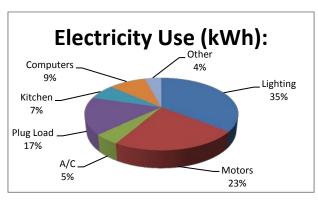
Additional information on selecting a third party energy supplier is available here:

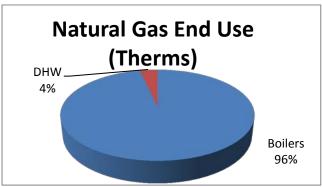
http://www.state.nj.us/bpu/commercial/shopping.html.

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

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

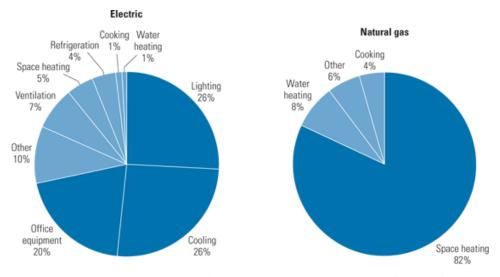
Site End-Use Utility Profile





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

Typical End-Use Utility Profile for Educational Facilities



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

4.0 BENCHMARKING

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

The EPA Portfolio Manager benchmarking tool provides a site and source Energy Use Intensity (EUI), as well as an Energy Star performance rating for qualifying building types. The EUIs are provided in kBtu/ft²/year, and the performance rating represents how energy efficient a building is on a scale of 1 to 100, with 100 being the most efficient. In order for a building to receive and Energy Star label, the energy benchmark rating must be at least 75. As energy use decreases from implementation of the proposed measures, the Energy Star rating will increase.

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/ft²/yr	Energy Star Rating (1-100)
87.7*	68**

^{*} Calculated by CHA using Utility Data provided by NPS

The school has an above average Energy Star Rating Score (50 being the median score), and is considered an energy efficient building.

^{**} Provided by TRC

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.

5.1.1 ECM-1A Separate Hot Water System from Steam

Presently, 75% of the building is heated by hot water which is generated through a heat exchanger with steam from the steam boilers. This is an inefficient process which could be improved by installing dedicated hot water boilers which would generate hot water directly for the system rather than using steam.

New modulating condensing gas boilers are available that minimally operate at 88%, and can operate as high as 96%. To implement this ECM, the heat exchanger and associated piping will be removed and the new hot water boilers, distribution piping and primary pumps put in their place. Some piping and wiring modifications will be needed. New dedicated boiler venting would also need to be installed either through the roof or sidewall. Asbestos abatement may need to be performed prior to any work and the cost for this is not included in the payback analysis.

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

ECM-1A Separate Hot Water System from Steam

Budgetary Cost		,	Annual Utility Sa	avings	ROI	Potential Payback Payback Incentive* (without (with		,
Cost	EI	ectricity	Natural Gas	Total		incentive	incentive)	incentive)
\$	kW	kWh	Therms	\$		\$	Years	Years
450,541	-	-	15,436	14,047	(0.2)	12,000	32.1	31.2

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

This measure is recommended.

5.1.2 ECM-1B Convert Steam System to Hot Water & Install High Efficiency Condensing Boilers

The heating system consists of two (2) natural gas fired steam boilers. The boilers have a nameplate efficiency of 80%.

Steam heating systems are inherently inefficient and high maintenance as compared to re-circulated hot water heating systems or other modern heating systems. As steam systems age, the steam traps fail which then requires more untreated cold make-up water. This in turn requires more chemical treatment and increases the risk of boiler thermal shock. Steam piping becomes fouled with scale and corrosion over time resulting in poor heat transfer an ultimately pipe failure. Steam heating systems use boilers that only operate up to 84% combustion efficiency and have even lower thermal efficiency. Multiple condensate pumps and boiler feed water pumps consume electricity that would not be needed in other modern heating systems.

In lieu of replacing the boilers in kind, this ECM evaluates replacing the steam system in its entirety with a more efficient hot water system. New modulating condensing gas boilers are available that minimally operate at 88%, and can operate as high as 96%. To implement this ECM, the old steam boilers, distribution piping, venting and terminal units would be removed and the new hot water boilers, distribution piping and primary pumps

put in their place. Significant piping and wiring modifications would be needed. New dedicated boiler venting would also need to be installed either through the roof or sidewall. Asbestos abatement may need to be performed prior to any work and the cost for this is not included in the payback analysis.

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

ECM-1B Convert Steam System to Hot Water & Install High Efficiency Condensing Boilers

Budgetary	Budgetary Cost	Annual Utility Savings				ROI	ROI Potential Incentive*	Payback (without	Payback (with
Cost	Electricity		Natural Gas	Total		incentive	incentive)	incentive)	
\$	kW	kWh	Therms	\$		\$	Years	Years	
3,006,712	-	ı	13,037	11,864	(0.9)	12,000	253.4	252.4	

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

This measure is not recommended due to the high capital cost as well as long payback period, however this ECM should be considered based on the life cycle cost savings as the current boilers and heating system are well beyond their useful life.

5.2 ECM-2 Install Premium Efficiency Motors on Pumps

There are several pump motors in the boiler room which were observed to be less than premium efficiency. These include two (2) 7.5 HP feedwater pumps (88.5%), four (4) 2 HP condenser water pumps (84%) and three (3) 7.5 HP hot water pumps (89.5%). Premium efficiency 7.5 HP motors are 91% efficiency while 2 HP motors are 86.5% efficient.

The savings of this measure are calculated from the motor efficiency improvement for the motors operating at full load.

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

ECM-2 Install Premium Efficiency Motors on Pumps

Budgetary Cost		Annua	l Utility Savings		ROI	Potential Incentive*	Payback (without	Payback (with		
Cost	EI	ectricity	Natural Gas	Total		incentive	incentive)	incentive)		
\$	kW	kWh	Therms	\$		\$	Years	Years		
7,275	0.6	1,319	-	212	(0.4)	-	34.4	34.4		

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

This measure is recommended.

5.3 ECM-3 Install Window A/C Controller

There are approximately 52 window air conditioners located throughout the school in classrooms and offices.

This ECM evaluates the installation of programmable "smart" timers that interrupt the electrical supply to the window air conditioners when cooling is not needed due to the room being unoccupied. The timers are configurable to operate as a standalone timer or they can be wirelessly interconnected to provide remote temperature control using software.

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

ECM-3 Install Window A/C Controller

Budgetary Cost		Annua	l Utility Savings		ROI Potential		Incentive* (Without	
Cost	EI	ectricity	Natural Gas	Total		incentive	incentive)	incentive)
\$	kW	kWh	Therms	\$		\$	Years	Years
10,000	-	41,853	=	5,859	4.9	=	1.7	1.7

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

This measure is recommended.

5.4.1 ECM-4A Install Basic Controls

The building uses steam boilers that are currently controlled manually by the building operators. Steam pressure is maintained at 3-5 psi most of the day with no regard to space temperature. Classrooms are overheated as a result and the teachers open the windows in an attempt to cool the rooms down. No night temperature set-back is implemented, unless the operator remembers to turn the boilers off before their shift ends. This highly inefficient method of operation consumes excessive fuel (natural gas).

A Basic Control system will provide automatic control of the boiler(s) to produce only enough steam (or hot water) needed to heat the building, based on a single or multiple averaging space thermostats and outdoor air temperatures. This system will not provide for independent room temperature control, but could be expanded in the future to provide this function, if desired using thermostatic radiator control valves. This system could also provide basic boiler and space temperature monitoring, trending and remote notification of boiler failure.

ECM-4A Install Basic Controls

Budgetary Cost		Annua	I ROLL	Potential	Payback (without	Payback (with						
Cost	Е	lectricity	Natural Gas	Total	Incentive*	incentive)	incentive)					
\$	kW	kWh	Therms	\$		\$	Years	Years				
21,309	-	-	25,367	23,084	9.8	-	0.9	0.9				

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

This measure is recommended.

5.4.2 ECM-4B Install Full DDC Controls

A Full Direct Digital Control (DDC) building automation system consists of automatic control of individual space heating and ventilation equipment, and provides monitoring, trending and alarms which notify an operator when a piece of equipment fails or operates outside a given set-point. This system allows for the implementation of energy efficient strategies, such as: time of day (TOD) optimization, set point optimization, staggered start, night setback, temporary daytime setback, economizer (free cooling), demand control ventilation, exhaust fan shut down, and holiday TOD optimization. It also allows for remote access and control of the building's systems. This ECM is recommended only if the building HVAC system is to be fully renovated to include new boilers, pumps and ventilation equipment as it will optimize the energy savings potential of the new systems.

Energy savings are generated from temperature reduction during the day and night as well as other controls sequences mentioned above, as applicable to the proposed HVAC system improvements. The savings is estimated at 10% overall energy reduction based on past experience with similar sized school buildings having fully functioning digital controls.

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

ECM-4B	Install	Full	DDC	Controls
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Budgetary Cost		Annua	I ROLL				Potential Payback (without		
Cost	EI	ectricity	Natural Gas	Total		incentive	incentive)	incentive)	
\$	kW kWh		Therms	\$		\$	Years	Years	
1,295,684	-	ı	49,140	44,718	(0.7)	-	29.0	29.0	

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

This measure is not recommended in lieu of ECM-4A and due to the high cost of implementation and long payback period.

5.5 ECM-5 Domestic Hot Water System Improvements

The existing domestic hot water heating system consists of one (1) natural gas fired DHW heater and two storage tanks with a combined capacity of 323 gallons. The DHW heater has a thermal efficiency of 80%. The amount of stored water is oversized for this type of school which only uses hot water at hand sinks.

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 one (1) high efficiency condensing heater with 100 gallon capacity.

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

ECM-5 Domestic Hot Water System Improvements

Budgetary Cost		Annua	l Utility Savings		ROI Potential		Incentive* (Without		
Cost	El	ectricity	Natural Gas	Total		incentive	incentive)	incentive)	
\$	kW	kWh	Therms	\$		\$	Years	Years	
17,937	-	-	1,488	1,354	0.9	700	13.2	12.7	

^{*} 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 Walk-in Cooler / Freezer Controls

Presently there is one (1) walk-in cooler and one (1) walk-in freezer in this building.

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-6 Install Walk-in Cooler / Freezer Controls

Budgetary Cost		Annua	l Utility Savings		ROI Potential Incentive*		Payback (without	Payback (with
Cost	El	ectricity	Natural Gas	Total		incentive	incentive)	incentive)
\$	kW kWh		Therms	\$		\$	Years	Years
41,250	-	9,142	-	1,280	(0.5)	-	32.2	32.2

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

This measure is recommended.

5.7 ECM-7 Install Vending Misers

The building presently has three (3) cold beverage and one (1) snack-type vending machines 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-7 Install Vending Misers

Budgetary Cost		Annua	l Utility Savings		ROI	Potential Incentive*	Payback (without	Payback (with	
Cost	El	lectricity	Natural Gas	Total		incentive	incentive)	incentive)	
\$	kW kWh		Therms	\$		\$	Years	Years	
1,120	-	10,295	-	1,441	11.9	-	0.8	0.8	

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

This measure is recommended.

5.8 ECM-8 Install Low Flow Plumbing Fixtures

The plumbing fixtures in this building are older high flow fixtures. The water savings associated from replacing existing high flow fixtures with low-flow fixtures was calculated by taking the difference of the annual water usage for the proposed and base case. The basis of this calculation is the estimate usage of each fixture, gallons per use, and number of fixtures. Replacing the existing fixtures in the restrooms with 1.28 Gals/flush toilets, 1.0 gal/flush urinals, and 0.5 gpm faucets will conserve water which will result in lower annual water and sewer charges. Facets with low-flow push valves were not considered for replacement.

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

ECM-8 Install Low Flow Plumbing Fixtures

Budgetary			Annual (Jtility Savin	gs	ROI	Potential	Payback (without	Payback (with	
Cost	Ele	ctricity	Natural Gas	Water	Total		Incentive*	incentive)	incentive)	
\$	kW	kWh	Therms	kGal	\$	·	\$	Years	Years	
590,264	-	-	-	2,419	18,263	(0.1)	-	32.3	32.3	

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

These measures are not recommended due to the high capital cost and long payback period.

5.9.1 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. Exterior lighting includes 70W wall mounted area light fixtures. 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		Annua	l Utility Savings		ROI	Potential	Payback (without	Payback (with	
Cost	Ele	ctricity	Natural Gas	Total		Incentive*	incentive)	incentive)	
\$	kW	kWh	Therms	\$		\$	Years	Years	
690,686	101	293,988	-	44,074	(0.3)	4,800	15.7	15.6	

^{*} 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.

5.9.2 ECM-L2 Install Lighting Controls (Occupancy Sensors)

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

This measure recommends installing occupancy sensors for the current lighting system. Using a process similar to that utilized in Section 5.9.1, 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		Annua	l Utility Savings		ROI	Potential Incentive*	Payback (without	Payback (with
Cost	El	lectricity	Natural Gas	Total		incentive	incentive)	incentive)
\$	kW	kWh	Therms	\$		\$	Years	Years
49,997	0	115,204	=	14,285	2.2	6,660	3.5	3.0

^{*} 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.

5.9.3 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		Annua	l Utility Savings		ROI Potential Incentive*		Payback (without	Payback (with	
Cost	Ele	ctricity	Natural Gas	Total		incentive	incentive)	incentive)	
\$	kW	kWh	Therms	\$		\$	Years	Years	
740,684	101	353,785	=	51,489	(0.2)	11,460	14.4	14.2	

^{*} 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.

5.10 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:

- Install Covers on Window Air Conditioners
- Clean Window AC filters before each season
- Perform a steam trap assessment yearly to ensure steam traps are functioning properly.
- Insulate hot water heat exchangers
- Replace Unit Ventilator filters at least twice a year
- Clear surface above unit ventilators of materials, plants, or books
- Set computers monitors to turn off and computers to sleep mode when not in use
- Look for the ENERGY STAR® label when purchasing Window AC units or Kitchen Appliances
- Disconnect unnecessary or unused small appliances and electronics when not in use to reduce phantom loads
- Train custodians to turn off lights and set HVAC temperatures to minimum levels when rooms are unoccupied
- Develop an Energy Master Plan to measure and track energy performance
- Educate students and staff about how their behavior affects energy use. Create student energy patrols to monitor and inform administration when energy is being wasted.
- During the winter, Custodians should ensure all windows are closed as part of cleaning routine

6.0 PROJECT INCENTIVES

6.1 Incentives Overview

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

6.1.1 New Jersey Smart Start Program

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

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

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

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

6.1.2 Direct Install Program

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

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

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

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

The building does not qualify for this program because its electrical demand is more than the maximum peak electrical demand of 200 kW for the last 12 month period.

Refer to Appendix D for more information on this program.

6.1.3 New Jersey Pay For Performance Program (P4P)

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

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

Incentive Amount: \$0.10/SFMinimum 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.

<u>Electric</u>

- 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.

<u>Gas</u>

- 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.

<u>Gas</u>

- 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, along with more detailed program information provided 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	Potential PV		
Area	Array Size		
(Ft ²)	(kW)		
16,832	130		

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 2014 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 – 130 kW System

Budgetary Cost	Annual Utility Savings		Total Savings	New Jersey Renewable SREC	Payback (without SREC)	Payback (with SREC)	Recommended	
	Electricity Natural Ga		Natural Gas					Ä
\$	kW	kWh	Therms	\$	\$	Years	Years	Y/N
520,000	130	162,366	0	22,731	25,167	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.

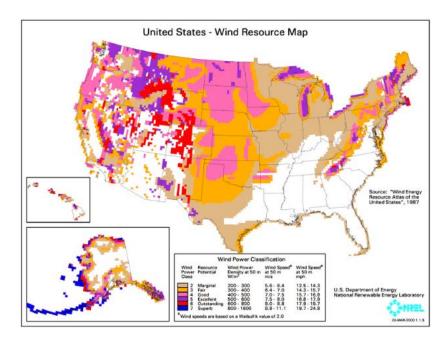
Several options exist for using active solar thermal systems for space heating. The most common method is called a passive solar hot water system involves using glazed collectors to heat a liquid held in a storage tank (similar to an active solar hot water system described above which requires pumping).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

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

7.2 Wind Powered Turbines

Wind power is the conversion of kinetic energy from wind into mechanical power that is used to drive a generator which creates electricity by means of a wind turbine. A wind

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



This measure is not recommended due the location of the school.

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 lack of sufficient year round thermal load need to make a CHP system financially viable.

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

			Onsite	
Peak Demand	Min Demand	Avg Demand	Generation	Eligible?
kW	kW	kW	Y/N	Y/N
412	280	358	Υ	Υ

This measure is not recommended because the building does not have adequate onsite generation to support the entire electrical building load.

8.0 CONCLUSIONS & RECOMMENDATIONS

The LGEA energy audit conducted by CHA for the building identified potential annual savings of \$98,767/yr with an overall payback of 13.1 years, if the recommended ECMs are implemented.

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

Electric Savings (kWh)	Natural Gas Savings (therms)	Total Savings (\$)	Payback (years)	
416,394	42,292	98,767	13.1	

The following projects should be considered for implementation:

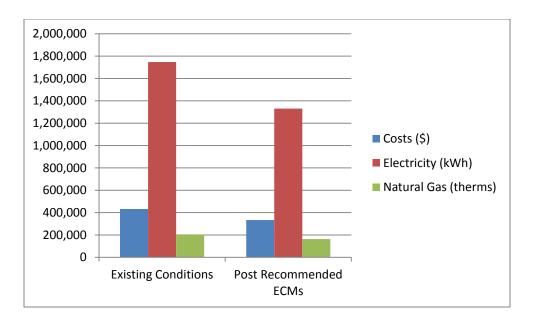
- Replace Steam to Hot Water Heat Exchanger w/ Dedicated Hot Water Boilers
- Install Premium Efficiency Motors
- Install Window A/C Controller
- Install Basic Controls
- Domestic Hot Water System Improvements
- Install Walk-In Cooler/Freezer Controls
- Install Vending Machine Occupancy Sensors
- Lighting Replacements with Controls (Occupancy Sensors)

The following alternative energy measures are recommended for further study:

• Photovoltaic (PV) Rooftop Solar Power Generation – 130 kW System

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

	Existing Conditions	Post Recommended ECMs	Percent Savings
Costs (\$)	432,109	333,342	23%
Electricity (kWh)	1,747,200	1,330,806	24%
Natural Gas (therms)	205,673	163,381	21%
Site EUI (kbtu/SF/Yr)	87.7	69.1	



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



East Side High School - Electric Usage

Blended Consumpt Demand

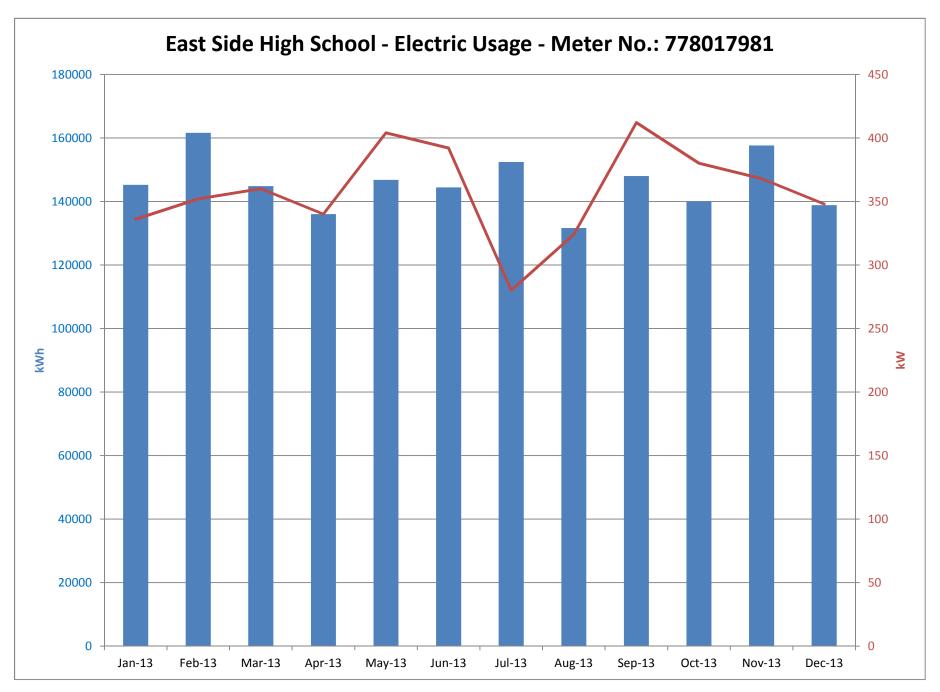
										Rate	ion Rate	Rate
Start Date	End Date	kW	h Dem	nand Usage (KW)	Total Charge	Supply Charge	Delivery Charge	Demand Charge	Consumption (\$)	(\$/kWh)	(\$/kWh)	(\$/kW)
1/5/2012	2	2/2/2012	152400	372	-			_	23,087.98	0.16	0.15	3.49
2/3/2012	2	3/5/2012	163200	376	26,110.00	C	4,966.63	1,310.96	24799.04	0.16	0.15	3.49
3/6/2012		4/3/2012	143200	368	22,915.00	C	4,405.10	1,283.07	21631.93	0.16	0.15	3.49
4/4/2012	2	5/3/2012	143200	352	22,910.00	C	4,405.10	1,227.28	21682.72	0.16	0.15	3.49
5/4/2012	2	6/4/2012	157200	376	25,150.00	C	7,917.01	1,310.96	23839.04	0.16	0.15	3.49
6/5/2012	2	7/3/2012	133200	364	21,258.45	12,653.73	7,335.60	1,269.12	19989.33	0.16	0.15	3.49
7/4/2012	2	8/2/2012	133600	232	19,837.52	12,762.62	6,266.01	808.89	19028.63	0.15	0.14	3.49
8/3/2012	2	8/31/2012	131600	236	19,320.41	12,250.02	6,247.55	822.84	18497.57	0.15	0.14	3.49
9/1/2012	2	10/2/2012	152800	376	20,164.91	13,936.62	4,917.32	1,310.97	18,853.94	0.13	0.12	3.49
10/3/2012	2	10/31/2012	128400	356	17,714.23	12,307.66	4,165.34	1,241.23	16473	0.14	0.13	3.49
11/1/2012	2	12/3/2012	149600	336	19,405.87	13,468.71	4,765.66	1,171.50	18234.37	0.13	0.12	3.49
12/4/2012	2	1/3/2013	145200	332	19,064.48	13,256.69	4,648.38	1,159.41	17905.07	0.13	0.12	3.49
1/4/2013	3	2/1/2013	145200	336	19,163.55	13,233.87	4,738.76	1,190.92	17972.63	0.13	0.12	3.54
2/2/2013	3	3/5/2013	161600	352	20,822.48	14,649.54	4,925.31	1,247.63	19574.85	0.13	0.12	3.54
3/6/2013	3	4/4/2013	144800	360	19,344.80	13,616.62	4,452.20	1,275.98	18068.82	0.13	0.12	3.54
4/5/2013	3	5/3/2013	136000	340	18,704.55	13,295.07	4,204.38	1,205.10	17499.45	0.14	0.13	3.54
5/4/2013	3	6/4/2013	146800	404	23,576.08	14,191.22	4,546.35	4,838.51	18737.57	0.16	0.13	11.98
6/4/2013	3	7/3/2013	144400	392	23,212.55	13,786.29	4,731.48	4,694.78	18517.77	0.16	0.13	11.98
7/3/2013	3	8/2/2013	152400	280	22,014.86	13,688.58	4,972.86	3,353.42	18661.44	0.14	0.12	11.98
8/2/2013	3	9/3/2013	131600	324	20,109.13	11,883.48	4,345.26	3,880.39	16228.74	0.15	0.12	11.98
9/3/2013	3	10/2/2013	148000	412	19,665.90	13,364.40	4,841.21	1,460.29	18205.61	0.13	0.12	3.54
10/2/2013	3	10/31/2013	140000	380	18,602.00	12,642.00	4,613.13	1,346.87	17255.13	0.13	0.12	3.54
11/1/2013	3	12/3/2013	157600	368	20,681.62	14,231.28	5,146.00	1,304.34	19377.28	0.13	0.12	3.54
12/3/2013	3	1/3/2014	138800	348	18,323.23	12,533.64	4,556.14	1,233.45	17089.78	0.13	0.12	3.54

East Side High School		Start Date	End Date	Months
238 Van Buren St., 07105		1/5/2012	1/3/2014	23
Account Number	2147483647			
Meter Number	778017981			

ELECTRIC USAGE -	MOST	RECENT	12 MONTHS.	PERIOD	FNDING

1.	/3/	/2	0:	14

LLLCTRIC OSAGE IVIC	ELECTRIC OSAGE MOST RECENT 12 MONTHS, I ERIOD ENDING:						
Total Usage	1,747,200	kwh					
Total Charges	\$244,221						
Blended Rate	\$0.14	\$/kWh					
Consumption Rate	\$0.12	\$/kWh					
Demand Rate	\$6.29	\$/kW					
Max Demand	412.0	kW					
Min Demand	280.0	kW					
Avg Demand	358.0	kW					



Newark Public Schools LGEA CHA Project# 27999

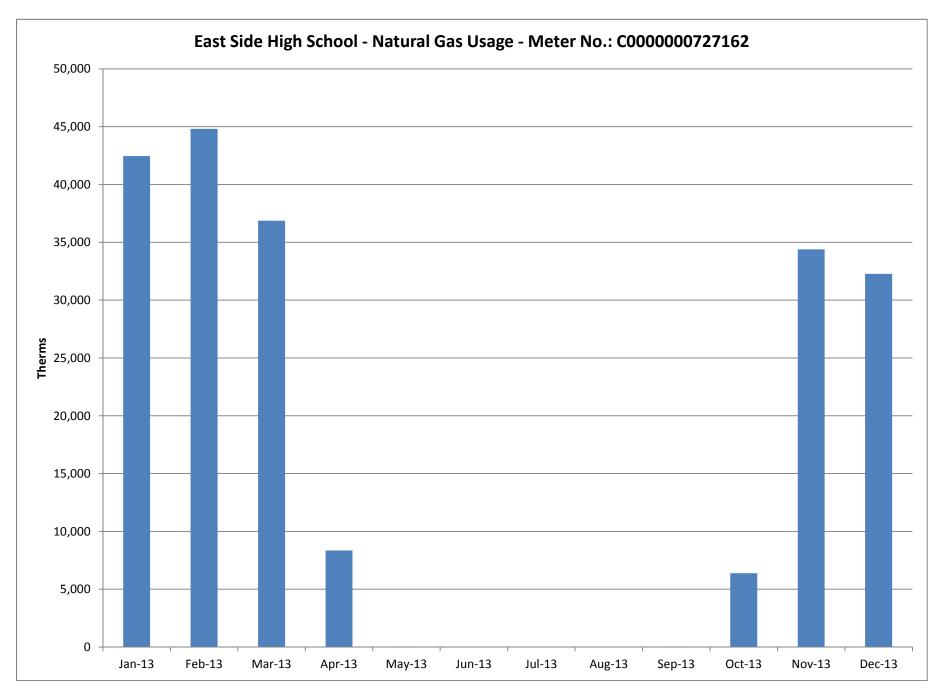
East Side High School - Natural Gas Usage

Index No	Current Name	Acct	Meter	Start Date	End Date	Therms	Total Charge	\$/therm
	26 East Side High School	4200102803	C0000000727162	1/5/2012	2/2/2012	34,046.08	29,479.83	0.87
	26 East Side High School	4200102803	C0000000727162	2/3/2012	3/5/2012	31,764.40	26,277.88	0.83
	26 East Side High School	4200102803	C0000000727162	3/6/2012	4/2/2012	11,050.08	6,680.97	0.60
	26 East Side High School	4200102803	C0000000727162	4/3/2012	5/3/2012	7,544.98	4,419.22	0.59
	26 East Side High School	4200102803	C0000000727162	5/4/2012	6/4/2012	572.86	443.93	0.77
	26 East Side High School	4200102803	C0000000727162	6/5/2012	7/3/2012	39.69	125.06	3.15
	26 East Side High School	4200102803	C0000000727162	7/4/2012	8/2/2012	7.76	104.79	13.50
	26 East Side High School	4200102803	C0000000727162	8/3/2012	8/30/2012	8.86	105.75	11.94
	26 East Side High School	4200102803	C0000000727162	8/31/2012	10/2/2012	171.7	213.9	1.25
	26 East Side High School	4200102803	C0000000727162	10/3/2012	11/2/2012	611.11	4,292.94	7.02
	26 East Side High School	4200102803	C0000000727162	11/3/2012	12/3/2012	33,497.76	31,829.44	0.95
	26 East Side High School	4200102803	C0000000727162	12/4/2012	1/3/2013	32,206.89	31,173.54	0.97
	26 East Side High School	4200102803	C0000000727162	1/4/2013	2/1/2013	42,453.04	38,699.50	0.91
	26 East Side High School	4200102803	C0000000727162	2/2/2013	3/5/2013	44,808.30	41,769.85	0.93
	26 East Side High School	4200102803	C0000000727162	3/6/2013	4/4/2013	36,868.80	25,879.82	0.70
	26 East Side High School	4200102803	C0000000727162	4/5/2013	5/3/2013	8,345.83	6,286.35	0.75
	26 East Side High School	4200102803	C0000000727162	5/4/2013	6/4/2013	55.6	148.09	2.66
	26 East Side High School	4200102803	C0000000727162	6/5/2013	7/3/2013	32.29	129.48	4.01
	26 East Side High School	4200102803	C0000000727162	7/4/2013	8/2/2013	8.97	110.86	12.36
	26 East Side High School	4200102803	C0000000727162	8/3/2013	9/4/2013	10.11	111.38	11.02
	26 East Side High School	4200102803	C0000000727162	9/5/2013	10/2/2013	51.69	141.14	2.73
	26 East Side High School	4200102803	C0000000727162	10/3/2013	10/31/2013	6,380.11	10,520.34	1.65
	26 East Side High School	4200102803	C0000000727162	11/1/2013	12/3/2013	34,389.23	32,216.17	0.94
	26 East Side High School	4200102803	C0000000727162	12/4/2013	1/3/2014	32,268.58	31,874.90	0.99
	East Side High School		Start Date	End Date	# Months			
	Account Number	//200102803	1/5/2012	1/3/201/	23			

East Side High School		Start Date	End Date	# Months
Account Number	4200102803	1/5/2012	1/3/2014	23
Meter Number	C0000000727162			

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

Annual Usage	205,673 Therms	
Annual Cost	\$187,888	
Rate	\$0.91 \$/Therm	Bill missing. Two month average used



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

$*\underline{CUSTOMER\ CLASS} - R - RESIDENTIAL\ C - COMMERCIAL\ I - INDUSTRIAL$

Supplier	Telephone	*Customer
**	& Web Site	Class
AEP Energy, Inc.	(866) 258-3782	C/I
309 Fellowship Road, Fl. 2		
Mount Laurel, NJ 08054	www.aepenergy.com	ACTIVE
Alpha Gas and Electric, LLC	(855) 553-6374	R/C
641 5 th Street		
Lakewood, NJ 08701	www.alphagasandelectric.com	ACTIVE
Ambit Northeast, LLC	(877)-30-AMBIT	R/C
103 Carnegie Center	(877) 302-6248	
Suite 300		
Princeton, NJ 08540	www.ambitenergy.com	ACTIVE
American Powernet	(877) 977-2636	C
Management, LP		
437 North Grove St.	www.americanpowernet.com	ACTIVE
Berlin, NJ 08009		
Amerigreen Energy, Inc.	888-423-8357	R/C
1463 Lamberton Road		
Trenton, NJ 08611	www.amerigreen.com	ACTIVE
AP Gas & Electric, LLC	(855) 544-4895	R/C/I
10 North Park Place, Suite 420		
Morristown, NJ 07960	www.apge.com	ACTIVE
Astral Energy LLC	(201) 384-5552	R/C/I
16 Tyson Place		
Bergenfield, NJ 07621	www.astralenergyllc.com	ACTIVE
Barclays Capital Services,	(888) 978-9974	C
Inc.		
70 Hudson Street		ACTIVE
Jersey City, NJ 07302-4585	www.group.barclays.com	
BBPC, LLC d/b/a Great	(888) 651-4121	C/I
Eastern Energy		
116 Village Blvd. Suite 200	www.greateasternenergy.com	
Princeton, NJ 08540		ACTIVE
Champion Energy Services,	(877) 653-5090	R/C/I
LLC		
72 Avenue L		ACTIVE
Newark, NJ 07105	www.championenergyservices.com	

Choice Energy, LLC	888-565-4490	R/C
4257 US Highway 9, Suite 6C Freehold, NJ 07728	www.4choiceenergy.com	ACTIVE
Clearview Electric, Inc.	(888) CLR-VIEW	R/C/I
505 Park Drive Woodbury, NJ 08096	(800) 746-4702 www.clearviewenergy.com	ACTIVE
Commerce Energy, Inc.	1-866-587-8674	R
7 Cedar Terrace Ramsey, NJ 07446	www.commerceenergy.com	ACTIVE
ConEdison Solutions Cherry Tree Corporate Center 535 State Highway Suite 180	(888) 665-0955	C/I ACTIVE
Cherry Hill, NJ 08002	www.conedsolutions.com	ACTIVE
Constellation NewEnergy,	(866) 237-7693	R/C/I
Inc. 900A Lake Street, Suite 2 Ramsey, NJ 07446	www.constellation.com	ACTIVE
Constellation Energy	(877) 997-9995	R
900A Lake Street, Suite 2 Ramsey, NJ 07446	www.constellation.com	ACTIVE
Credit Suisse, (USA) Inc.	(212) 538-3124	С
700 College Road East Princeton, NJ 08450	www.creditsuisse.com	ACTIVE
Direct Energy Business, LLC	(888) 925-9115	C/I
120 Wood Avenue, Suite 611 Iselin, NJ 08830	www.directenergybusiness.com	ACTIVE
Direct Energy Services, LLC	(866) 348-4193	R
120 Wood Avenue, Suite 611 Iselin, NJ 08830	www.directenergy.com	ACTIVE
Discount Energy Group,	(800) 282-3331	R/C
LLC 811 Church Road, Suite 149 Cherry Hill, New Jersey 08002	www.discountenergygroup.com	ACTIVE
Dominion Retail, Inc.	(866) 275-4240	R/C
d/b/a Dominion Energy Solutions 395 Route #70 West Suite 125		ACTIVE
Lakewood, NJ 08701	www.dom.com/products	ACTIVE

DTE Energy Supply, Inc.	(877) 332-2450	C/I
One Gateway Center,		
Suite 2600 Newark, NJ 07102	www.dtesupply.com	ACTIVE
Energy.me Midwest LLC	(855) 243-7270	R/C/I
90 Washington Blvd	(600) 2.0 , 2.0	10 0/1
Bedminster, NJ 07921	www.energy.me	ACTIVE
Energy Plus Holdings LLC	(877) 866-9193	R/C
309 Fellowship Road		
East Gate Center, Suite 200		
Mt. Laurel, NJ 08054	www.energypluscompany.com	ACTIVE
Ethical Electric Benefit Co.	(888) 444-9452	R/C
d/b/a Ethical Electric 100 Overlook Center, 2 nd Fl.	www.ethicalelectric.com	ACTIVE
Princeton, NJ 08540	<u>www.euncalelectric.com</u>	ACTIVE
FirstEnergy Solutions	(800) 977-0500	C/I
300 Madison Avenue	(000) 511 0000	0,1
Morristown, NJ 07962	www.fes.com	ACTIVE
Gateway Energy Services	(800) 805-8586	R/C/I
Corp.		
44 Whispering Pines Lane		ACTIVE
Lakewood, NJ 08701	www.gesc.com	
GDF SUEZ Energy	(866) 999-8374	C/I
Resources NA, Inc.		
333 Thornall Street Sixth Floor		
Edison, NJ 08837	www.gdfsuezenergyresources.com	ACTIVE
Glacial Energy of New	(888) 452-2425	C/I
Jersey, Inc.		
75 Route 15 Building E		
Lafayette, NJ 07848	www.glacialenergy.com	ACTIVE
Global Energy Marketing	(800) 542-0778	C/I
LLC	www.clab.clm.com	A CUDINATE
129 Wentz Avenue Springfield, NJ 07081	www.globalp.com	ACTIVE
	(0.65) 7.67 5010	0.7
Green Mountain Energy Company	(866) 767-5818	C/I
211 Carnegie Center Drive	www.greenmountain.com/commercial-	
Princeton, NJ 08540	home	ACTIVE
1111100011, 113 00570	Home	MOTIVE

Hess Corporation	(800) 437-7872	C/I
1 Hess Plaza Woodbridge, NJ 07095	www.hess.com	ACTIVE
HIKO Energy, LLC	(888) 264-4908	R/C
655 Suffern Road Teaneck, NJ 07666	www.hikoenergy.com	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,	(877) Hudson 9	С
LLC 7 Cedar Street Ramsey, New Jersey 07446	www.hudsonenergyservices.com	ACTIVE
IDT Energy, Inc. 550 Broad Street	(877) 887-6866	R/C
Newark, NJ 07102	www.idtenergy.com	ACTIVE
Independence Energy Group, LLC	(877) 235-6708	R/C
3711 Market Street, 10 th Fl. Philadelphia, PA 19104	www.chooseindependence.com	ACTIVE
Integrys Energy Services, Inc.	(877) 763-9977	C/I
99 Wood Ave, South, Suite 802 Iselin, NJ 08830	www.integrysenergy.com	ACTIVE
Keil & Sons, Inc. d/b/a Systrum Energy	(877) 797-8786	R/C/I
1 Bergen Blvd. Fairview, NJ 07022	www.systrumenergy.com	ACTIVE
Liberty Power Delaware, LLC	(866) 769-3799	C/I
1973 Highway 34, Suite 211 Wall, NJ 07719	www.libertypowercorp.com	ACTIVE
Liberty Power Holdings, LLC	(866) 769-3799	C/I
1973 Highway 34, Suite 211 Wall, NJ 07719	www.libertypowercorp.com	ACTIVE

Linde Energy Services	(800) 247-2644	C/I
575 Mountain Avenue Murray Hill, NJ 07974	www.linde.com	ACTIVE
Marathon Power LLC 302 Main Street	(888) 779-7255	R/C/I
Paterson, NJ 07505	www.mecny.com	ACTIVE
MXenergy Electric Inc.	(800) 785-4374	R/C/I
900 Lake Street Ramsey, NJ 07446	www.mxenergy.com	ACTIVE
NATGASCO, Inc.	(973) 678-1800 x. 251	R/C
532 Freeman St. Orange, NJ 07050	www.supremeenergyinc.com	ACTIVE
NextEra Energy Services	(877) 528-2890 Commercial	R/C/I
New Jersey, LLC 651 Jernee Mill Road	(800) 882-1276 Residential	
Sayreville, NJ 08872	www.nexteraenergyservices.com	ACTIVE
New Jersey Gas & Electric	(866) 568-0290	R/C
1 Bridge Plaza fl. 2 Fort Lee, NJ 07024	www.NJGandE.com	ACTIVE
Noble Americas Energy	(877) 273-6772	C/I
Solutions	(6/1) 2/3 3/12	
The Mac-Cali Building 581 Main Street, 8th Floor	www.noblesolutions.com	ACTIVE
Woodbridge, NJ 07095	www.nobiesofutions.com	ACTIVE
North American Power and	(888) 313-9086	R/C/I
Gas, LLC		
222 Ridgedale Avenue Cedar Knolls, NJ 07927	www.napower.com	ACTIVE
Palmco Power NJ, LLC	(877) 726-5862	R/C/I
One Greentree Centre		
10,000 Lincoln Drive East, Suite 201		
Marlton, NJ 08053	www.PalmcoEnergy.com	ACTIVE
Pepco Energy Services, Inc.	(800) ENERGY-9 (363-7499)	C/I
112 Main St. Lebanon, NJ 08833	www.pepco-services.com	ACTIVE
Plymouth Rock Energy, LLC	(855) 32-POWER (76937)	R/C/I
338 Maitland Avenue		
Teaneck, NJ 07666	www.plymouthenergy.com	ACTIVE

PPL Energy Plus, LLC 811 Church Road	(800) 281-2000	C/I
Cherry Hill, NJ 08002	www.pplenergyplus.com	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 <u>www.respondpower.com</u>	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 <u>www.sjnaturalgas.com</u>	R/C ACTIVE
Spark Energy, L.P. 2105 CityWest Blvd., Ste 100 Houston, Texas 77042	(800) 441-7514 <u>www.sparkenergy.com</u>	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.	(856) 273-9995	C/I
d/b/a GASMARK		
224 Strawbridge Drive		
Suite 107		
Moorestown, NJ 08057	www.ugienergyservices.com	ACTIVE
Verde Energy USA, Inc.	(800) 388-3862	R/C/I
50 East Palisades Avenue		
Englewood, NJ 07631	www.lowcostpower.com	ACTIVE
Viridian Energy	(866) 663-2508	R/C/I
2001 Route 46, Waterview		
Plaza		
Suite 310		
Parsippany, NJ 07054	www.viridian.com	ACTIVE
Xoom Energy New Jersey,	(888) 997-8979	R/C/I
LLC		
744 Broad Street		
Newark, NJ 07102	www.xoomenergy.com	ACTIVE
YEP Energy	(855) 363-7736	R/C/I
89 Headquarters Plaza North		
#1463		
Morristown, NJ 07960	www.yepenergyNJ.com	ACTIVE
Your Energy Holdings, LLC	(855) 732-2493	R/C/I
One International Boulevard		
Suite 400		
Mahwah, NJ 07495-0400	www.thisisyourenergy.com	ACTIVE

Back to the main supplier page

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

$*\underline{CUSTOMER\ CLASS} - R - RESIDENTIAL\ C - COMMERCIAL\ I - INDUSTRIAL$

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

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

Hudson Energy Services, LLC 7 Cedar Street	877- Hudson 9	C
Ramsey, NJ 07446	www.hudsonenergyservices.com	ACTIVE
IDT Energy, Inc.	877-887-6866	R/C
550 Broad Street Newark, NJ 07102	www.idtenergy.com	ACTIVE
Integrys Energy Services – Natural Gas, LLC	800-536-0151	C/I
99 Wood Avenue South		
Suite #802 Iselin, NJ 08830	www.integrysenergy.com	ACTIVE
Intelligent Energy	800-927-9794	R/C/I
2050 Center Avenue, Suite 500 Fort Lee, NJ 07024	www.intelligentenergy.org	ACTIVE
Keil & Sons, Inc.	1-877-797-8786	R/C/I
d/b/a Systrum Energy 1 Bergen Blvd.		
Fairview, NJ 07022	www.systrumenergy.com	ACTIVE
Major Energy Services, LLC 10 Regency CT	888-625-6760	R/C/I
Lakewood, NJ 08701	www.majorenergy.com	ACTIVE
Marathon Power LLC	888-779-7255	R/C/I
302 Main Street Paterson, NJ 07505	www.mecny.com	ACTIVE
Metromedia Energy, Inc.	800-828-9427	С
6 Industrial Way Eatontown, NJ 07724	www.metromediaenergy.com	ACTIVE
Metro Energy Group, LLC	888-53-Metro	R/C
14 Washington Place Hackensack, NJ 07601	www.metroenergy.com	ACTIVE
MxEnergy, Inc.	800-758-4374	R/C/I
900 Lake Street Ramsey, NJ 07446	www.mxenergy.com	ACTIVE
NATGASCO (Mitchell Supreme) 532 Freeman Street	800-840-4GAS	С
Orange, NJ 07050	www.natgasco.com	ACTIVE
New Energy Services LLC	800-660-3643	R/C/I
101 Neptune Avenue Deal, New Jersey 07723	www.newenergyservicesllc.com	ACTIVE

New Jersey Gas & Electric	866-568-0290	R/C
1 Bridge Plaza, Fl. 2 Fort Lee, NJ 07024	www.NJGandE.com	ACTIVE
Noble Americas Energy Solutions The Mac-Cali Building 581 Main Street, 8th fl.	877-273-6772	C/I
Woodbridge, NJ 07095	www.noblesolutions.com	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	877-726-5862	R/C/I
One Greentree Centre 10,000 Lincoln Drive East, Suite 201 Marlton, NJ 08053	www.PalmcoEnergy.com	ACTIVE
Pepco Energy Services, Inc.	800-363-7499	C/I
112 Main Street Lebanon, NJ 08833	www.pepco-services.com	ACTIVE
Plymouth Rock Energy, LLC	855-32-POWER (76937)	R/C/I
338 Maitland Avenue Teaneck, NJ 07666	www.plymouthenergy.com	ACTIVE
PPL EnergyPlus, LLC	800-281-2000	C/I
811 Church Road - Office 105 Cherry Hill, NJ 08002	www.pplenergyplus.com	ACTIVE
Respond Power LLC	(877) 973-7763	R/C/I
10 Regency CT Lakewood, NJ 08701	www.respondpower.com	ACTIVE
South Jersey Energy Company	800-266-6020	C/I
1 South Jersey Plaza, Route 54 Folsom, NJ 08037	www.southjerseyenergy.com	ACTIVE
S.J. Energy Partners, Inc.	800-695-0666	R/C
208 White Horse Pike, Suite 4 Barrington, NJ 08007	www.sjnaturalgas.com	ACTIVE
Spark Energy Gas, L.P.	800-411-7514	R/C/I
2105 CityWest Blvd, Ste 100 Houston, Texas 77042	www.sparkenergy.com	ACTIVE
Sprague Energy Corp.	855-466-2842	C/I
12 Ridge Road Chatham Township, NJ 07928	www.spragueenergy.com	ACTIVE

Stuyvesant Energy LLC	800-640-6457	С
10 West Ivy Lane, Suite 4 Englewood, NJ 07631	www.stuyfuel.com	ACTIVE
Stream Energy New Jersey, LLC	(973) 494-8097	R/C
309 Fellowship Road Suite 200	www.stroomonorgy.not	ACTIVE
Mt. Laurel, NJ 08054	www.streamenergy.net	ACTIVE
Systrum Energy	877-797-8786	R/C/I
1 Bergen Blvd. Fairview, NJ 07022	www.systrumenergy.com	ACTIVE
Woodruff Energy	800-557-1121	R/C/I
73 Water Street		
Bridgeton, NJ 08302	www.woodruffenergy.com	ACTIVE
Woodruff Energy US LLC	856-455-1111	C/I
73 Water Street, P.O. Box 777	800-557-1121	
Bridgeton, NJ 08302	www.woodruffenergy.com	ACTIVE
Xoom Energy New Jersey, LLC	888-997-8979	R/C/I
744 Broad Street		
Newark, NJ 07102	<u>www.xoomenergy.com</u>	ACTIVE
Your Energy Holdings, LLC	(855) 732-2493	R/C/I
One International Boulevard		
Suite 400		
Mahwah, NJ 07495-0400	www.thisisyourenergy.com	ACTIVE

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Newark Schools CHA Project# 27998 East Side High School

Actual Estimated

									Louinatea		
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.
Boiler-1	3	Trane	Unknown	76-142	Steam Boiler, Natural Gas	13,390 lbs/hr (estimated 80%)	Boiler Room	Heating System	1976	-8	Three never run at the same time
Burner-1	3	Gordon-Platt	Unknown	76-142	Modulating Burner, Natural Gas	13,390 lbs/hr (estimated 80%)	Boiler Room	Heating System	1976	-17	Modulating
Heat Exchanger	2	Unknown	Unknown	Unknown	Steam to Hot Water Heat Exchanger	Unknown	Boiler Room	Heating System	1985	-5	Un-insulated, 75% of school
Feedwater Water Pump	2	Baldor	M3311T	Unknown	Electric Motor, Pump	7.5 HP, 88.5%	Boiler Room	Heating System	2006	10	
Condensate Return Pumps	4	Marathon Electric	BVB S6T34D55915 P	Unknown	Electric Motor, Pump	2 HP, 84.0%	Boiler Room	Heating System	2006	10	
Hot Water Pump	3	U.S. Electric Motors	T763A	Unknown	Electric Motor, Pump	7.5 HP, 89.5%	Boiler Room	Heating System	2006	10	
DHW	1	AO Smith	BTR 365A 118	1236M000412	Domestic Hot Water Heater, Natural Gas	365,000 btu/h, 80% eff, 85 Gal	Boiler Room	Domestic Hot Water System	2012	23	130F
DHW Tank	2	AO Smith	TJV 120M 000000Y00	1239M001053	Domestic Hot Water Storage Tank	119.0 Gal	Boiler Room	Domestic Hot Water System	2012	23	130F
AHU-3	1	McQuay	CAH012FHAC	FB0U030500252	Heating & Ventilation Unit, Hot Water Heat	Unknown (Custom Build)	Penthouse	Cafeteria	2006	17	
AHU-5	1	McQuay	CAH012FHAC	FB0U030500251	Heating & Ventilation Unit, Hot Water Heat	Unknown (Custom Build)	Penthouse	Unknown	2006	17	
Walk-in Cooler	1	Unknown	Unknown	Unknown	Walk-in Cooler	15' x 15'	Kitchen	Kitchen	2006	12	No Controls
Walk-in Freezer	1	Unknown	Unknown	Unknown	Walk-in Freezer	8' x 6'	Kitchen	Kitchen	2006	12	No Controls
Kitchen Hood	2	Unknown	Unknown	Unknown	Kitchen Hood	4' x 12'	Kitchen	Kitchen	2006	12	
Window AC	52	Various	Various	Various	Window Air Conditioning Unit	12,000 btu/h - 24,000 btu/h	Classrooms and Offices	Classrooms and Offices	2006	7	

\$0.124 \$6.29 \$/kW

Field (Area Description Unique description of the location - Room number/Room	Hoose	No. of									
						Watts per					Retrofit Control	
	Unique description of the location - Room number/Room	Usage Turns	Fixtures	Standard Fixture Code	Fixture Code	Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh		Natas
Code	name: Floor number (if applicable)	Describe Usage Type using Operating Hours	No. of fixtures	Lighting Fixture Code	Code from Table of Standard Fixture	Value from Table of	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated annual hours for	(kW/space) *	Retrofit control device	Notes
	name. Floor number (ii applicable)	using Operating Hours	before the		Wattages	Standard	NO.)	device	the usage group	,	uevice	
			retrofit		Wallages	Fixture			the usage group			
						Wattages						
15LED	UN-240	Storage	6	S 32 C F 2 (ELE)	F42LL	60	0.36	SW	520	187	OCC	
35LED	UN-241	Storage	4	T 32 R F 3 (ELE)	F43SSILL	72	0.29	SW	520	150	OCC	
32LED	461.5	Offices	12	1T 32 R F 2 (ELE)	F42LL	60	0.72	SW	2600	1,872	C-OCC	
32LED	UN-242	Storage	6	1T 32 R F 2 (ELE)	F42LL	60	0.36	SW	520	187	OCC	
32LED	462	Classrooms	18	1T 32 R F 2 (ELE)	F42LL	60	1.08	SW	2600	2,808	C-OCC	
32LED 32LED	463 UN-243	Classrooms Classrooms	18 6	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.08 0.36	SW SW	2600 2600	2,808 936	C-OCC	
32LED	UN-244	Storage	2	1T 32 R F 2 (ELE)	F42LL F42LL	60	0.30	SW	520	62	000	
32LED	UN-245	Storage	2	1T 32 R F 2 (ELE)	F42LL	60	0.12	SW	520	62	OCC	
32LED	UN-246	Classrooms	6	1T 32 R F 2 (ELE)	F42LL	60	0.36	SW	2600	936	C-OCC	
32LED	464	Classrooms	18	1T 32 R F 2 (ELE)	F42LL	60	1.08	SW	2600	2,808	C-OCC	
32LED	465	Classrooms	18	1T 32 R F 2 (ELE)	F42LL	60	1.08	SW	2600	2,808	C-OCC	
32LED	466	Staff Lounge	14	1T 32 R F 2 (ELE)	F42LL	60	0.84	SW	2600	2,184	C-OCC	
32LED	UN-249	Classrooms	5	1T 32 R F 2 (ELE)	F42LL	60	0.30	SW	2600	780	C-OCC	
32LED	467	Classrooms	18	1T 32 R F 2 (ELE)	F42LL	60	1.08	SW	2600	2,808	C-OCC	
32LED	468	Classrooms	18	1T 32 R F 2 (ELE)	F42LL	60	1.08	SW	2600	2,808	C-OCC	
32LED	UN-251	Storage	6	1T 32 R F 2 (ELE)	F42LL	60	0.36	SW	520	187	000	
32LED 32LED	UN-252 UN-253	Storage Storage	6 2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0.36 0.12	SW SW	520 520	187 62	OCC	
32LED 32LED	UN-253 UN-254	Classrooms	2	1T 32 R F 2 (ELE)	F42LL F42LL	60	0.12	SW	2600	312	C-OCC	
32LED	489	Classrooms	18	1T 32 R F 2 (ELE)	F42LL	60	1.08	SW	2600	2,808	C-OCC	
32LED	UN-255	Storage	5	1T 32 R F 2 (ELE)	F42LL	60	0.30	SW	520	156	OCC	
32LED	UN-257	Storage	5	1T 32 R F 2 (ELE)	F42LL	60	0.30	SW	520	156	OCC	
32LED	UN-258	Linen/Utility/Wet/Janitor/Electrical	1	1T 32 R F 2 (ELE)	F42LL	60	0.06	SW	780	47	NONE	
220LED	UN-247	Restroom	1	S 17 C F 1(ELE)	F21ILL	20	0.02	SW	3120	62	NONE	
220LED	UN-248	Restroom	1	S 17 C F 1(ELE)	F21ILL	20	0.02	SW	3120	62	NONE	
32LED	461	Classrooms	18	1T 32 R F 2 (ELE)	F42LL	60	1.08	SW	2600	2,808	C-OCC	
32LED	460	Classrooms	18	1T 32 R F 2 (ELE)	F42LL	60	1.08	SW	2600	2,808	C-OCC	
32LED	459	Classrooms	18	1T 32 R F 2 (ELE)	F42LL	60	1.08	SW	2600	2,808	C-OCC	
32LED	Corridor D Corridor D	Hallways Hallwavs	12	1T 32 R F 2 (ELE)	F42LL F43SSILL	60	0.72 0.86	SW	6240 6240	4,493 5,391	NONE	
35LED 20LED	409	Classrooms	12 10	T 32 R F 3 (ELE) S 28 P F 1 (ELE)	F43SSILL F41SSILL	72 26	0.86	SW SW	2600	5,391	NONE C-OCC	
20LED	410	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL	26	0.20	SW	2600	1,217	C-OCC	
20LED	411	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL	26	0.47	SW	2600	1,217	C-OCC	
20LED	412	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL	26	0.47	SW	2600	1,217	C-OCC	
20LED	413	Classrooms	16	S 28 P F 1 (ELE)	F41SSILL	26	0.42	SW	2600	1,082	C-OCC	
220LED	UN-260	Storage	1	S 17 C F 1(ELE)	F21ILL	20	0.02	SW	520	10	NONE	
20LED	414-C	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL	26	0.47	SW	2600	1,217	C-OCC	
20LED	415	Classrooms	12	S 28 P F 1 (ELE)	F41SSILL	26	0.31	SW	2600	811	C-OCC	
20LED	400 (Gym)	Gymnasium	8	S 28 P F 1 (ELE)	F41SSILL	26	0.21	SW	2600	541	NONE	
20LED 20LED	407 408	Classrooms Classrooms	18 15	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.47 0.39	SW SW	2600 2600	1,217 1,014	C-OCC	
20LED 20LED	408	Classrooms	22	S 28 P F 1 (ELE)	F41SSILL F41SSILL	26	0.39	SW	2600	1,014	C-OCC	
20LED	405	Classrooms	24	S 28 P F 1 (ELE)	F41SSILL	26	0.62	SW	2600	1,622	C-OCC	
20LED	UN-273	Storage	1	S 28 P F 1 (ELE)	F41SSILL	26	0.02	SW	520	14		
20LED	UN-274	Storage	1	S 28 P F 1 (ELE)	F41SSILL	26	0.03	SW	520	14		
15LED	UN-275	Storage	2	S 32 C F 2 (ELE)	F42LL	60	0.12	SW	520	62	NONE	
15LED	UN-276	Offices	6	S 32 C F 2 (ELE)	F42LL	60	0.36	SW	2600	936	OCC	
15LED	UN-277	Offices	6	S 32 C F 2 (ELE)	F42LL	60	0.36	SW	2600	936	OCC	
15LED	404L	Staff Lounge	6	S 32 C F 2 (ELE)	F42LL	60	0.36	SW	2600	936	C-OCC	
15LED	403C	Classrooms	18	S 32 C F 2 (ELE)	F42LL	60	1.08	SW	2600	2,808	C-OCC	
15LED	402	Classrooms	18	S 32 C F 2 (ELE)	F42LL	60	1.08	SW	2600	2,808	C-OCC	
15LED 32LED	401 UN-272	Classrooms Storage	15 2	S 32 C F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0.90 0.12	SW SW	2600 520	2,340	C-OCC NONE	
220LED	UN-271	Storage	1	S 17 C F 1(ELE)	F42LL F21ILL	20	0.12	SW	520	10		
32LED	UN-270	Storage	2	1T 32 R F 2 (ELE)	F42LL	60	0.02	SW	520	62	NONE	
81	UN-268	Restroom	2	S 34 C F 2	F42EE	72	0.12	SW	3120	449	C-OCC	
74	UN-269	Linen/Utility/Wet/Janitor/Electrical	1	150	150/1	50	0.05	SW	780	39	NONE	
81	UN-267	Storage	3	S 34 C F 2	F42EE	72	0.22	SW	520	112	OCC	
81	UN-266	Storage	3	S 34 C F 2	F42EE	72	0.22	SW	520	112	OCC	
20LED	425	Classrooms	15	S 28 P F 1 (ELE)	F41SSILL	26	0.39	SW	2600	1,014	C-OCC	
20LED	423	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL	26	0.47	SW	2600	1,217	C-OCC	

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Cost of Electricity:

\$0.124 \$/kWh \$6.29 \$/kW

_						EXISTING CO	NDITIONS				Retrofit	
			No. of	0. 1.15.	F1	Watts per					Control	
Field	Area Description Unique description of the location - Room number/Room	Usage Describe Usage Type	Fixtures No. of	Standard Fixture Code Lighting Fixture Code	Fixture Code Code from Table of	Fixture Value from	kW/Space (Watts/Fixt) * (Fixt	Exist Control Pre-inst. control	Annual Hours Estimated	Annual kWh (kW/space) *	Retrofit control	Notes
Code	name: Floor number (if applicable)	using Operating Hours	fixtures	Lighting Fixture code	Standard Fixture	Table of	No.)	device	annual hours for	` '	device	Notes
	() () () () () ()	3 1,1 13	before the		Wattages	Standard			the usage group			
			retrofit			Fixture						
20LED	426	Classrooms	18	C 20 D F 4 (FLF)	F41SSILL	Wattages	0.47	SW	2600	1,217	C-OCC	
20LED	426	Classrooms	15	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.47	SW	2600	1,217	C-OCC	
20LED	422	Classrooms	15	S 28 P F 1 (ELE)	F41SSILL	26	0.39	SW	2600	1,014	C-OCC	
20LED	421	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL	26	0.47	SW	2600	1,217	C-OCC	
20LED	420	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL	26	0.47	SW	2600	1,217	C-OCC	
20LED	419	Classrooms	6	S 28 P F 1 (ELE)	F41SSILL	26	0.16	SW	2600	406	C-OCC	
20LED 20LED	418 417	Classrooms Classrooms	18 12	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.47 0.31	SW SW	2600 2600	1,217 811	C-OCC	
20LED	416	Classrooms	15	S 28 P F 1 (ELE)	F41SSILL	26	0.39	SW	2600	1,014	C-OCC	
32LED	Corridor A	Hallways	21	1T 32 R F 2 (ELE)	F42LL	60	1.26	SW	6240	7,862	NONE	
35LED	Corridor A	Hallways	14	T 32 R F 3 (ELE)	F43SSILL	72	1.01	SW	6240	6,290	NONE	
32LED	UN-301	Restroom	2	1T 32 R F 2 (ELE)	F42LL	60	0.12	SW	3120	374	OCC	
32LED	UN-302	Restroom	2	1T 32 R F 2 (ELE)	F42LL	60	0.12	SW	3120	374	OCC	
32LED 32LED	UN-300 UN-299	Linen/Utility/Wet/Janitor/Electrical Storage	2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.12 0.12	SW SW	780 520	94 62	NONE OCC	
32LED	480	Classrooms	26	1T 32 R F 2 (ELE)	F42LL F42LL	60	1.56	SW	2600	4,056	C-OCC	
32LED	UN-298	Storage	2	1T 32 R F 2 (ELE)	F42LL	60	0.12	SW	520	62	OCC	
32LED	UN-297	Storage	2	1T 32 R F 2 (ELE)	F42LL	60	0.12	SW	520	62	OCC	
32LED	482B	Classrooms	33	1T 32 R F 2 (ELE)	F42LL	60	1.98	SW	2600	5,148	C-OCC	
32LED	483	Classrooms	29	1T 32 R F 2 (ELE)	F42LL	60	1.74	SW	2600	4,524	C-OCC	
32LED 32LED	UN-295 448B	Storage Classrooms	2 25	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.12 1.50	SW SW	520 2600	62 3,900	C-OCC	
32LED	440B 485B	Classrooms	25	1T 32 R F 2 (ELE)	F42LL F42LL	60	1.50	SW	2600	3,900	C-OCC	
32LED	486B	Classrooms	25	1T 32 R F 2 (ELE)	F42LL	60	1.50	SW	2600	3,900	C-OCC	
32LED	487	Classrooms	25	1T 32 R F 2 (ELE)	F42LL	60	1.50	SW	2600	3,900	C-OCC	
32LED	488B	Classrooms	32	1T 32 R F 2 (ELE)	F42LL	60	1.92	SW	2600	4,992	C-OCC	
32LED	489B	Classrooms	32	1T 32 R F 2 (ELE)	F42LL	60	1.92	SW	2600	4,992	C-OCC	
32LED 32LED	UN-305 UN-304	Storage Storage	2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0.12 0.12	SW SW	520 520	62 62	00C	
32LED	UN-303	Storage	2	1T 32 R F 2 (ELE)	F42LL F42LL	60	0.12	SW	520	62	OCC	
32LED	UN-268	Storage	2	1T 32 R F 2 (ELE)	F42LL	60	0.12	SW	520	62	OCC	
32LED	Corridor C	Hallways	3	1T 32 R F 2 (ELE)	F42LL	60	0.18	SW	6240	1,123	NONE	
40LED	Corridor C	Hallways	21	T 28 R F 2 (ELE)	F42LL	60	1.26	SW	6240	7,862	NONE	
32LED	UN-198	Storage	18	1T 32 R F 2 (ELE)	F42LL	60	1.08	SW	520	562	OCC	
32LED 32LED	366 367	Classrooms Classrooms	18 18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.08 1.08	SW SW	2600 2600	2,808 2,808	C-OCC	
32LED	368	Classrooms	18	1T 32 R F 2 (ELE)	F42LL F42LL	60	1.08	SW	2600	2,808	C-OCC	
32LED	369	Classrooms	18	1T 32 R F 2 (ELE)	F42LL	60	1.08	SW	2600	2,808	C-OCC	
32LED	370	Classrooms	18	1T 32 R F 2 (ELE)	F42LL	60	1.08	SW	2600	2,808	C-OCC	
32LED	365	Classrooms	30	1T 32 R F 2 (ELE)	F42LL	60	1.80	SW	2600	4,680	C-OCC	
32LED	UN-192	Storage	2	1T 32 R F 2 (ELE)	F42LL	60	0.12	SW	520	62	000	
32LED 32LED	UN-193 UN-194	Storage Storage	2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.12 0.12	SW SW	520 520	62 62	000	
32LED	UN-195	Storage	2	1T 32 R F 2 (ELE)	F42LL F42LL	60	0.12	SW	520	62	OCC	
32LED	364	Classrooms	30	1T 32 R F 2 (ELE)	F42LL	60	1.80	SW	2600	4,680	C-OCC	
32LED	363	Classrooms	36	1T 32 R F 2 (ELE)	F42LL	60	2.16	SW	2600	5,616	C-OCC	
32LED	361	Classrooms	18	1T 32 R F 2 (ELE)	F42LL	60	1.08	SW	2600	2,808	C-OCC	
32LED	360	Classrooms	18	1T 32 R F 2 (ELE)	F42LL	60	1.08	SW	2600	2,808	C-OCC	
32LED 32LED	359 (Work Room) UN-191	Classrooms Storage	7	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.42 0.12	SW SW	2600 520	1,092 62	C-OCC NONE	
32LED	UN-190	Storage	2	1T 32 R F 2 (ELE)	F42LL F42LL	60	0.12	SW	520	62	NONE	
32LED	UN-189	Storage	4	1T 32 R F 2 (ELE)	F42LL	60	0.24	SW	520	125	OCC	
32LED	UN-188	Storage	4	1T 32 R F 2 (ELE)	F42LL	60	0.24	SW	520	125	OCC	
32LED	UN-205	Storage	4	1T 32 R F 2 (ELE)	F42LL	60	0.24	SW	520	125	OCC	
32LED	UN-204	Storage	4	1T 32 R F 2 (ELE)	F42LL	60	0.24	SW	520	125	OCC	
32LED 35LED	Corridor D Corridor D	Hallways Hallways	12 12	1T 32 R F 2 (ELE) T 32 R F 3 (ELE)	F42LL F43SSILL	60 72	0.72 0.86	SW SW	6240 6240	4,493 5,391	NONE NONE	
20LED	310	Classrooms	12	S 28 P F 1 (ELE)	F43SSILL F41SSILL	26	0.31	SW	2600	811	C-OCC	
20LED	311	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL	26	0.47	SW	2600	1,217	C-OCC	
20LED	312A	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL	26	0.47	SW	2600	1,217	C-OCC	
20LED	312B	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL	26	0.47	SW	2600	1,217	C-OCC	
20LED	313	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL	26	0.47	SW	2600	1,217	C-OCC	

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\$0.124 \$/kWh \$6.29 \$/kW

				EXISTING CONDITIONS Retrofit									
			No. of			Watts per					Control		
Ciald	Area Description	Usage Turns	Fixtures	Standard Fixture Code	Fixture Code	Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh		Natas	
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	(Watts/Fixt) * (Fixt No.)	Pre-inst. control device	Estimated annual hours for the usage group	`	Retrofit control device	Notes	
20LED	309	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL	Wattages 26	0.47	SW	2600	1,217	C-OCC		
20LED	307	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL	26	0.47	SW	2600	1,217	C-OCC		
20LED	308	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL	26	0.47	SW	2600	1,217	C-OCC		
40LED	306	Offices	6	T 28 R F 2 (ELE)	F42LL	60	0.36	SW	2600	936	OCC		
20LED	305	Classrooms	15	S 28 P F 1 (ELE)	F41SSILL	26	0.39	SW	2600	1,014	C-OCC		
46LED	304	Offices	6	W 28 C F 2 (ELE)	F42LL	60	0.36	SW	2600	936	OCC		
20LED	303	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL	26	0.47	SW	2600	1,217	C-OCC		
20LED 20LED	302	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL F41SSILL	26	0.47	SW	2600	1,217	C-OCC		
20LED 20LED	301 326	Classrooms Classrooms	15 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.39 0.47	SW SW	2600 2600	1,014 1,217	C-OCC C-OCC		
20LED	323	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL F41SSILL	26	0.47	SW	2600	1,217	C-OCC		
20LED	324	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL	26	0.47	SW	2600	1,217	C-OCC		
20LED	325	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL	26	0.47	SW	2600	1,217	C-OCC		
20LED	322	Classrooms	15	S 28 P F 1 (ELE)	F41SSILL	26	0.39	SW	2600	1,014	C-OCC		
20LED	321	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL	26	0.47	SW	2600	1,217	C-OCC		
20LED	320	Classrooms	18	S 28 P F 1 (ELE)	F41SSILL	26	0.47	SW	2600	1,217	C-OCC		
20LED	319	Offices	6	S 28 P F 1 (ELE)	F41SSILL	26	0.16	SW	2600	406	OCC		
20LED	318	Classrooms	12	S 28 P F 1 (ELE)	F41SSILL	26	0.31	SW	2600	811	C-OCC		
20LED	317	Classrooms	12	S 28 P F 1 (ELE)	F41SSILL	26	0.31	SW	2600	811	C-OCC		
20LED	316	Classrooms	24	S 28 P F 1 (ELE)	F41SSILL	26	0.62	SW	2600	1,622	C-OCC		
20LED 20LED	315 314	Classrooms	24	S 28 P F 1 (ELE)	F41SSILL	26 26	0.62	SW	2600	1,622	C-OCC		
35LED	Corridor A	Classrooms Hallways	18 46	S 28 P F 1 (ELE) T 32 R F 3 (ELE)	F41SSILL F43SSILL	72	0.47 3.31	SW SW	2600 6240	1,217 20,667	C-OCC NONE		
32LED	UN-226	Restroom	3	1T 32 R F 3 (ELE)	F4355ILL F42LL	60	0.18	SW	3120	562	C-OCC		
32LED	UN-227	Restroom	3	1T 32 R F 2 (ELE)	F42LL	60	0.18	SW	3120	562	C-OCC		
32LED	380	Classrooms	27	1T 32 R F 2 (ELE)	F42LL	60	1.62	SW	2600	4,212	C-OCC		
32LED	381B	Classrooms	48	1T 32 R F 2 (ELE)	F42LL	60	2.88	SW	2600	7,488	C-OCC		
40LED	UN-230	Storage	2	T 28 R F 2 (ELE)	F42LL	60	0.12	SW	520	62	NONE		
40LED	UN-231	Storage	2	T 28 R F 2 (ELE)	F42LL	60	0.12	SW	520	62	NONE		
40LED	UN-232	Storage	2	T 28 R F 2 (ELE)	F42LL	60	0.12	SW	520	62	NONE		
40LED	UN-233	Storage	2	T 28 R F 2 (ELE)	F42LL	60	0.12	SW	520	62	NONE		
40LED	UN-234	Storage	2	T 28 R F 2 (ELE)	F42LL	60	0.12	SW	520	62	NONE		
32LED	New Storage (Music)	Storage	2	1T 32 R F 2 (ELE)	F42LL	60	0.12	SW	520	62	NONE		
32LED 32LED	382 383B	Classrooms	21 14	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.26 0.84	SW SW	2600 2600	3,276 2,184	C-OCC C-OCC		
32LED	384	Classrooms Offices	6	1T 32 R F 2 (ELE)	F42LL F42LL	60	0.36	SW	2600	936	000		
40LED	Corridor C	Classrooms	20	T 28 R F 2 (ELE)	F42LL	60	1.20	SW	2600	3,120	C-OCC		
32LED	Gym Connect	Gymnasium	3	1T 32 R F 2 (ELE)	F42LL	60	0.18	SW	2600	468	C-OCC		
32LED	Gym Lobby	Gymnasium	4	1T 32 R F 2 (ELE)	F42LL	60	0.24	SW	2600	624	C-OCC		
32LED	Gym Lobby	Classrooms	15	1T 32 R F 2 (ELE)	F42LL	60	0.90	SW	2600	2,340	C-OCC		
32LED	Gym Office	Gymnasium	6	1T 32 R F 2 (ELE)	F42LL	60	0.36	SW	2600	936	C-OCC		
9LED	Gym	Gymnasium	32	High Bay MH 200 35 Feet High		232	7.42	SW	2600	19,302	NONE		
32LED	Boys Locker Room	Locker	40	1T 32 R F 2 (ELE)	F42LL	60	2.40	SW	2600	6,240	NONE		
32LED	Girl's Locker Room	Locker	40	1T 32 R F 2 (ELE)	F42LL	60	2.40	SW	2600	6,240	NONE		
32LED	Team Room Boys	Locker	14	1T 32 R F 2 (ELE)	F42LL	60	0.84	SW	2600	2,184	NONE		
32LED	Team Room Girls Main Office	Locker Offices	14	1T 32 R F 2 (ELE)	F42LL	60	0.84	SW	2600	2,184	NONE		
32LED 40LED	Main Office Main Office Side Room	Offices	32 4	1T 32 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL	60 60	1.92 0.24	SW SW	2600 2600	4,992 624	C-OCC OCC		
32LED	Main Office Side Room Main Office Side Room	Offices	1	1T 32 R F 2 (ELE)	F42LL F42LL	60	0.24	SW	2600	156	OCC		
10LED	Main Office Kitchenette	Breakroom	4	T 28 R F 2 (ELE)	F42LL	60	0.00	SW	1700	408	OCC		
SLED	Maain Office Storage	Storage	1	T 32 R F 3 (ELE)	F43SSILL	72	0.07	SW	520	37	OCC		
10LED	Principal's Office	Offices	4	T 28 R F 2 (ELE)	F42LL	60	0.24	SW	2600	624	C-OCC		
32LED	Main Office Corridor	Offices	4	1T 32 R F 2 (ELE)	F42LL	60	0.24	SW	2600	624	NONE		
40LED	Office	Offices	4	T 28 R F 2 (ELE)	F42LL	60	0.24	SW	2600	624	C-OCC		
32LED	Office	Offices	9	1T 32 R F 2 (ELE)	F42LL	60	0.54	SW	2600	1,404	C-OCC		
15LED	Office Storage	Storage	1	S 32 C F 2 (ELE)	F42LL	60	0.06	SW	520	31	NONE		
32LED	Main Office Teachers Lounge	Staff Lounge	14	1T 32 R F 2 (ELE)	F42LL	60	0.84	SW	2600	2,184	C-OCC		
32LED	Exit 2B	Hallways	1	1T 32 R F 2 (ELE)	F42LL	60	0.06	SW	6240	374	NONE		
65	Women's Staff Restroom	Restroom	1	I 100	I100/1	100	0.10	SW	3120	312	NONE		
65 40LED	Men's Staff Restroom Corridor	Restroom Hallways	1 11	I 100 T 28 R F 2 (ELE)	I100/1 F42LL	100 60	0.10 0.66	SW SW	3120 6240	312 4,118	NONE C-OCC		

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Cost of Electricity:

\$0.124 \$/kWh \$6.29 \$/kW

_						EXISTING CO	NDITIONS				Retrofit	1
	Area December	Unana	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per	kW/Space	Exist Control	Annual Hours	Annual kWh	Control	
Field	Area Description Unique description of the location - Room number/Room	Usage Describe Usage Type	No. of	Lighting Fixture Code	Code from Table of	Fixture Value from	(Watts/Fixt) * (Fixt	Pre-inst. control	Estimated	(kW/space) *	Retrofit control	Notes
Code	name: Floor number (if applicable)	using Operating Hours	fixtures	3 - 3	Standard Fixture	Table of	No.)	device	annual hours for	` '	device	
			before the		Wattages	Standard			the usage group			
			retrofit			Fixture Wattages						
32LED	Guidance Office	Offices	19	1T 32 R F 2 (ELE)	F42LL	60	1.14	SW	2600	2,964	C-OCC	
40LED	Guidance Office Copy Room	Offices	2	T 28 R F 2 (ELE)	F42LL	60	0.12	SW	2600	312	OCC	
32LED 40LED	Guidance Office - Office	Offices Offices	6	1T 32 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL	60	0.36	SW SW	2600 2600	936	C-OCC	
40LED	Guidance Office 1 Guidance Office 2	Offices	1	T 28 R F 2 (ELE)	F42LL F42LL	60	0.06 0.06	SW	2600	156 156	000	
40LED	Guidance Office 3	Offices	1	T 28 R F 2 (ELE)	F42LL	60	0.06	SW	2600	156	OCC	
40LED	Guidance Office 4	Offices	1	T 28 R F 2 (ELE)	F42LL	60	0.06	SW	2600	156	OCC	
40LED 40LED	Guidance Office 5	Offices Offices	1	T 28 R F 2 (ELE)	F42LL F42LL	60	0.06 0.06	SW	2600 2600	156 156	00C	
40LED	Guidance Office 6 Guidance Office 7	Offices	1	T 28 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL	60	0.06	SW SW	2600	156	OCC	
40LED	Guidance Office 8	Offices	1	T 28 R F 2 (ELE)	F42LL	60	0.06	SW	2600	156	OCC	
40LED	Guidance Office 9	Offices	1	T 28 R F 2 (ELE)	F42LL	60	0.06	SW	2600	156	OCC	
40LED	Guidance Office - Conference Room	Conference	2	T 28 R F 2 (ELE)	F42LL F41LL	60	0.12	SW	1200	144	C-OCC	
103LED 102	Main Entrance Main Entrance	Hallways Hallways	130	1T 32 R F 1 O CF 26	CFQ26/1-L	32 27	4.16 0.16	SW SW	6240 6240	25,958 1,011	NONE NONE	
26	Main Entrance Display Case	Hallways	12	S 30 C F 1 (MAG)	F31SS	46	0.55	SW	6240	3,444	NONE	
46LED	Auditorium	Auditorium	22	W 28 C F 2 (ELE)	F42LL	60	1.32	SW	2600	3,432	NONE	
46LED 20LED	Auditorium	Auditorium	111 12	W 28 C F 2 (ELE)	F42LL F41SSILL	60	6.66 0.31	SW SW	2600 2600	17,316 811	NONE NONE	
46LED	Stage Stage Right	Auditorium Storage	2	S 28 P F 1 (ELE) W 28 C F 2 (ELE)	F4155ILL F42LL	26 60	0.31	SW	520	62	NONE	
46LED	Stage Left	Storage	2	W 28 C F 2 (ELE)	F42LL	60	0.12	SW	520	62	NONE	
32LED	Corridor (Outside Auditorium)	Hallways	20	1T 32 R F 2 (ELE)	F42LL	60	1.20	SW	6240	7,488	NONE	
250	Gymnasium	Gymnasium	25	T 54 W F 3 (ELE) (T-5)	F43GHL	177	4.43	SW	2600	11,505	NONE	
32LED 40LED	Stairwell Cafeteria	Stairway Cafeteria	9 110	1T 32 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL	60	0.54 6.60	SW SW	6240 2000	3,370 13,200	NONE C-OCC	
32LED	Parent Survey	Offices	14	1T 32 R F 2 (ELE)	F42LL	60	0.84	SW	2600	2,184	NONE	
32LED	Kitchen Dishwasher Room	Cafeteria	12	1T 32 R F 2 (ELE)	F42LL	60	0.72	SW	2000	1,440	NONE	
32LED	Kitchen	Cafeteria	56	1T 32 R F 2 (ELE)	F42LL	60	3.36	SW	2000	6,720	NONE	
51LED 51LED	Basement (Under Kitchen) Pantry	Hallways Storage	5	W 34 F 4 (ELE) 1'x8' W 34 F 4 (ELE) 1'x8'	F44ILL F44ILL	112 112	0.45 0.56	SW SW	6240 520	2,796 291	NONE NONE	
20LED	Locker Room	Locker	2	S 28 P F 1 (ELE)	F44ILL F41SSILL	26	0.56	SW	2600	135	C-OCC	
20LED	Locker Room	Locker	2	S 28 P F 1 (ELE)	F41SSILL	26	0.05	SW	2600	135	C-OCC	
35LED	Corridor A 1	Hallways	14	T 32 R F 3 (ELE)	F43SSILL	72	1.01	SW	6240	6,290	NONE	
15LED	Starway 22	Stairway	14	S 32 C F 2 (ELE)	F42LL	60	0.84	SW	6240	5,242	NONE	
15LED 34LED	Basement Storage Child Study	Storage Offices	15 18	S 32 C F 2 (ELE) 1T 32 C F 2 (ELE)	F42LL F42ILL	60 59	0.90 1.06	SW SW	520 2600	468 2,761	C-OCC	
34LED	Child Study Office	Offices	6	1T 32 C F 2 (ELE)	F42ILL	59	0.35	SW	2600	920	C-OCC	
34LED	Child Study Office	Offices	6	1T 32 C F 2 (ELE)	F42ILL	59	0.35	SW	2600	920	C-OCC	
32LED	Corridor	Hallways	9	1T 32 R F 2 (ELE)	F42LL	60	0.54	SW	6240	3,370	NONE	
20LED 51LED	Detention Room 101	Classrooms Classrooms	30 19	S 28 P F 1 (ELE) W 34 F 4 (ELE) 1'x8'	F41SSILL F44ILL	26 112	0.78 2.13	SW SW	2600 2600	2,028 5,533	C-OCC	
51LED	Athletic Office	Offices	6	W 34 F 4 (ELE) 1'x8'	F44ILL	112	0.67	SW	2600	1,747	C-OCC	
20LED	Athletic Office	Offices	2	S 28 P F 1 (ELÉ)	F41SSILL	26	0.05	SW	2600	135	NONE	
51LED	Auto Shop	Classrooms	27	W 34 F 4 (ELE) 1'x8'	F44ILL	112	3.02	SW	2600	7,862	C-OCC	
15LED 18LED	Auto Shop 209	Classrooms Classrooms	8	S 32 C F 2 (ELE) T 32 R F 4 (ELE)	F42LL F44ILL	60 112	0.48 0.45	SW SW	2600 2600	1,248 1,165	C-OCC	
18LED	209	Classrooms	2	T 32 R F 4 (ELE)	F44ILL F44ILL	112	0.45	SW	2600	582	C-OCC	
46LED	207 Restroom	Restroom	1	W 28 C F 2 (ELE)	F42LL	60	0.06	SW	3120	187	NONE	
32LED	208	Classrooms	6	1T 32 R F 2 (ELE)	F42LL	60	0.36	SW	2600	936	C-OCC	
32LED 32LED	Corridor D	Hallways	20 30	1T 32 R F 2 (ELE)	F42LL F42LL	60	1.20 1.80	SW SW	6240 2600	7,488	NONE C-OCC	
32LED	261 264	Classrooms Classrooms	60	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	3.60	SW	2600	4,680 9,360	C-OCC	
32LED	270	Classrooms	18	1T 32 R F 2 (ELE)	F42LL	60	1.08	SW	2600	2,808	C-OCC	
32LED	265	Classrooms	48	1T 32 R F 2 (ELE)	F42LL	60	2.88	SW	2600	7,488	C-OCC	
32LED	269	Classrooms	18	1T 32 R F 2 (ELE)	F42LL	60	1.08	SW	2600	2,808	C-OCC	
32LED 40LED	267 - Health Office 267 - Health Office	Offices Offices	6	1T 32 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL	60 60	0.66 0.36	SW SW	2600 2600	1,716 936	C-OCC	
32LED	267 - Health Office 268	Classrooms	9	1T 32 R F 2 (ELE)	F42LL F42LL	60	0.54	SW	2600	1,404	C-OCC	
32LED	266 - Teachers Lounge	Staff Lounge	14	1T 32 R F 2 (ELE)	F42LL	60	0.84	SW	2600	2,184	C-OCC	
220LED	266 - Teachers Lounge Women's Restroom	Restroom	1	S 17 C F 1(ELE)	F21ILL	20	0.02	SW	3120	62	NONE	
220LED	266 - Teachers Lounge Men's Restroom	Restroom	1	S 17 C F 1(ELE)	F21ILL	20	0.02	SW	3120	62	NONE	
32LED	Boy's Restroom	Restroom	5	1T 32 R F 2 (ELE)	F42LL	60	0.30	SW	3120	936	C-OCC	

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Cost of Electricity:

\$0.124 \$/kWh \$6.29 \$/kW

						EXISTING CO	NDITIONS				Retrofit	
	Area Description	Usage	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Control	
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		(kW/space) * (Annual Hours)	Retrofit control device	Notes
2LED	Girl's Restroom	Restroom	5	1T 32 R F 2 (ELE)	F42LL	60	0.30	SW	3120	936	C-OCC	
5LED	Corridor A 2	Hallways	40	T 32 R F 3 (ELE)	F43SSILL	72	2.88	SW	6240	17,971	NONE	
6LED	210 - Office	Offices	4	W 28 C F 2 (ELE)	F42LL	60	0.24	SW	2600	624	C-OCC	
6LED	210 - Office Storage	Storage	2	W 28 C F 2 (ELE)	F42LL	60	0.12	SW	520	62	OCC	
6LED	210 - Office Storage	Storage		W 28 C F 2 (ELE)	F42LL	60	0.12	SW	520	62	OCC	
6LED	210 - Office Conference Room	Conference		W 28 C F 2 (ELE)	F42LL	60	0.24	SW	1200	288	C-OCC	
6LED	213A	Classrooms		W 28 C F 2 (ELE)	F42LL	60	0.30	SW	2600	780	C-OCC	
0LED	213	Classrooms		W 32 P F 2 (ELE)	F42LL	60	2.16	SW	2600	5,616	C-OCC	
0LED	214A	Classrooms		W 32 P F 2 (ELE)	F42LL	60	0.90	SW	2600	2,340	C-OCC	
4LED	Media Center	Classrooms	64	1B 32 P F 2 (ELE)	F42LL	60	3.84	SW	2600	9,984	C-OCC	
2LED	Media Center	Classrooms		1T 32 R F 2 (ELE)	F42LL	60	5.40	SW	2600	14,040	C-OCC	
2LED	Media Center Office	Offices	2	1T 32 R F 2 (ELE)	F42LL	60	0.12	SW	2600	312	C-OCC	
SLED	214B	Classrooms	5	W 28 C F 2 (ELE)	F42LL	60	0.30	SW	2600	780	C-OCC	
3LED	215	Classrooms	18	1T 32 R F 1	F41LL	32	0.58	SW	2600	1,498	C-OCC	
3LED	216	Classrooms	24	1T 32 R F 1	F41LL	32	0.77	SW	2600	1,997	C-OCC	
3LED	217	Classrooms	18	1T 32 R F 1	F41LL	32	0.58	SW	2600	1,498	C-OCC	
3LED	219	Classrooms	18	1T 32 R F 1	F41LL	32	0.58	SW	2600	1,498	C-OCC	
3LED	220	Classrooms	20	1T 32 R F 1	F41LL	32	0.64	SW	2600	1,664	C-OCC	
3LED	222A/B	Classrooms	36	1T 32 R F 1	F41LL	32	1.15	SW	2600	2,995	C-OCC	
3LED	223/221	Classrooms	30	1T 32 R F 1	F41LL	32	0.96	SW	2600	2,496	C-OCC	
3LED	201	Classrooms	15	1T 32 R F 1	F41LL	32	0.48	SW	2600	1,248	C-OCC	
3LED	202	Classrooms	18	1T 32 R F 1	F41LL	32	0.58	SW	2600	1,498	C-OCC	
3LED	203	Classrooms	18	1T 32 R F 1	F41LL	32	0.58	SW	2600	1,498	C-OCC	
3LED	205	Classrooms		1T 32 R F 1	F41LL	32	0.58	SW	2600	1,498	C-OCC	
3LED	206	Classrooms	18	1T 32 R F 1	F41LL	32	0.58	SW	2600	1,498	C-OCC	
3LED	207A	Classrooms	15	1T 32 R F 1	F41LL	32	0.48	SW	2600	1,248	C-OCC	
3LED	208B	Classrooms	15	1T 32 R F 1	F41LL	32	0.48	SW	2600	1,248	C-OCC	
2LED	Corridor C 2	Hallways	7	1T 32 R F 2 (ELE)	F42LL	60	0.42	SW	6240	2,621	NONE	
LED	Boy's Restroom	Restroom	5	S 28 P F 1 (ELE)	F41SSILL	26	0.13	SW	3120	406	NONE	
LED	Girl's Restroom	Restroom	5	S 28 P F 1 (ELE)	F41SSILL	26	0.13	SW	3120	406	NONE	
2LED	Corridor C 2	Hallways	6	1T 32 R F 2 (ELE)	F42LL	60	0.36	SW	6240	2,246	NONE	
SLED	Corridor C 2	Hallways	4	T 32 R F 3 (ELE)	F43SSILL	72	0.29	SW	6240	1,797	NONE	
LED	215	Classrooms	10	T 32 R F 3 (ELE)	F43SSILL	72	0.72	SW	2600	1,872	C-OCC	
250	282-B Gymnasium	Gymnasium	18	T 54 W F 3 (ELÉ) (T-5)	F43GHL	177	3.19	SW	2600	8,284	NONE	
5LED	281-A	Offices	10	T 32 R F 3 (ELE)	F43SSILL	72	0.72	SW	2600	1,872	C-OCC	
2LED	Boys Locker Room	Locker	20	1T 32 R F 2 (ELÉ)	F42LL	60	1.20	SW	2600	3,120	NONE	
2LED	Entryway	Corridor	13	1T 32 R F 2 (ELE)	F42LL	60	0.78	SW	2125	1,658	C-OCC	
	Total		3,969				213.35			619,679		

5/9/2014 Page 5, Existing



Newark Public Schools CHA Project Number: 27999

Pate	of	Discount	(ueod	for	NID\

	Utility	/ Costs	Yearly Usage	Metric Ton Carbon Dioxide Equivalent	Building Area	A	nnual Utility Co	st
\$	0.140	\$/kWh blended		0.000420205	302,353	Electric	Natural Gas	Fuel Oil
\$	0.124	\$/kWh supply	1,747,200	0.000420205		\$ 244,221	\$ 187,888	\$ -
\$	6.29	\$/kW	412.0	0				
\$	0.91	\$/Therm	205,673	0.00533471				
\$	7.55	\$/kgals	2,827	0				
\$		\$/Gal						

		Eas	st Side I	High Sc	hool																		
Recommend		Item			S	avings			Cost	Simple	Life	Equivalent CO	NJ Smart Start	Direct Install	Payback w/		Simple Pro	ojected Lifetin	ne Savings		ROI	NPV	IRR
Y or N			kW	kWh	therms	No. 2 Oil gal	Water kgal	S		Payback	Expectancy	(Metric tons)	Incentives	Eligible (Y/N)	Incentives	kW	kWh	therms	kgal/yr	S	<u></u>		1
Y	ECM-1A	Replace Steam to Hot Water Heat Exchanger w/ Dedicated Hot Water	0.0	0	15,436	0	0	14,047	\$ 450,541	32.1	25	82.3	\$ 12,000	N	31.2	0.0	0	385,909	0	\$ 351,177	(0.2)	(\$193,936)	-1.6%
N	ECM-1B	Convert Steam Heating System to Hydronic Heat w/ High Efficiency	0.0	0	13,037	0	0	11,864	\$ 3,006,712	253.4	25	69.6	\$ 12,000	N	252.4	0.0	0	325,937	0	\$ 296,603	(0.9)	(\$2,788,120)	-13.2%
Y	ECM-2	Install Premium Efficiency Motors	0.6	1,319	0	0	0	212	\$ 7,275	34.4	18	0.6		N	34.4	11.5	23,745	0	0	\$ 4,191	(0.4)	(\$4,363)	-6.1%
Y	ECM-3	Install Window AC Controllers	0.0	41,853	0	0	0	5,859	\$ 10,000	1.7	10	17.6		N	1.7	0.0	418,529	0	0	\$ 58,594	4.9	\$39,982	58.0%
Y	ECM-4A	Install Basic Controls	0.0	0	25,367	0	0	23,084	\$ 21,309	0.9	10	135.3		N	0.9	0.0	0	253,674	0	\$ 230,843	9.8	\$175,605	108.3%
N	ECM-4B	Install Full DDC Controls	0.0	0	49,140	0	0	44,718	\$ 1,295,684	29.0	10	262.1		N	29.0	0.0	0	491,403	0	\$ 447,177	(0.7)	(\$914,233)	-15.8%
Y	ECM-5	Domestic Hot Water System Improvements	0.0	0	1,488	0	0	1,354	\$ 17,937	13.2	25	7.9	\$ 700	N	12.7	0.0	0	37,201	0	\$ 33,853	0.9	\$6,343	6.0%
Y	ECM-6	Install Walk-In Cooler/Freezer Controls	0.0	9,142	0	0	0	1,280	\$ 41,250	32.2	15	3.8		N	32.2	0.0	137,129	0	0	\$ 19,198	(0.5)	(\$25,971)	-8.3%
Y	ECM-7	Install Vending Machine Occupancy Sensors	0.0	10,295	0	0	0	1,441	\$ 1,120	0.8	10	4.3		N	0.8	0.0	102,953	0	0	\$ 14,413	11.9	\$11,174	128.6%
N	ECM-8	Install Low Flow Plumbing Fixtures	0.0	0	0	0	2,419	18,263	\$ 590,264	32.3	30	0.0		N	32.3	0.0	0	0	72,567	\$ 547,879	(0.1)	(\$232,309)	-0.5%
N	ECM-L1	Lighting Replacements / Upgrades	100.9	293,988	0	0	0	44,074	\$ 690,686	15.7	10	123.5	\$ 4,800	N	15.6	1,009.0	2,939,880	0	0	\$ 487,743	(0.3)	(\$309,926)	-7.3%
N	ECM-L2	Install Lighting Controls (Add Occupancy Sensors)	0.0	115,204	0	0	0	14,285	\$ 49,997	3.5	10	48.4	\$ 6,660	N	3.0	0.0	1,152,040	0	0	\$ 161,286	2.2	\$78,519	30.7%
Y	ECM-L3	Lighting Replacements with Controls (Occupancy Sensors)	100.9	353,785	0	0	0	51,489	\$ 740,684	14.4	10	148.7	\$ 11,460	N	14.2	1,009.0	3,537,850	0	0	\$ 571,458	(0.2)	(\$290,012)	-5.9%
		Total (Not Including [B] Option ECMs or L1, L2)	101.5	416,394	42,292	0	2,419	\$ 117,029	\$ 1,880,380	16.1	17.0	401	\$ 24,160		15.9	1,020	4,220,206	676,784	72,567	\$ 1,831,607	(0.0)	(\$315,396)	0.8%
		Recommended Measures (highlighted green above)	101.5	416,394	42,292	0	0	\$ 98,767	\$ 1,290,116	13.1	15.4	401	\$ 24,160	0	12.8	1,020	4,220,206	676,784	-	\$ 1,283,728	(0.0)	(\$86,883)	2.0%
		% of Existing	25%	24%	21%	0%	0%																

			City:	Newar	k, NJ	1		
		Occupied F	Hours/Week	70	70	70	70	50
				Building	Auditorium	Gymnasium	Library	Classrooms
		Enthalpy		Operating	Occupied	Occupied	Occupied	Occupied
	Temp	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
- 1	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
- 1	7.5	2.1	34	14	14	14	14	10
	2.5	1.3	1	0	0	0	0	0
	-2.5							
	-7.5							

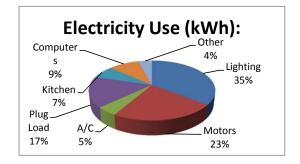
Multipliers		
Material:	1.027	
Labor:	1.246	
Equipment:	1.124	
Heating System	n Efficiency	90
		- 00
Cooling Eff (kV		l

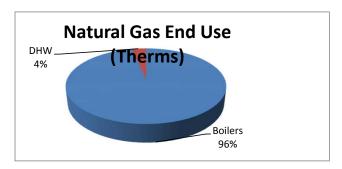
Hea	ating	
Hours	4,427	Hrs
Weighted Avg	40	F
Avg	28	-
Avg	20	г
	oling	
Con		Hrs
Cor	oling	Hrs F

	Utility End	Use Analysis				
Electric	ity Use (kWh):	Notes/Comments:				
1,747,200	Total	Based on utility analysis				
619,679	Lighting	From Lighting Calculations				
401,288	Motors	Estimated				
81,312	A/C	See Window AC Calculation				
287,840	Plug Load	Estimated				
120,960	Kitchen	Estimated				
163,125	Computers	Estimated				
72,997	Other	Remaining				
Natural Ga	ıs Use (Therms):	Notes/Comments:				
205,673	Total	Based on utility analysis				
	198,474 Boilers Therms/SF x Square Feet Served					
7,199	DHW	Based on utility analysis				

35%
23%
5%
16%
7%
9%
10/

97% 4%





ECM-1A: Replace Steam to Hot Water Heat Exchanger w/ Dedicated Hot Water Boilers

Description: This ECM evaluates the replacement of an existing steam to hot water heat exchanger with a high efficiency condensing gas boiler. The existing boiler efficiency is 80% (per NJ Protocols) but the heat excahnger is further de-rated to 75%. The proposed boiler efficiency is 90% (average seasonal efficiency). Electrical power consumption due to pumps is considered to be the same for both the proposed system and the baseline system.

<u>Item</u>	<u>Value</u>	<u>Units</u>	Formula/Comments
Baseline Fuel Cost	\$ 0.91	/ Therm	Natural Gas
	FORMULA	CONSTANTS	Ŝ
Oversize Factor	0.8		
Hours per Day	24		
Design Outdoor Temp	14	F	
Infrared Conversion Factor	1.0		1.0 if Boiler, 0.8 if Infrared Heater
	EXI	STING	
Capacity	9,750,000	btu/hr	75% of Avg Steam Capacity
Heating Combustion Efficiency	75%		Derated boiler + HT Exch
Heating Degree-Day	2,783	Degree-day	
Design Temperature Difference	75	F	
Fuel Conversion	100,000	btu/therm	
	PRO	POSED	
Capacity	9,750,000	btu/hr	
Efficiency	90%		
			_
	SA	VINGS	·
Fuel Savings	15,436	Therms	NJ Protocols Calculation
Fuel Cost Savings	\$ 14,047		

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

Algorithms

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

Definition of Variables

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

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

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

 $HDD_{mod} = HDD$ by zone and building type

24 = Hours/Day

 ΔT = design temperature difference

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

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

EFF_B = Efficiency of baseline heaters (AFUE %)

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

Furnaces and Boilers

Component	Type	Value	Source
$AFUE_q$	Variable		Application
AFUE _b	Fixed	Furnaces: 78% Boilers: 80% Infrared: 78%	EPACT Standard for furnaces and boilers
CAPYin	Variable		Application
ΔΤ	Variable	See Table Below	1
HDD_{mod}	Fixed	See Table Below	1

Sources:

- KEMA, Smartstart Program Protocol Review. 2009.
 http://www.spaceray.com/l_space-ray_faqs.php

Adjusted Heating Degree Days by Building Type

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

Heating Degree Days and Outdoor Design Temperature by Zone

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

Multipliers								
Material:	1.03							
Labor:	1.25							
Equipment:	1.12							

ECM-1A: Replace Steam to Hot Water Heat Exchanger w/ Dedicated Hot Water Boilers - Cost

Description	QTY	UNIT	UNIT COSTS		SUBTOTAL COSTS			TOTAL COST	DEMARKS		
Description	QII	ONT	MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.	TOTAL COST	REWARKS	
Aerco BMK3000 w/ condensate	3	EA	\$ 47,500	\$ 15,000		\$ 146,348	\$ 56,070	\$ -	\$ 202,418	Vendor Estimate	
Flue Installation	100	LF	\$ 150.0	\$ 50.00		\$ 15,405	\$ 6,230	\$ -	\$ 21,635	Vendor Estimate	
Miscellaneous Electrical	2	LS	\$ 5,000	\$ 15,000		\$ 10,270	\$ 37,380	\$ -	\$ 47,650	RS Means 2012	
Miscellaneous HW Piping	2	LS	\$ 25,000	\$ 15,000		\$ 51,350	\$ 37,380	\$ -	\$ 88,730	RS Means 2012	
						\$ -	\$ -	\$ -	\$ -		

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

\$ 360,433	Subtotal
\$ 90,108	25% Contingency
\$ 450,541	Total

ECM-1B: Convert Steam Heating System to Hydronic Heat w/ High Efficiency Condensing Boilers

Description: This ECM evaluates the replacement of an existing steam boiler with high efficiency condensing gas boiler. The existing boiler efficiency is 80% (per NJBPU protocols) and the proposed boiler efficiency is 90% (average seasonal efficiency). Electrical power consumption due to pumps is considered to be the same for both the proposed system and the baseline system.

<u>Item</u>	<u>Value</u>	<u>Units</u>	Formula/Comments						
Baseline Fuel Cost	\$ 0.91	/ Therm	Natural Gas						
Baseline Fuel Cost		/ Gal	No. 2 Oil						
	FORMULA	CONSTANT	S						
Oversize Factor	0.8								
Hours per Day	24								
Design Outdoor Temp	14	F							
Infrared Conversion Factor	1.0		1.0 if Boiler, 0.8 if Infrared Heater						
	EXI	STING							
Capacity	13,000,000	btu/hr	Avg Steam Capacity						
Heating Combustion Efficiency	80%								
Heating Degree-Day	2,783	Degree-day							
Design Temperature Difference	74	F							
Fuel Conversion	100,000	btu/therm							
	PRO	POSED							
Capacity	13,000,000	btu/hr							
Efficiency	90%								
	·								
	SA	VINGS	·						
Fuel Savings	13,037	Therms	NJ Protocols Calculation						
Fuel Cost Savings	\$ 11,864		-						

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

Algorithms

Gas Savings (Therms)

$$= \frac{OF \times ((CAPY_{Bl} \times EFF_Q) - (CAPY_{Ql} \times EFF_B \times ICF)) \times HDD_{mod} \times 24}{\Delta T \times HC_{fuel} \times EFF_B \times ICF \times EFF_Q}$$

Definition of Variables

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

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

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

 $HDD_{mod} = HDD$ by zone and building type

24 = Hours/Day

 ΔT = design temperature difference

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

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

EFF_B = Efficiency of baseline heaters (AFUE %)

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

Furnaces and Boilers

Component	Type	Value	Source	
AFUE _q	Variable		Application	
AFUE _b	Fixed	Furnaces: 78% Boilers: 80% Infrared: 78%	EPACT Standard for furnaces and boilers	
CAPYin	Variable		Application	
ΔΤ	Variable	See Table Below	1	
HDD _{mod}	Fixed	See Table Below	1	
	1 2			

Sources:

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

Adjusted Heating Degree Days by Building Type

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

Heating Degree Days and Outdoor Design Temperature by Zone

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

ECM-1B: Convert Steam Heating System to Hydronic Heat w/ High Efficiency Condensing Boilers -	Cost
---	------

Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.12

Description	QTY	UNIT	L	INIT COST	S	SUBTOTAL COSTS				REMARKS
Description	QII	OINIT	MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.	TOTAL COST	INLIMANNO
Hydronic Heating System (boiler, piping, radiator & UVs)	75,588	SF	\$ 14	\$ 14		\$1,086,808	\$ 1,318,561	\$ -	\$ 2,405,369	2012 RS Means Square Foot Construction Costs

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

3,006,712	Total
601,342	25% Contingency
2,405,369	Subtotal
	601,342

ECM-2: Install Premium Efficiency Motors

s associated with replacing less efficient electric motors with NEMA standard MG-1 rated motor

Demand Cost \$/kW-month

Energy Cost \$/kWh

	Multiplie	rs
Material	Labor	Equipment
1.03	1.25	1.12

			Existina	Load	Coincidence	IF	-	Existing	New	ΔkW	Demand	Demand	Annual	kWh	S kWh	Total \$	Estimated	Pavback	
	Description	Location	HP	Factor	Factor	Y/N	Factor	Efficiency _a	Efficiency _a	kW	Savings	Savings \$	Hours	Savings	Savings		Cost	Years	l
		0.1.0	7.5		0.74	N	10	00.501	04.00/	0.2	0.400	S 10	0.004		S 55		S 974		1
	Feedwater Pump-1	Boiler Room	7.5	0.75	0.74	N N	1.0	88.5%	91.0%	0.2	0.129	\$ 10	3,391	442	\$ 55	\$ 64	\$ 974	15.1	l
	Feedwater Pump-2	Boiler Room	7.5	0.75	0.74	N	1.0	88.5%	91.0%	0.2	0.129	\$ 10	1,696	221	\$ 27	\$ 37	\$ 974	26.3	1
	Condensate Pump-1	Boiler Room	2	0.75	0.74	N	1.0	84.0%	86.5%	0.1	0.038	\$ 3	2,745	106	\$ 13	\$ 16	\$ 601	37.6	
C	Condensate Pump-2	Boiler Room	2	0.75	0.74	N	1.0	84.0%	86.5%	0.1	0.038	\$ 3	1,373	53	\$ 7	\$ 9	\$ 601	63.8	
С	ondensate Pump-3	Boiler Room	2	0.75	0.74	N	1.0	84.0%	86.5%	0.1	0.038	\$ 3	686	26	\$ 3	\$ 6	\$ 601	97.8	
c	Condensate Pump-4	Boiler Room	2	0.75	0.74	N	1.0	84.0%	86.5%	0.1	0.038	\$ 3	343	13	\$ 2	\$ 5	\$ 601	133.3	
	Hot Water Pump-1	Boiler Room	7.5	0.75	0.74	N	1.0	89.5%	91.0%	0.1	0.076	\$ 6	3,391	262	\$ 32	\$ 38	\$ 974	25.5	
	Hot Water Pump-2	Boiler Room	7.5	0.75	0.74	N	1.0	89.5%	91.0%	0.1	0.076	\$ 6	1,696	131	\$ 16	\$ 22	\$ 974	44.3	l
Ì	Hot Water Pump-3	Boiler Room	7.5	0.75	0.74	N	1.0	89.5%	91.0%	0.1	0.076	\$ 6	848	66		S 14		70.2	l
•		Total	45.5							0.9	0.64	\$ 48		1,319	\$ 164	\$ 212	\$ 7,275		l .

Unit Costs					Subtotal Costs								
Materials		Labor	Equi	ipment	Mat	terials	L	abor	Equ	ipment	Tota	I Cost	Remarks
s	621	\$ 270	,		s	638		336	,		s	974	
s		\$ 270			s	638		336			s	974	
\$		\$ 200			S		Ė	249			\$	601	
\$	342	\$ 200	\$		\$	351	\$	249	\$		\$	601	
\$	342	\$ 200	\$	-	\$	351	\$	249	\$		\$	601	
\$	342	\$ 200	\$	- 1	s	351	\$	249	s		\$	601	
\$	621	\$ 270	s	1	s	638	s	336	\$	1	\$	974	
\$	621	\$ 270	\$	1	s	638	\$	336	s	100	\$	974	
\$	621	S 270	s		s	638	s	336	s		s	974	

Notes

a Existing and new efficiencies should be entered if known. If not known, use provided curve fit based on "DOE Survey Installed Average" and NEMA Premium values, respectively.

b Same as existing HP unless resized to better match load

10.4

			COOLING CAPACITY
EQUIPMENT		AREA/EQUIPMENT SERVED	(btu/h)
Window AC - 24,000	21	Classrooms and Offices	504,000
Window AC - 18,000	10	Classrooms and Offices	180,000
Window AC - 12,000	21	Classrooms and Offices	252,000

Total btu/h of all window A/C Units: 936,000 btu/h

ECM-3: Window A/C Controller

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

ASSUMP	TIONS		Comments				
Electric Cost	\$0.140	/ kWh					
Average run hours per Week	80	Hours					
Space Balance Point	55	F					
Space Temperature Setpoint	70	deg F	Setpoint.				
BTU/Hr Rating of existing DX equipment	936,000	Btu / Hr	Total BTU/hr of DX cooling equipment to be replaced.				
Average EER	10.7						
Existing Annual Electric Usage	81,312	kWh					
<u>Item</u>	<u>Value</u>	<u>Units</u>	Comments				
Proposed Annual Electric Usage	39,459	kWh	Unit will cycle on w/ temp of room. Possible operating time shown below				

ANNU	AL SAVINGS
Annual Electrical Usage Savings	41,853 kWh
Annual Cost Savings	\$5,859

OAT - DB		Existing		Proposed
Bin	Annual	Hours of	Proposed % of time of	hrs of
Temp F	Hours	Operation	operation	Operation
102.5	0	0	100%	0
97.5	6	3	89%	3
92.5	31	15	79%	12
87.5	131	62	68%	43
82.5	500	238	58%	138
77.5	620	295	47%	140
72.5	664	316	37%	116
67.5	854	0	0%	0
62.5	927	0	0%	0
57.5	600	0	0%	0
52.5	730	0	0%	0
47.5	491	0	0%	0
42.5	656	0	0%	0
37.5	1,023	0	0%	0
32.5	734	0	0%	0
27.5	334	0	0%	0
22.5	252	0	0%	0
17.5	125	0	0%	0
12.5	47	0	0%	0
7.5	34	0	0%	0
2.5	1	0	0%	0
-2.5	0	0	0%	0
-7.5	0	0	0%	0
Total	8,760	930	49%	451

ECM-3: Window A/C Controller - Cost

Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.12

Description	QTY	UNIT	Ų	JNIT COST	S	SL	IBTOTAL C	OSTS	TOTAL	REMARKS
			MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.	COST	KLWAKKS
						0	\$ -	\$ -	\$ -	
Window AC Controller	52	EA	\$ 150	\$ -	\$ -	8010.6	\$ -	\$ -	\$ 8,011	Estimated
						\$ -	\$ -	\$ -	\$ -	

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

\$ 8,011	Subtotal
\$ 2,003	25% Contingency
\$ 10,000	Total

ECM - 4A: Basic Controls

Description: This ECM evaluates adding automatic temperature controls that will turn the boilers on/off based on outdoor air and indoor air temperatures.

Day Setback

Day 3			-				
EXISTING CONDITION) N S						
Heating							
	Heating Season Facility Temp 78						
Weekly Occupied Hours	70	hrs	Н				
Heating Season Setback Temp	72	F	Sh				
Heating Season % Savings per	3%		Ph				
Annual Boiler Capacity		Mbtu/yr					
Connected Heating Load	13,000,000	Btu/hr	Caph				
Equivalent Full Load Heating	900	hrs	EFLHh				
Heating Equipment Efficiency	80%		AFUEh				
Cooling							
Cooling Season Facility Temp	-	F	Tc				
Weekly Occupied Hours	-	hrs	Н				
Cooling Season Setback Temp	-	F	Sc				
Cooling Season % Savings per			Pc				
Connected Cooling Load	-	Tons	Capc				
Equivalent Full Load Cooling		hrs	EFLHc				
Cooling Equipment EER	-		AFUEc				
	No Significant Coolin	g in Bldg					
SAVINGS							
Natural Gas Savings	14,573	Therms ³					
Cooling Electricity Savings	0	kWh					

Nighttime Se	tback					
EXISTING CONDITIONS						
Heating						
Heating Season Facility Temp	78	F				
Weekly Occupied Hours	70	hrs				
Heating Season Setback Temp	68	F				
Heating Season % Savings per	3%					
Annual Boiler Capacity		Mbtu/yr				
Connected Heating Load Capacity	13,000,000	Btu/hr				
Equivalent Full Load Heating Hours	400	hrs				
Heating Equipment Efficiency	80%					
Cooling						
Cooling Season Facility Temp	-	F				
Weekly Occupied Hours	-	hrs				
Cooling Season Setback Temp	-	F				
Cooling Season % Savings per						
Connected Cooling Load Capacity	-	Tons				
Equivalent Full Load Cooling Hours	-	hrs				
Cooling Equipment EER	-					
	No Significant C	ooling in Blo				
SAVINGS	•					
Natural Gas Savings	10,795	Therms ³				
Cooling Electricity Savings	0	kWh				

\$0.14 \$/kWh Blended \$0.91 \$/Therm

COMBINED SAVINGS					
Natural Gas Savings	25,367	Therms			
Cooling Electricity Savings	0	kWh			
Total Cost Savings	\$ 23,084				
Estimated Total Project Cost	\$ 21,309				
Simple Payback	0.9	Yrs			
taken from N.I. Drotopolo dogument for Occur		Heat Therese			

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

Algorithms

Cooling Energy Savings (kWh) = ((($T_c*(H+5)+S_c*(168-(H+5)))/168$) $T_c)*(P_c*Cap_{tp}*12*EFLH_c/EER_{hp})$

 $\label{eq:heating energy Savings (kWh) = (((T_h^*(H+5)+S_h^*(168-(H+5)))/168)-T_h)^*(P_h^*Cap_{hp}^*12^*EFLH_b/EER_{hp})}$

 $\label{eq:heating-energy-savings} \begin{array}{l} \mbox{Heating Energy Savings (Therms)} = (T_h - (T_h + (H + 5) + S_h + (168 - (H + 5)))/168) + (P_h + Cap_h + EFLH_b/AFUE_b/100,000) \\ \end{array}$

Definition of Variables

$$\begin{split} T_h &= \text{Heating Season Facility Temp. (°F)} \\ T_c &= \text{Cooling Season Facility Temp. (°F)} \\ S_h &= \text{Heating Season Setback Temp. (°F)} \\ S_c &= \text{Cooling Season Setup Temp. (°F)} \\ H &= \text{Weekly Occupied Hours} \\ \text{Cap}_{hp} &= \text{Connected load capacity of heat pump/AC (Tons)} - \text{Provided on Application.} \\ \text{Cap}_h &= \text{Connected heating load capacity (Btu/hr)} - \text{Provided on Application.} \\ \text{EFI-H}_c &= \text{Equivalent full load cooling hours} \\ \text{EFI-H}_b &= \text{Equivalent full load heating hours} \\ P_s &= \text{Heating season percent savings per degree setback} \end{split}$$

EPLH_b = Equivalent tuli load nearing hours P_c = Heating season percent savings per degree setback P_c = Cooling season percent savings per degree setup

AFUE_b = Heating equipment efficiency – Provided on Application.

EER_{bp} = Heat pump/AC equipment efficiency – Provided on Application

Occupancy Controlled Thermostats

Component	Type	Value	Source
Th	Variable		Application
Tc	Variable		Application
Sh	Fixed	T _b -5°	
Sc	Fixed	Tc+5°	
Н	Variable		Application; Default of 56 hrs/week
Caphp	Variable		Application
Caph	Variable		Application
EFLH _c	Fixed	381	1
EFLH _h	Fixed	900	PSE&G
Ph	Fixed	3%	2
Pc	Fixed	6%	2
AFUE _h	Variable		Application
EERhp	Variable		Application

Sources:

- JCP&L metered data from 1995-1999
 ENERGY STAR Products website

Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.00

ECM - 4A: Basic Controls - Cost

Description	QTY	QTY UNIT		UNIT COSTS		SUBTOTAL COSTS			TOTAL	REMARKS
Description	QII	OINII	MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.	COST	KLIWAKKS
						\$ -	\$ -	\$ -	\$ -	
Boiler Controller	1	ea	\$ 7,500	\$ 7,500		\$ 7,703	\$ 9,345	\$ -	\$ 17,048	RS Means 2012
						\$ -	\$ -	\$ -	\$ -	

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

\$ 17,048	Subtotal
\$ 4,262	25% Contingency
\$ 21,309	Total

ECM-4B: Install Full DDC Controls

Description: This ECM evaluates the energy savings associated with implementing a full wireless direct digital control system that enable remote automatic control, monitoiring and alarming of all HVAC equipment. Specific energy savings sequences would include optium Start/ Stop, night setback, temporary occupied set back, economizer control of UVs and AHU's. This energy savings percentage is based on past performance of similar buildings which have a fully functioning DDC control system.

Building Information:

Sq Footage Cooling Heating

4 \$/kWh Blended

FULL DDC - TEMPERATURE SETBACK S	AVINGS CALCU	LATION
EXISTING COND	TIONS	
Heating		
Heating Season Facility Temp	78	F
Weekly Occupied Hours	80	hrs
Heating Season Setback Temp	72	F
Heating Season % Savings per Degree Setback	3%	
Annual Boiler Capacity	-	Mbtu/yr
Connected Heating Load Capacity	13,000,000	Btu/hr
Equivalent Full Load Heating Hours	900	hrs
Heating System Efficiency	65%	
Cooling		
Cooling Season Facility Temp		F
Weekly Occupied Hours		hrs
Cooling Season Setback Temp		F
Cooling Season % Savings per Degree Setback		
Connected Cooling Load Capacity		Tons
Equivalent Full Load Cooling Hours		hrs
Cooling Equipment EER	-	
	Cooling	
SAVINGS		
Natural Gas Savings	16,007	Therms
Cooling Electricity Savings	0	kWh

FULL DDC - ADDITIONAL CONTROLS SAVINGS CALCULATION

EXISTING CONDITIONS					
Existing Facility Total Electric usage	1,747,200	kWh			
Existing Facility Total Gas usage	205,673	Therms			
Existing Facility Cooling Electric usage	-	kWh ¹			
Existing Facility Heating Natural Gas usage	198,474	Therms			
PROPOSED CONDI	TIONS				
Proposed Facility Cooling Electric Savings	0	kWh			
Proposed Facility Natural Gas Savings	19,847	Therms			
SAVINGS					
Electric Savings	0	kWh			
Natural Gas Savings	19,847	Therms			

Assumptions

- 0% of facility total electricity dedicated to Cooling; based on utility information
- 97% of facility total natural gas dedicated to Heating; based on utility information 10% Typical Savings associated with installation of DDC controls

Nighttime	Setback

14ightime Octobaci		
EXISTING CONDITIONS		
Heating		
Heating Season Facility Temp	78	F
Weekly Occupied Hours	70	hrs
Heating Season Setback Temp	68	F
Heating Season % Savings per Degree Setback	3%	
Annual Boiler Capacity		Mbtu/yr
Connected Heating Load Capacity	13,000,000	Btu/hr
Equivalent Full Load Heating Hours	400	hrs
Heating Equipment Efficiency	65%	
Cooling		
Cooling Season Facility Temp	-	F
Weekly Occupied Hours	-	hrs
Cooling Season Setback Temp	-	F
Cooling Season % Savings per Degree Setback		
Connected Cooling Load Capacity	-	Tons
Equivalent Full Load Cooling Hours	-	hrs
Cooling Equipment EER	-	
	No Significant	Cooling in Bldg
SAVINGS		
Natural Gas Savings	13,286	Therms ³
Cooling Electricity Savings	0	kWh

COMBINED SAVINGS		
Natural Gas Savings	49,140	Therms
Cooling Electricity Savings	0	kWh
Total Cost Savings	\$ 44,718	
Estimated Total Project Cost	\$1,295,684	
Simple Payback	29.0	Yrs

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

Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.00

ECM-4B: Install Full DDC Controls - Cost

Description	QTY	UNIT	L	INIT COSTS	3		SUE	STOTAL COSTS		TOTAL COST	DEMARKS
Description	QII	UNIT	MAT.	LABOR	EQUIP.	MAT.		LABOR	EQUIP.	TOTAL COST	REWARKS
						\$ -	\$	-	\$ -	\$ -	
Unit Ventilator Controls	150	ea		\$ 4,000		\$ -	\$	747,600	\$ -	\$ 747,600	Vendor Quote
Radiator Control (Group of 4)	35	ea		\$ 4,500		\$ -	\$	196,245	\$ -	\$ 196,245	Vendor Quote
Exhaust Fan Control (Group of 4)	8	ea		\$ 3,300		\$ -	\$	32,894	\$ -	\$ 32,894	Vendor Quote
H& V Units	4	ea		\$ 4,000		\$ -	\$	19,936	\$ -	\$ 19,936	Vendor Quote
Head End Controller & Programming	1	ls		\$ 32,000		\$ -	\$	39,872	\$ -	\$ 39,872	Vendor Quote

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

\$	1,036,547	Subtotal
\$	259,137	25% Contingency
\$	1,295,684	Total

ECM-5: Replace Gas-Fired DHW Heater w/ High Efficiency DHW Heater

Description: This ECM evaluates the energy savings associated with replacing a gas fired tank type water heater with an equivalent natural gas condensing water heater

The existing DH heating system includes one (1) 85 gallon DHW heater with two (2) additional 119 gallon storage tanks is proposed to be replaced with one (1) 100 gallon high efficiency DHW heater

<u>Item</u>	Value	<u>Units</u>	Formula/Comments
Avg. Monthly Utility Demand by Water Heater	600	Therms/month	Calculated from utility bill
Total Annual Utility Demand by Water Heater	719,856	MBTU/yr	1therm = 100 MBTU
Existing DHW Heater Efficiency	80%	-	Per manufacturer nameplate
Total Annual Hot Water Demand (w/ standby losses)	575,884	MBTU/yr	
Existing Tank Size	323	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)	4.6	MBH	
Annual Standby Hot Water Load	40,705	MBTU/yr	
New Tank Size	100	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)	1.5	MBH	
Annual Standby Hot Water Load	13,031	MBTU/yr	
Total Annual Hot Water Demand	548,210	MBTU/yr	
Proposed Avg. Hot water heater efficiency	96%		
Proposed Fuel Use	5,711	Therns	Standby Losses and inefficient DHW heater eliminated
Utility Cost	\$0.91	\$/Therm	
Existing Operating Cost of DHW	\$6,551	\$/yr	
Proposed Operating Cost of DHW	\$5,197	\$/yr	

Savings Summary:

_	_		_	_	_	_	_			_	_																																								_	
	111	 1.1	1.1				1.1	1 1	 	 	 1.1	1 1	1.1	 	1.1	1	0	0	 	 	1.1	1.1	1.1	 1.1	1.1	1.1	 	1.1	1.1	1.1	 1.1	 	 ž	1.1	ō	ļ	1.1	1.1	1.1	 1.1	1.1	 	 1.1	Ξ	1.1	1.1	1.1	1.1	1.1	1.1	7.7	$\overline{}$
																																							g													
																																							२८													

Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.12

ECM-5: Replace Gas-Fired DHW Heater w/ High Efficiency DHW Heater - Cost

Description	QTY	UNIT	Į	JNIT COST	S	SUE	TOTAL CO	STS	TOTAL	REMARKS
Description	QII	UNIT	MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.	COST	REWARKS
Gas-Fired DHW Heater Removal	1	LS		\$ 50		\$ -	\$ 62	\$ -	\$ 62	RS Means 2012
High Efficiency Gas-Fired DHW Heater	1	EA	\$ 5,500	\$ 4,500		\$ 5,649	\$ 5,607	\$ -	\$ 11,256	RS Means 2012
Miscellaneous Electrical	1	LS	\$ 300	\$ 500		\$ 308	\$ 623	\$ -	\$ 931	RS Means 2012
Venting Kit	1	EA	\$ 450	\$ 650		\$ 462	\$ 810	\$ -	\$ 1,272	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

\$ 14,349	Subtotal
\$ 3,587	25% Contingency
\$ 17,937	Total

ECM-6: 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			1
Walk-In Freezer(s)			1
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)	,		1
Existing Cooler Controls?	N		
Quantity of Walk-In Coolers	1		
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)	3,157	kWh	1
Electricity Savings (Evaporator Fan Reduced Heat)	1,414	kWh]
Total Walk-In Cooler(s) Electricity Savings	4,571	kWh	1
SAVINGS			1
Total Electricity Savings	9,142	kWh]
Total Cost Savings	\$ 1,280		

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

Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.12

ECM-6: Walk-in Cooler & Freezer EC Motor Retrofits - Cost

Description	QTY	UNIT	UNIT COSTS		SUBTOTAL COSTS			TOTAL	REMARKS	
Description	QII	ONIT	MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.	COST	REWARRS
									\$ -	
Turnkey Walk-In Controller & Equipment	2	EA	\$ 10,000	\$ 5,000	\$ -	\$ 20,540	\$ 12,460	\$ -	\$ 33,000	Vendor Estimate
						\$ -	\$ -	\$ -	\$ -	

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

\$ 33,000	Subtotal
\$ 8,250	25% Contingency
\$ 41,250	Total

ECM-7: 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: \$0.140 \$/kWh blended

Energy Savings Calculations:

	sti	

Cold Beverage Vending Machine Electric usage

10,512 kWh^{1,4,7}

Snack Vending Machine Electric usage

1,752 kWh^{2,5,7}

Dual Vending Machine Electric Usage

Total Vending Machine Electric Usage

12,264 kWh

Proposed

Cold Beverage Vending Machine Electric usage Snack Vending Machine Electric usage Dual Vending Machine Electric Usage Total Vending Machine Electric Usage

Vending Machine Controls Usage Savings Total cost savings

	_
10,295	kWh
\$ 1.441	

1,654 kWh⁸

315 kWh 0 kWh

1,969 kWh

Assumptions

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

Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.12

ECM-7: Install Vending Machine Controls - Cost

Description		UNIT	UNIT COSTS		SUBTOTAL COSTS			TOTAL	L REMARKS	
Description	QTY	OINIT	MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.	COST	KEWAKKS
									\$ -	
Vending Miser	4	EA	\$ 200	\$ 15	\$ -	\$ 822	\$ 75	\$ -	\$ 896	Vendor Estimation
						\$ -	\$ -	\$ -	\$ -	

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

\$ 896	Subtotal
\$ 224	25% Contingency
\$ 1,120	Total

ECM-8: Replace urinals and flush valves with low flow

Description: This ECM evaluates the water savings associated with replacing/ upgrading urinals with 0.125 GPF urinals and or flush valves.

EXISTING CONDITIONS							
Cost of Water / 1000 Gallons	\$7.55	\$ / kGal					
Urinals in Building to be replaced	66						
Total Flushes / Urinal (per Day)	11.1						
Average Gallons / Flush	2.5	Gal					

PROPOSED	CONDIT	IONS	
Proposed Urinals to be Replaced	6	6	
Proposed Gallons / Flush	0.12	5 Gal	

SAVINGS								
Current Urinal Water Use	668.9	kGal / year						
Proposed Urinal Water Use	33.4	kGal / year						
Water Savings	635.4	kGal / year						
Cost Savings	\$4,797	/ year						

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

ECM-8: Replace toilets and flush valves with low flow

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

EXISTING CONDI	TIONS	
Cost of Water / 1000 Gallons	\$7.55	\$ / kGal
Toilets in Building	115	
Total Flushes / Toilet (per Day)	19.1	
Average Gallons / Flush	3.5	Gal

PROPOSED	CONDI	TIONS	
Proposed Toilets to be Replaced		115	
Proposed Gallons / Flush		1.28	Gal

SAVINGS		
Current Toilet Water Use	2,812	kGal / year
Proposed Toilet Water Use	1,028	kGal / year
Water Savings	1,783	kGal / year
Cost Savings	\$13,465	/ year

Multipliers	
Material:	1.03
Labor:	1.25
Equipment:	1.12

Replace Plumbing Fixtures with Low-Flow Equivalents - Cost

Description	QTY	OTV	OTV	OTV	OTV	UNIT	L	JNIT COST	S	SUB	TOTAL COS	STS	TOTAL	REMARKS
Description	QII	OINIT	MAT.	LABOR	EQUIP.	MAT.	LABOR	EQUIP.	COST	REMARKS				
									\$ -					
Low-Flow Urinal	66	EA	\$ 1,200	\$ 1,000	\$ -	\$ 81,338	\$ 82,236	\$ -	\$ 163,574	Vendor Estimate				
Low-Flow Toilet	115	EA	\$ 1,400	\$ 1,000	\$ -	\$ 165,347	\$ 143,290	\$ -	\$ 308,637	Vendor Estimate				
						\$ -	\$ -	\$ -	\$ -					

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

\$ 472,211	Subtotal
\$ 118,053	25% Contingency
\$ 590,264	Total

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 governments 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)	302,353
Is this audit funded by NJ BPU (Y/N)	Yes

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

Board of Public Utilites (BPU)

	Annual Utilities		
	kWh Therms		
Existing Cost (from utility)	\$302,353	\$244,221	
Existing Usage (from utility)	1,747,200	205,673	
Proposed Savings	416,394	42,292	
Existing Total MMBtus	26,530		
Proposed Savings MMBtus	5,650		
% Energy Reduction	21.3%		
Proposed Annual Savings	\$98,767		

	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	\$1.21
Incentive #3	\$0.09	\$0.90	\$0.005	\$0.05	\$0.11	\$1.25	\$0.11	\$1.21

		Incentives \$			
	Elec	Gas	Total		
Incentive #1	\$0	\$0	\$15,118		
Incentive #2	\$45,803	\$51,379	\$97,183		
Incentive #3	\$45,803	\$51,379	\$97,183		
Total All Incentives	\$91,607	\$102,759	\$209,483		

Total Project Cost	\$1,290,116
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		Allowable Incentive	
% Incentives #1 of Utility Cost	2.8%	\$15,118	
% Incentives #2 of Project Cost*	7.5%	\$97,183	
% Incentives #3 of Project Cost*	7.5%	\$97,183	
Total Eligible Incentives***	\$209,483		
Project Cost w/ Incentives	\$1,080,633		

Project Payl	ack (years)
w/o Incentives	w/ Incentives
13.1	10.9

 $^{^{\}star}$ 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 #3 is 25% of total project cost.

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

^{**} Maximum allowable amount of Incentive #2 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.

ECM-L1 Lighting R	epiacements		EXISTING CONDI	TIONS					RETROFIT C	CONDITIONS					Co	OST & SAVINGS ANALYSIS		
	Area Description	No. of Fixtures Standard Fixture Code	Fixture Code	Watts per Fixture kW/S	Space Exist Cor	ntrol Annual Hours Annual kWh	Number of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control Annual Ho	urs Annual kWh	Annual kWh Saved Ar	unnual kW Saved Ani	nual \$ Saved Retrofit Cost	NJ Smart Start With C	
ield Code Uniq	ue description of the location - Room number/Room name: Floor number (if applicable)		2T Code from Table of Standard		xt) * (Fixt Pre-inst.	Estimated daily (kW/space) *	No. of fixtures after	"Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w	Code from Table of Standard Fixture	Value from Table of	(Watts/Fixt) * (Number of	Retrofit control Estimated device annual hours	(kW/space) *	(Original Annual (O	Original Annual (kWi	h Saved) * Cost for	Prescriptive Length of Lighting for renova	f time Length of time for
		lamps U shape		Standard Fixture		usage group		Recess. Floor 2 lamps U shape	Wattages	Standard Fixture	Fixtures)	for the usage group		Annual kWh) Ar	nnual kW)	lighting system		
15LED	UN-240 UN-241	6 S 32 C F 2 (ELE) 4 T 32 R F 3 (ELE)	F42LL		1.4 SW			4 ft LED Tube	200732x2 RTLED38	Wattages 30	0.2	SW 520	94	94 0.2		25.19 \$ 1,066.20		
35LED 32LED 32LED	461.5 UN-242	12 1T 32 R F 2 (ELE) 6 1T 32 R F 2 (ELE)	F43SSILL F42LL F42LL	60 0.	1.3 SW 1.7 SW 1.4 SW	520 15 2600 1,87 520 18	60 4 72 12 87 6	T 59 R LED 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30	0.2 0.4 0.2	SW 520 SW 2,600 SW 520	936 94	9 71 0.1 6 936 0.4 94 0.2	4 \$	19.03 \$ 945.00 143.24 \$ 2,132.40 25.19 \$ 1,066.20	\$0 14.9	.9 14.9
32LED 32LED	462 463	18 1T 32 R F 2 (ELE) 18 1T 32 R F 2 (ELE)	F42LL F42LL		.1 SW	2600 2,80 2600 2,80	18 18 18 18	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.5 0.5	SW 2,600 SW 2,600	1,404 1,404	1,404 0.5 1,404 0.5	.5 \$.5 \$	214.86 \$ 3,198.60 214.86 \$ 3,198.60	\$0 14.9 \$0 14.9	.9 14.9 .9 14.9
32LED 32LED	UN-243 UN-244	6 1T 32 R F 2 (ELE) 2 1T 32 R F 2 (ELE)	F42LL F42LL	60 0.	1.4 SW 1.1 SW			4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30	0.2 0.1	SW 2,600 SW 520	468 31			71.62 \$ 1,066.20 8.40 \$ 355.40	\$0 42.3	.3 42.3
32LED 32LED 32LED	UN-245 UN-246 464	2 1T 32 R F 2 (ELE) 6 1T 32 R F 2 (ELE) 18 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 0.	1.1 SW 1.4 SW .1 SW	520 6 2600 93 2600 2,80		4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30	0.1 0.2 0.5	SW 520 SW 2,600 SW 2,600	468 1,404	468 0.2	.2 \$	8.40 \$ 355.40 71.62 \$ 1,066.20 214.86 \$ 3,198.60	\$0 14.9	.9 14.9
32LED 32LED	465 466	18 1T 32 R F 2 (ELE) 14 1T 32 R F 2 (ELE)	F42LL F42LL	60 1. 60 0.	.1 SW	2600 2,80 2600 2,18	18 18	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.5 0.4	SW 2,600 SW 2,600	1,404 1,092	1,404 0.5 2 1,092 0.4	.5 \$.4 \$	214.86 \$ 3,198.60 167.11 \$ 2,487.80	\$0 14.9 \$0 14.9	.9 14.9 .9 14.9
32LED 32LED	UN-249 467 468	5 1T 32 R F 2 (ELE) 18 1T 32 R F 2 (ELE)	F42LL F42LL	60 1.	.1 SW	2600 2,80	18 18	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30	0.2	SW 2,600 SW 2,600	390 1,404	1,404 0.5		59.68 \$ 888.50 214.86 \$ 3,198.60	\$0 14.9	.9 14.9
32LED 32LED 32LED	468 UN-251 UN-252	18	F42LL F42LL F42LL	60 0.	.1 SW 0.4 SW 0.4 SW	2600 2,80 520 18 520 18	7 6	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30	0.5 0.2 0.2	SW 2,600 SW 520 SW 520	1,404 94 94	94 0.2	.2 \$	214.86 \$ 3,198.60 25.19 \$ 1,066.20 25.19 \$ 1,066.20	\$0 42.3	.3 42.3
32LED 32LED	UN-253 UN-254	2 1T 32 R F 2 (ELE) 2 1T 32 R F 2 (ELE)	F42LL F42LL	60 0.	1.1 SW 1.1 SW	520 6		4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30 30	0.1 0.1	SW 520 SW 520 SW 2,600	31 156	31 0.1		8.40 \$ 355.40 23.87 \$ 355.40	\$0 42.3	.3 42.3
32LED 32LED	489 UN-255	18 1T 32 R F 2 (ELE) 5 1T 32 R F 2 (ELE)	F42LL F42LL	60 1. 60 0.	.1 SW	2600 2,80 520 15	18 18 6 5	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.5 0.2	SW 2,600 SW 520	1,404 78	1,404 0.5 78 0.2	.5 \$.2 \$	214.86 \$ 3,198.60 20.99 \$ 888.50	\$0 14.9 \$0 42.3	.9 14.9 .3 42.3
32LED 32LED 220LED	UN-257 UN-258 UN-247	5 1T 32 R F 2 (ELE) 1 1T 32 R F 2 (ELE) 1 S 17 C F 1(ELE)	F42LL F42LL		1.3 SW 1.1 SW	520 15 780 4 3120 6	7 1	4 ft LED Tube 4 ft LED Tube 2 ft LED Tube	200732x2 200732x2 200714x2	30	0.2	SW 520 SW 780 SW 3,120	78 23	78 0.2 3 23 0.0 12 0.0	2 \$	20.99 \$ 888.50 5.17 \$ 177.70 1.85 \$ 157.70	\$0 34.4	.4 34.4
220LED 220LED 32LED	UN-248 461	1 S 17 C F 1(ELE)	F21ILL F21ILL F42LL	20 0.	1.0 SW 1.0 SW	3120 6 3120 6 2600 2,80	2 1	2 ft LED Tube 4 ft LED Tube	200714x2 200714x2 200732x2	16	0.0	SW 3,120 SW 3,120 SW 2,600	50 50 1.404	12 0.0	.0 \$	1.85 \$ 157.70 1.85 \$ 157.70 214.86 \$ 3.198.60	\$0 85.3	.3 85.3
32LED 32LED	460 459	18 1T 32 R F 2 (ELE) 18 1T 32 R F 2 (ELE) 18 1T 32 R F 2 (ELE)	F42LL F42LL		.1 SW .1 SW	2600 2,80 2600 2,80	18 18	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.5 0.5	SW 2,600 SW 2,600	1,404 1,404	1,404 0.5	.5 \$.5 \$	214.86 \$ 3,198.60 214.86 \$ 3,198.60	\$0 14.9	.9 14.9
32LED 35LED	Corridor D Corridor D 409	12 1T 32 R F 2 (ELE) 12 T 32 R F 3 (ELE)	F42LL F43SSILL	72 0.	1.7 SW 1.9 SW		11 12	4 ft LED Tube T 59 R LED	200732x2 RTLED38	30 38	0.4	SW 6,240 SW 6,240	2,246 2,845	2,546 0.4	.4 \$	305.73 \$ 2,132.40 346.49 \$ 2,835.00	\$0 8.2	2 8.2
20LED 20LED 20LED	409 410 411	10 S 28 P F 1 (ELE) 18 S 28 P F 1 (ELE) 18 S 28 P F 1 (ELE)	F41SSILL F41SSILL F41SSILL	26 0.	1.3 SW 1.5 SW 1.5 SW	2600 67 2600 1,21 2600 1,21	7 18	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x1 200732x1 200732x1	15 15	0.2 0.3 0.3	SW 2,600 SW 2,600 SW 2,600	390 702 702	515 0.2	.2 \$	43.77 \$ 1,172.00 78.78 \$ 2,109.60 78.78 \$ 2,109.60	\$0 26.8	.8 26.8
20LED 20LED	412 413	18 S 28 P F 1 (ELE) 16 S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 0. 26 0.	0.5 SW 0.4 SW	2600 1,21 2600 1,08	7 18	4 ft LED Tube 4 ft LED Tube	200732x1 200732x1	15 15	0.3 0.2	SW 2,600 SW 2,600	702 702 624			78.78 \$ 2,109.60 70.03 \$ 1,875.20	\$0 26.8 \$0 26.8	.8 26.8 .8 26.8
220LED 20LED	UN-260 414-C	1 S 17 C F 1(ELE) 18 S 28 P F 1 (ELE)	F21ILL F41SSILL	20 0. 26 0.	1.0 SW 1.5 SW	520 1 2600 1,21	0 1 7 18	2 ft LED Tube 4 ft LED Tube	200714x2 200732x1	16 15	0.0 0.3	SW 520 SW 2,600	8 702	2 0.0 2 515 0.2	.0 \$	0.56 \$ 157.70 78.78 \$ 2,109.60	\$0 281. \$0 26.8	1.7 281.7 .8 26.8
20LED 20LED 20LED	415 400 (Gym) 407	12 S 28 P F 1 (ELE) 8 S 28 P F 1 (ELE) 18 S 28 P F 1 (FLF)	F41SSILL F41SSILL F41SSILI	26 0.	1.3 SW 1.2 SW 1.5 SW		1 8	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x1 200732x1 200732x1	15 15	0.2 0.1 0.3	SW 2,600 SW 2,600 SW 2,600	468 312 702	229 0.1		52.52 \$ 1,406.40 35.01 \$ 937.60 78.78 \$ 2,109.60	\$0 26.8	
20LED 20LED	408 406	18 S 28 P F 1 (ELE) 15 S 28 P F 1 (ELE) 22 S 28 P F 1 (ELE)	F41SSILL F41SSILL F41SSILL		1.5 SW 1.4 SW 1.6 SW	2600 1,01 2600 1,48	4 15	4 ft LED Tube 4 ft LED Tube	200732x1 200732x1 200732x1	15 15	0.2 0.3	SW 2,600 SW 2,600 SW 2,600	585 858	5 515 0.2 6 429 0.2 8 629 0.2	2 \$	78.78 \$ 2,109.60 65.65 \$ 1,758.00 96.29 \$ 2,578.40		
20LED 20LED	405 UN-273	24 S 28 P F 1 (ELE) 1 S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 0. 26 0.	1.6 SW 1.0 SW	2600 1,62 520 1	22 24 4 1	4 ft LED Tube 4 ft LED Tube	200732x1 200732x1	15 15	0.4 0.0	SW 2,600 SW 520	936 8		.0 \$	105.04 \$ 2,812.80 1.54 \$ 117.20	\$0 26.8	.1 76.1
20LED 15LED 15LED	UN-274 UN-275	1 S 28 P F 1 (ELE) 2 S 32 C F 2 (ELE)	F41SSILL F42LL F42LL	26 0. 60 0.		520 6		4 ft LED Tube 4 ft LED Tube	200732x1 200732x2 200732x2	15 30	0.0 0.1	SW 520 SW 520 SW 2,600	8 31 468	31 0.1	.0 \$	1.54 \$ 117.20 8.40 \$ 355.40 71.62 \$ 1,066.20	\$0 42.3	.3 42.3
15LED 15LED	UN-276 UN-277 404L	6 S 32 C F 2 (ELE) 6 S 32 C F 2 (ELE) 6 S 32 C F 2 (ELE)	F42LL F42LL F42LL	60 0.	1.4 SW 1.4 SW 1.4 SW	2600 93 2600 93 2600 93	6	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30	0.2 0.2 0.2	SW 2,600 SW 2,600	468 468		2 \$	71.62 \$ 1,066.20 71.62 \$ 1,066.20 71.62 \$ 1,066.20	\$0 14.9	.9 14.9
15LED 15LED	403C 402	18 S 32 C F 2 (ELE) 18 S 32 C F 2 (ELE)	F42LL F42LL	60 1. 60 1.	.1 SW	2600 2,80 2600 2,80	18 18 18 18	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.5 0.5	SW 2,600 SW 2,600	1,404 1,404	1,404 0.5 1,404 0.5	.5 \$	214.86 \$ 3,198.60 214.86 \$ 3,198.60	\$0 14.9 \$0 14.9	.9 14.9 .9 14.9
15LED 32LED	401 UN-272	15 S 32 C F 2 (ELE) 2 1T 32 R F 2 (ELE)	F42LL F42LL	60 0.	1.9 SW 1.1 SW		2 2	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30	0.5 0.1	SW 2,600 SW 520	1,170	31 0.1		179.05 \$ 2,665.50 8.40 \$ 355.40 0.56 \$ 157.70	\$0 42.3	.3 42.3
220LED 32LED 81	UN-271 UN-270 UN-268	1 S 17 C F 1(ELE) 2 1T 32 R F 2 (ELE) 2 S 34 C F 2	F21ILL F42LL F42FF	60 0.	I.0 SW I.1 SW I.1 SW	520 6	0 1 i2 2 i9 2	2 ft LED Tube 4 ft LED Tube S 28 C F 2	200714x2 200732x2 F42SSILL	16 30 48	0.0 0.1 0.1	SW 520 SW 520 SW 3,120	31 300	31 0.1 31 0.1		0.56 \$ 157.70 8.40 \$ 355.40 22.19 \$ 229.50	\$0 42.3	.3 42.3
81 74 81 81	UN-269 UN-267	1 150 3 S 34 C F 2	F42EE I50/1 F42EE	50 0. 72 0.	1.1 SW 1.2 SW	780 3 520 11	9 1	CF 26 S 28 C F 2 S 28 C F 2	CFQ26/1-L F42SSILL	27 48	0.0	SW 780	21 75			3.96 \$ 20.25 10.08 \$ 344.25	\$0 5.1 \$0 34.2	1 5.1 .2 34.2
81 20LED 20LED	UN-266 425 423	3 \$ 34 C F 2 15 \$ 28 P F 1 (ELE) 18 \$ 28 P F 1 (ELE)	F42EE F41SSILL F41SSILL	26 0.	1.2 SW 1.4 SW 1.5 SW	520 11 2600 1,01 2600 1,21	4 15	S 28 C F 2 4 ft LED Tube 4 ft LED Tube	F42SSILL 200732x1 200732x1	48 15	0.1 0.2	SW 520 SW 2,600 SW 2,600	75 585			10.08 \$ 344.25 65.65 \$ 1,758.00 78.78 \$ 2.109.60	\$0 26.8	.8 26.8
20LED 20LED	426 424	18 S 28 P F 1 (ELE) 15 S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 0.	1.5 SW 1.4 SW		7 18	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732X1 200732X1 200732X1	15	0.3 0.2	SW 2,600 SW 2,600	702 702 585	515 0.2 5 515 0.2 6 429 0.2	2 \$	78.78 \$ 2,109.60 78.78 \$ 2,109.60 65.65 \$ 1,758.00	\$0 26.8	.8 26.8
20LED 20LED	422 421	15 S 28 P F 1 (ELE) 18 S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 0. 26 0.	1.4 SW 1.5 SW	2600 1,01 2600 1,21	4 15 7 18	4 ft LED Tube 4 ft LED Tube	200732x1 200732x1	15 15	0.2 0.3	SW 2,600 SW 2,600	585 702	5 429 0.2 515 0.2	2 \$	65.65 \$ 1,758.00 78.78 \$ 2,109.60	\$0 26.8 \$0 26.8	.8 26.8 .8 26.8
20LED 20LED	420 419 418	18 S 28 P F 1 (ELE) 6 S 28 P F 1 (ELE) 18 S 28 P F 1 (FLF)	F41SSILL F41SSILL F41SSII I	26 0.	1.5 SW 1.2 SW 1.5 SW	2600 1,21 2600 40 2600 1,21	6 6	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x1 200732x1	15	0.3 0.1 0.3	SW 2,600 SW 2,600 SW 2,600	702 234	515 0.2	2 \$	78.78 \$ 2,109.60 26.26 \$ 703.20 78.78 \$ 2,109.60	\$0 26.8	.8 26.8
20LED 20LED 20LED	418 417 416	12 S 28 P F 1 (ELE) 15 S 28 P F 1 (ELE)	F41SSILL F41SSILL F41SSILL	26 0.	1.5 SW 1.3 SW 1.4 SW	2600 1,21 2600 81 2600 1,01	1 12	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x1 200732x1 200732x1	15	0.3	SW 2,600 SW 2,600 SW 2,600	702 468 585	515 0.2 3 343 0.1 6 429 0.2	.1 \$	52.52 \$ 1,406.40 65.65 \$ 1,758.00	\$0 26.8	.8 26.8
32LED 35LED	Corridor A Corridor A	21 1T 32 R F 2 (ELE) 14 T 32 R F 3 (ELE)	F42LL F43SSILL		.3 SW .0 SW	6240 7,86 6240 6,29		4 ft LED Tube T 59 R LED	200732x2 RTLED38	30 38	0.6 0.5	SW 6,240 SW 6,240	3,931 3,320	3,931 0.6	.6 \$	535.02 \$ 3,731.70 404.24 \$ 3,307.50	\$0 7.0 \$0 8.2	0 7.0 2 8.2
32LED 32LED	UN-301 UN-302	2 1T 32 R F 2 (ELE) 2 1T 32 R F 2 (ELE) 2 1T 32 R F 2 (ELE)	F42LL F42LL	60 0.	1.1 SW 1.1 SW 1.1 SW	3120 37 3120 37	4 2	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30	0.1 0.1 0.1	SW 3,120 SW 3,120 SW 780	187 187 47	187 0.1	.1 \$	27.74 \$ 355.40 27.74 \$ 355.40	\$0 12.8	.8 12.8
32LED 32LED 32LED	UN-300 UN-299 480	2 11 32 R F 2 (ELE) 2 1T 32 R F 2 (ELE) 26 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 0.	1.1 SW 1.1 SW 1.6 SW		2 2	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30	0.1 0.1 0.8	SW 780 SW 520 SW 2,600	31	31 0.1		10.33 \$ 355.40 8.40 \$ 355.40 310.35 \$ 4,620.20	\$0 42.3	.3 42.3
32LED 32LED	UN-298 UN-297	2 1T 32 R F 2 (ELE) 2 1T 32 R F 2 (ELE) 33 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 0.	1.1 SW	520 6 520 6	2 2	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.1 0.1	SW 520 SW 520	31 31 2,574	31 0.1	.1 \$	8.40 \$ 355.40 8.40 \$ 355.40	\$0 42.3 \$0 42.3	.3 42.3 .3 42.3
32LED 32LED 32LED	482B 483 UN-295	33	F42LL F42LL F42LL		.0 SW .7 SW I.1 SW	2600 5,14 2600 4,52 520 6	8 33 4 29	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30	1.0 0.9 0.1	SW 2,600 SW 2,600 SW 520	2,574 2,262		.9 \$	393.90 \$ 5,864.10 346.16 \$ 5,153.30 8.40 \$ 355.40	\$0 14.9	.9 14.9
32LED 32LED 32LED	448B 485B	25 1T 32 R F 2 (ELE) 25 1T 32 R F 2 (ELE) 25 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 1.	.5 SW .5 SW			4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732X2 200732X2 200732X2	30	0.8	SW 2,600 SW 2,600	1,950 1,950	1,950 0.8		298.41 \$ 4,442.50 298.41 \$ 4.442.50	\$0 14.9	.9 14.9
32LED 32LED	486B 487	25 1T 32 R F 2 (ELE) 25 1T 32 R F 2 (ELE)	F42LL F42LL	60 1.	.5 SW .5 SW	2600 3,90 2600 3,90	0 25 0 25	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.8	SW 2,600 SW 2,600	1,950 1,950	1,950 0.8 1,950 0.8	.8 \$.8 \$	298.41 \$ 4,442.50 298.41 \$ 4,442.50	\$0 14.9 \$0 14.9	.9 14.9 .9 14.9
32LED 32LED	488B 489B	32 1T 32 R F 2 (ELE) 32 1T 32 R F 2 (ELE)	F42LL F42LL	60 1.	.9 SW	2600 4,99 2600 4,99	12 32	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30	1.0 1.0 0.1	SW 2,600 SW 2,600 SW 520	2,496 2,496	2,496 1.0	.0 \$	381.96 \$ 5,686.40 381.96 \$ 5,686.40	\$0 14.9	.9 14.9
32LED 32LED 32LED	UN-305 UN-304 UN-303	2 1T 32 R F 2 (ELE) 2 1T 32 R F 2 (ELE) 2 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 0.	1.1 SW 1.1 SW 1.1 SW	520 6	2 2 2 2 2	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30	0.1 0.1 0.1	SW 520 SW 520 SW 520	31 31 31	31 0.1 31 0.1 31 0.1	.1 \$.1 \$	8.40 \$ 355.40 8.40 \$ 355.40 8.40 \$ 355.40	\$0 42.3	.3 42.3
32LED 32LED	UN-268 Corridor C	2 1T 32 R F 2 (ELE) 3 1T 32 R F 2 (ELE)	F42LL F42LL	60 0.	1.1 SW 1.2 SW		2 2	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30	0.1 0.1	SW 520 SW 6,240	31 562	31 0.1	1 \$	8.40 \$ 355.40 76.43 \$ 533.10	\$0 42.3	.3 42.3
40LED 32LED 32LED	Corridor C UN-198 366	21 T 28 R F 2 (ELE) 18 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 1.	.3 SW .1 SW .1 SW	520 56		T 38 R LED 4 ft LED Tube 4 ft LED Tube	RTLED38 200732x2 200732x2	38	0.8 0.5	SW 6,240 SW 520 SW 2,600	281	281 0.5		392.35 \$ 4,961.25 75.58 \$ 3,198.60 214.86 \$ 3.198.60	\$0 42.3	.3 42.3
32LED 32LED 32LED	366 367 368	18 1T 32 R F 2 (ELE) 18 1T 32 R F 2 (ELE) 18 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 1.	.1 SW .1 SW	2600 2,80	18 18	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30	0.5 0.5 0.5	SW 2,600 SW 2,600 SW 2,600	1,404 1,404 1,404	1,404 0.5	.5 \$	214.86 \$ 3,198.60 214.86 \$ 3,198.60 214.86 \$ 3,198.60	\$0 14.9	.9 14.9
32LED 32LED	369 370	18 1T 32 R F 2 (ELE) 18 1T 32 R F 2 (ELE)	F42LL F42LL	60 1.	.1 SW		18 18 18 18	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30	0.5 0.5	SW 2,600 SW 2,600	1,404 1,404	1,404 0.5	.5 \$	214.86 \$ 3,198.60 214.86 \$ 3,198.60	\$0 14.9 \$0 14.9	.9 14.9
32LED 32LED	365 UN-192	30 1T 32 R F 2 (ELE) 2 1T 32 R F 2 (ELE)	F42LL F42LL	60 0.	.8 SW 0.1 SW		0 30 2 2	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.9 0.1 0.1	SW 2,600 SW 520	2,340 31	31 0.1	.1 \$	358.09 \$ 5,331.00 8.40 \$ 355.40	\$0 42.3	.3 42.3
32LED 32LED 32LED	UN-193 UN-194 UN-195	2 1T 32 R F 2 (ELE) 2 1T 32 R F 2 (ELE) 2 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 0.	I.1 SW I.1 SW I.1 SW	520 6 520 6 520 6	2 2	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30 30	0.1 0.1 0.1	SW 520 SW 520 SW 520	31 31 31	31 0.1 31 0.1 31 0.1	.1 \$	8.40 \$ 355.40 8.40 \$ 355.40 8.40 \$ 355.40	\$0 42.3 \$0 42.3	.3 42.3
32LED 32LED	364 363 361	30 1T 32 R F 2 (ELE) 36 1T 32 R F 2 (ELE)	F42LL F42LL	60 1.	.8 SW	2600 4,68 2600 5,61	0 30 6 36	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.9	SW 2,600 SW 2,600	2,340 2,808	2,808 1.1	9 \$	358.09 \$ 5,331.00 429.71 \$ 6,397.20	\$0 14.9 \$0 14.9	.9 14.9 .9 14.9
32LED 32LED	361 360 359 (Work Room)	18 1T 32 R F 2 (ELE) 18 1T 32 R F 2 (ELE)	F42LL F42LL	60 1. 60 1.	.1 SW .1 SW	2600 2,80 2600 2,80	18 18	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.5 0.5	SW 2,600 SW 2,600	1,404 1,404	1,404 0.5		214.86 \$ 3,198.60 214.86 \$ 3,198.60	\$0 14.9	.9 14.9
32LED 32LED 32LED	359 (Work Room) UN-191 UN-190	7 1T 32 R F 2 (ELE) 2 1T 32 R F 2 (ELE) 2 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 0.	1.4 SW 1.1 SW 1.1 SW	2600 1,09 520 6 520 6	2 2	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30 30	0.2 0.1 0.1	SW 2,600 SW 520 SW 520	546 31 31	31 0.1 31 0.1		83.55 \$ 1,243.90 8.40 \$ 355.40 8.40 \$ 355.40	\$0 42.3	.3 42.3
32LED 32LED	UN-189 UN-188	4 1T 32 R F 2 (ELE) 4 1T 32 R F 2 (ELE)	F42LL F42LL	60 0.	1.2 SW 1.2 SW	520 12 520 12	25 4 25 4	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30	0.1 0.1 0.1	SW 520 SW 520	62	62 0.1 62 0.1	.1 \$	16.80 \$ 710.80 16.80 \$ 710.80	\$0 42.3 \$0 42.3	.3 42.3
32LED	UN-205 UN-204	4 1T 32 R F 2 (ELE) 4 1T 32 R F 2 (ELE)	F42LL F42LL	60 0.	0.2 SW 0.2 SW	520 12 520 12	15 4 15 4	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30	0.1 0.1	SW 520 SW 520	62 62	62 0.1 62 0.1	.1 \$	16.80 \$ 710.80 16.80 \$ 710.80	\$0 42.3 \$0 42.3	.3 42.3 .3 42.3
32LED																		
32LED 32LED 35LED 20LED	Corridor D Corridor D 310	12 1T 32 R F 2 (ELE) 12 T 32 R F 3 (ELE) 12 S 28 P F 1 (ELE)	F42LL F43SSILL F41SSILL		1.7 SW 1.9 SW 1.3 SW		11 12	4 ft LED Tube T 59 R LED 4 ft LED Tube		30 38	0.4 0.5 0.2	SW 6,240 SW 6,240 SW 2,600	2,246 2,845 468	2,546 0.4	4 \$	305.73 \$ 2,132.40 346.49 \$ 2,835.00 52.52 \$ 1,406.40	\$0 8.2	2 8.2

		EXISTING CON	Watts per							RETROFIT C	Watts per		Retrofit			Annual kWh		COST & SAVINGS A		IJ Smart Start W	e Payback
Area Description	No. of Fixtures Standard Fixture Code Room No. of fixtures "Lighting Fixture Code" Example	Fixture Code 2T Code from Table of Standard	Fixture Value from	kW/Space (Watts/Fixt) * (Fixt	Exist Control Annual Hou Pre-inst. Estimated da				Standard Fixture Code Lighting Fixture Code" Example	Fixture Code Code from Table of	Fixture Value from	kW/Space (Watts/Fixt) *	Control Retrofit control	Annual Hours	Annual kWh	Saved	Annual kW Saved			hting Incentive In	centive Simp
name: Floor number (if applicable)	before the retrofit lamps U shape		Table of Standard	No.)	control device hours for the usage group	(Annual Hours)		2T	7 40 R F(U) = 2'x2' Troff 40 w ecess. Floor 2 lamps U shape	Standard Fixture Wattages	Table of Standard	(Number of Fixtures)	device	annual hours for the usage	(Annual Hours)	kWh) - (Retrofit	kW) - (Retrofit Annual kW)	(\$/kWh) ren	ovations to Lig		novations renova
			Fixture Wattages							-	Fixture Wattages	ŕ		group	,		·			recov	ered
312B 313	18 S 28 P F 1 (ELE) 18 S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 0.5	SW 2600 SW 2600	1,2	17 18	4 ft	ft LED Tube ft LED Tube	200732x1 200732x1	15 15	0.3	SW	2,600 2,600	702 702	515 515	0.2	\$ 78.78 \$	2,109.60 \$0 2,109.60 \$0		26.8 26.8
309 307	18 S 28 P F 1 (ELE) 18 S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 0.5	SW 2600 SW 2600	1,2 1,2	17 18	4 ft	ft LED Tube ft LED Tube	200732x1 200732x1	15 15	0.3	SW	2,600 2,600	702 702	515 515	0.2		2,109.60 \$0 2,109.60 \$0		26.8 26.8
308 306 305	18 S 28 P F 1 (ELE) 6 T 28 R F 2 (ELE)	F41SSILL F42LL	26 60	0.5	SW 2600 SW 2600		36 6	T 3	ft LED Tube 38 R LED	200732x1 RTLED38	15 38	0.3	SW	2,600 2,600	702 593	515 343	0.1	\$ 52.52 \$	2,109.60 \$0 1,417.50 \$0		26.8 27.0
305 304 303	15 S 28 P F 1 (ELE) 6 W 28 C F 2 (ELE) 18 S 28 P F 1 (ELE)	F41SSILL F42LL F41SSILL	26 60	0.4	SW 2600 SW 2600	1,0 9 1,2	36 6	4 ft	ft LED Tube	200732x1 200732x2 200732x1	15 30	0.2	SW SW	2,600 2,600	585 468	429 468	0.2	\$ 65.65 \$ \$ 71.62 \$	1,312.20 \$0		26.8 18.3
302 301	18 S 28 P F 1 (ELE) 18 S 28 P F 1 (ELE) 15 S 28 P F 1 (ELE)	F41SSILL F41SSILL	26	0.5 0.4	SW 2600 SW 2600 SW 2600	1,2	17 18		ft LED Tube ft LED Tube ft LED Tube	200732x1 200732x1 200732x1	15	0.3 0.2	SW SW SW	2,600 2,600 2,600	702 702	515 515 429		\$ 78.78 \$ \$ 78.78 \$ \$ 65.65 \$			26.8 26.8 26.8
326 323	18 S 28 P F 1 (ELE) 18 S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5	SW 2600 SW 2600	1,2	17 18	4 ft	ft LED Tube	200732X1 200732X1 200732X1	15	0.3	SW	2,600 2,600	702 702	515 515	0.2	\$ 78.78 \$ \$ 78.78 \$	2,109.60 \$0		26.8 26.8
324 325	18 S 28 P F 1 (ELE) 18 S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5	SW 2600 SW 2600	1,2	17 18	4 ft	ft LED Tube ft LED Tube	200732x1 200732x1	15 15	0.3	SW	2,600 2,600	702 702	515 515	0.2	\$ 78.78 \$	2,109.60 \$0 2,109.60 \$0		26.8 26.8
322 321	15 S 28 P F 1 (ELE) 18 S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.4 0.5	SW 2600 SW 2600	1,0 1,2	14 15 17 18	4 ft	ft LED Tube ft LED Tube	200732x1 200732x1	15 15	0.2 0.3	SW SW	2,600 2,600	585 702	429 515	0.2 0.2	\$ 65.65 \$ \$ 78.78 \$	1,758.00 \$0 2,109.60 \$0		26.8 26.8
320 319	18 S 28 P F 1 (ELE) 6 S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 0.2	SW 2600 SW 2600	1,2 4		4 ft	ft LED Tube ft LED Tube	200732x1 200732x1	15 15	0.3 0.1	SW SW	2,600 2,600	702 234	515 172	0.1	\$ 78.78 \$ \$ 26.26 \$	703.20 \$0		26.8 26.8
318 317	12 S 28 P F 1 (ELE) 12 S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.3	SW 2600 SW 2600	8	11 12	4 ft	ft LED Tube ft LED Tube	200732x1 200732x1	15 15	0.2	SW SW	2,600 2,600	468 468	343 343	0.1	\$ 52.52 \$ \$ 52.52 \$	1,406.40 \$0		26.8 26.8
316 315	24 S 28 P F 1 (ELE) 24 S 28 P F 1 (ELE) 18 S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.6	SW 2600 SW 2600	1,6	22 24	4 ft	ft LED Tube	200732x1 200732x1	15	0.4	SW	2,600 2,600	936 936	686 686	0.3		2,812.80 \$0 2,812.80 \$0		26.8 26.8
314 Corridor A UN-226	18 S 28 P F 1 (ELE) 46 T 32 R F 3 (ELE) 3 1T 32 R F 2 (ELE)	F41SSILL F43SSILL F42LL	26 72	0.5 3.3 0.2	SW 2600 SW 6240 SW 3120	1,2 20,6	67 46	T 5	ft LED Tube 59 R LED ft LED Tube	200732x1 RTLED38 200732x2	38	0.3 1.7 0.1	SW SW SW	2,600 6,240 3,120	10,908 281	515 9,759 281	1.6		2,109.60 \$0 10,867.50 \$0 533.10 \$0		26.8 8.2 12.8
UN-226 UN-227 380	3 1T 32 R F 2 (ELE) 3 1T 32 R F 2 (ELE) 27 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60	0.2	SW 3120 SW 3120 SW 2600	5	62 3 62 3	4 ft	It LED Tube It LED Tube It LED Tube	200732x2 200732x2 200732x2	30	0.1 0.1 0.8	SW SW	3,120 3,120 2,600	281 281 2,106	281 281 2,106	0.1	\$ 41.61 \$ \$ 322.28 \$			12.8 12.8 14.9
381B UN-230	48 1T 32 R F 2 (ELE) 2 T 28 R F 2 (ELE)	F42LL F42LL	60	2.9	SW 2600 SW 520	7,4	88 48	4 ft	ft LED Tube 38 R LED	200732x2 200732x2 RTLED38	30	1.4 0.1	SW SW	2,600 520	3,744	3,744	1.4	\$ 572.95 \$ \$ 6.16 \$	8,529.60 \$0 472.50 \$0		14.9 76.7
UN-231 UN-232	2 T 28 R F 2 (ELE)	F42LL F42LL	60	0.1	SW 520 SW 520		62 2 62 2	T 3	38 R LED 38 R LED	RTLED38 RTLED38	38	0.1	SW SW	520 520	40	23 23 23		\$ 6.16 \$ \$ 6.16 \$	472.50 \$0 472.50 \$0		76.7 76.7
UN-233 UN-234	2 T 28 R F 2 (ELE) 2 T 28 R F 2 (ELE) 2 T 28 R F 2 (ELE)	F42LL F42LL	60	0.1 0.1	SW 520 SW 520		62 2 62 2	T 3	38 R LED 38 R LED	RTLED38 RTLED38	38 38	0.1 0.1	SW	520 520	40	23	0.0	\$ 6.16 \$ \$ 6.16 \$	472.50 \$0 472.50 \$0		76.7 76.7
New Storage (Music) 382	2 1T 32 R F 2 (ELE) 21 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.1	SW 520 SW 2600	3,2	62 2 76 21	4 ft 4 ft	ft LED Tube ft LED Tube	200732x2 200732x2	30	0.1 0.6	SW SW	520 2,600	31 1,638	23 31 1,638		\$ 8.40 \$ \$ 250.66 \$	355.40 \$0 3,731.70 \$0		42.3 14.9
383B 384	14 1T 32 R F 2 (ELE) 6 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.8 0.4	SW 2600 SW 2600	2,1	84 14 36 6	4 ft 4 ft	ft LED Tube ft LED Tube	200732x2 200732x2	30 30	0.4 0.2	SW	2,600 2,600	1,092 468	1,092 468	0.4	\$ 167.11 \$ \$ 71.62 \$	2,487.80 \$0 1,066.20 \$0		14.9 14.9
Corridor C Gym Connect	20 T 28 R F 2 (ELE) 3 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.2 0.2	SW 2600 SW 2600	3,1	68 3	4 ft	38 R LED ft LED Tube	RTLED38 200732x2	38	0.8	SW	2,600 2,600	1,976 234	1,144 234	0.1	\$ 175.07 \$ \$ 35.81 \$	533.10 \$0		27.0 14.9
Gym Lobby Gym Lobby Gym Office	4 1T 32 R F 2 (ELE) 15 1T 32 R F 2 (ELE)	F42LL F42LL	60	0.2	SW 2600 SW 2600	2,3		4 ft	ft LED Tube ft LED Tube	200732x2 200732x2	30	0.1	SW	2,600 2,600	312 1,170	312 1,170		\$ 47.75 \$ \$ 179.05 \$			14.9 14.9
Gym Boys Locker Room	6 1T 32 R F 2 (ELE) 32 High Bay MH 200 35 Feet High 40 1T 32 R F 2 (ELE)	F42LL MH200/1 F42LL	232	7.4 2.4	SW 2600 SW 2600 SW 2600	19,3		FX	ft LED Tube (LED78 ft LED Tube	200732x2 FXLED78/1 200732x2	78	2.5	SW SW SW	2,600 2,600 2,600	6,490	468 12,813 3,120	4.9	\$ 71.62 \$ \$ 1,960.75 \$	1,066.20 \$0 27,014.26 \$4 7,108.00 \$0	800	14.9 13.8 14.9
Girl's Locker Room Team Room Boys	40 1T 32 R F 2 (ELE) 14 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60	2.4	SW 2600 SW 2600	6,2 2,1	40 40	4 ft	It LED Tube It LED Tube	200732x2 200732x2 200732x2	30	1.2	SW	2,600 2,600 2,600	3,120 3,120 1,092	3,120 3,120 1,092	1.2	\$ 477.46 \$ \$ 167.11 \$			14.9 14.9
Team Room Girls Main Office	14 1T 32 R F 2 (ELE) 32 1T 32 R F 2 (ELE)	F42LL F42LL	60	0.8	SW 2600 SW 2600	2,1	84 14	4 ft	ft LED Tube ft LED Tube	200732x2 200732x2 200732x2	30	0.4 1.0	SW	2,600 2,600	1,092 2,496	1,092	0.4		2,487.80 \$0		14.9
Main Office Side Room Main Office Side Room	4 T 28 R F 2 (ELE) 1 1T 32 R F 2 (ELE)	F42LL F42LL	60	0.2	SW 2600 SW 2600	6	24 4	T 3	38 R LED ft LED Tube	RTLED38 200732x2	38	0.2	SW	2,600 2,600	395 78	229 78	0.1	\$ 35.01 \$ \$ 11.94 \$	945.00 \$0 177.70 \$0		27.0 14.9
Main Office Kitchenette Maain Office Storage	4 T 28 R F 2 (ELE) 1 T 32 R F 3 (ELE)	F42LL F43SSILL	60 72	0.2	SW 1700 SW 520	4	08 4 37 1	T 3	38 R LED 59 R LED	RTLED38 RTLED38	38	0.2	SW	1,700 520	258 20	150 18	0.1	\$ 25.19 \$ \$ 4.76 \$	945.00 \$0 236.25 \$0		37.5 49.6
Principal's Office Main Office Corridor	4 T 28 R F 2 (ELE) 4 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.2 0.2	SW 2600 SW 2600		24 4 24 4	4 ft	38 R LED ft LED Tube	RTLED38 200732x2	38 30	0.2 0.1	SW	2,600 2,600	395 312	229 312	0.1	\$ 35.01 \$ \$ 47.75 \$	945.00 \$0 710.80 \$0		27.0 14.9
Office Office	4 T 28 R F 2 (ELE) 9 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.2 0.5	SW 2600 SW 2600	1,4	24 4 04 9	4 ft	38 R LED ft LED Tube	RTLED38 200732x2	38	0.2	SW SW	2,600 2,600	395 702	229 702	0.3	\$ 35.01 \$ \$ 107.43 \$	945.00 \$0 1,599.30 \$0		27.0 14.9
Office Storage Main Office Teachers Lounge	1 S 32 C F 2 (ELE) 14 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.1	SW 520 SW 2600	2,1		4 ft	ft LED Tube ft LED Tube	200732x2 200732x2	30	0.0	SW	520 2,600	16 1,092	16 1,092	0.4	\$ 4.20 \$ \$ 167.11 \$	177.70 \$0 2,487.80 \$0		42.3 14.9 7.0
Exit 2B Women's Staff Restroom	1 1T 32 R F 2 (ELE) 1 1100	F42LL I100/1	60 100	0.1	SW 6240 SW 3120	3	74 1	CF	ft LED Tube	200732x2 CFQ26/1-L	27	0.0	SW	6,240 3,120	187 84	187 228	0.1	\$ 25.48 \$ \$ 33.75 \$	177.70 \$0 40.50 \$0 40.50 \$0		7.0 1.2
Men's Staff Restroom Corridor 170	11 T 28 R F 2 (ELE) 18 1T 32 R F 2 (ELE)	1100/1 F42LL F42LL	60	0.7	SW 3120 SW 6240 SW 2600	4,1			F 26 38 R LED ft LED Tube	CFQ26/1-L RTLED38 200732x2	38	0.4 0.5	SW	3,120 6,240 2,600	2,608 1,404	228 1,510 1,404		\$ 205.52 \$ \$ 214.86 \$	2,598.75 \$0		1.2 12.6 14.9
Guidance Office Guidance Office Copy Room	19 1T 32 RF 2 (ELE) 2 T 28 R F 2 (ELE)	F42LL F42LL	60	1.1	SW 2600	2,8 2,9	64 19	4 ft	ft LED Tube 38 R LED	200732x2 200732x2 RTLED38	30	0.6	SW	2,600 2,600	1,482	1,482	0.6	\$ 226.79 \$ \$ 17.51 \$	3,376.30 \$0 472.50 \$0		14.9
Guidance Office - Office Guidance Office 1	6 1T 32 R F 2 (ELE)	F42LL F42LL	60	0.4	SW 2600 SW 2600 SW 2600	9	36 6 56 1	4 ft	ft LED Tube 38 R LED 38 R LED	200732x2 RTLED38	30 38	0.2	SW SW SW	2,600 2,600	468 99	468	0.2	\$ 71.62 \$ \$ 8.75 \$	1,066.20 \$0		
Guidance Office 2 Guidance Office 3	1 T 28 R F 2 (ELE) 1 T 28 R F 2 (ELE) 1 T 28 R F 2 (ELE)	F42LL F42LL	60 60	0.1 0.1	SW 2600 SW 2600	1	56 1 56 1		38 R LED 38 R LED	RTLED38 RTLED38	38 38	0.0	SW SW SW	2,600 2,600	99 99	57 57 57		\$ 8.75 \$ \$ 8.75 \$	236.25 \$0 236.25 \$0		27.0 27.0 27.0
Guidance Office 4 Guidance Office 5	1 T 28 R F 2 (ELE) 1 T 28 R F 2 (ELE)	F42LL F42LL	60 60	0.1 0.1	SW 2600 SW 2600	1	56 1 56 1	T 3	38 R LED 38 R LED	RTLED38 RTLED38	38 38	0.0	SW	2,600 2,600	99 99	57 57	0.0	\$ 8.75 \$ \$ 8.75 \$	236.25 \$0 236.25 \$0		27.0 27.0
Guidance Office 6 Guidance Office 7	1 T 28 R F 2 (ELE) 1 T 28 R F 2 (ELE)	F42LL F42LL	60 60	0.1 0.1	SW 2600 SW 2600	1	56 1 56 1	T 3	38 R LED 38 R LED	RTLED38 RTLED38	38 38	0.0	SW SW	2,600 2,600	99 99	57 57 57		\$ 8.75 \$ \$ 8.75 \$	236.25 \$0 236.25 \$0		27.0 27.0
Guidance Office 8 Guidance Office 9	1 T 28 R F 2 (ELE) 1 T 28 R F 2 (ELE)	F42LL F42LL	60 60	0.1	SW 2600 SW 2600	1	56 1 56 1	T 3	38 R LED 38 R LED	RTLED38 RTLED38	38	0.0	SW	2,600 2,600	99	57	0.0	\$ 8.75 \$ \$ 8.75 \$	236.25 \$0 236.25 \$0		27.0 27.0 47.9
Guidance Office - Conference Room Main Entrance Main Entrance	2 T 28 R F 2 (ELE) 130 1T 32 R F 1 6 O CF 26	F42LL F41LL CFQ26/1-L	60 32	0.1 4.2 0.2	SW 1200 SW 6240 SW 6240	25,9 1.0	44 2 58 130	4 ft	38 R LED ft LED Tube CF 26	RTLED38 200732x1 CFQ26/1-L	38 15	2.0	SW SW SW	1,200 6,240 6,240	12,168 1,011	53 13,790		\$ 9.87 \$ \$ 1,876.82 \$	472.50 \$0 18,876.00 \$0		47.9 10.1
Main Entrance Main Entrance Display Case Auditorium	12 S 30 C F 1 (MAG) 22 W 28 C F 2 (ELE)	F31SS F42LL	46 60	0.2 0.6 1.3	SW 6240 SW 6240 SW 2600	3,4 3,4	44 12	S 2	25 C F 1 ft LED Tube	F31ILL 200732x2	26	0.2 0.3 0.7	SW SW	6,240 6,240 2,600	1,947	1,498 1,716	0.2	\$ 203.82 \$ \$ 262.60 \$	1,701.00 \$0 4,811.40 \$0		8.3 18.3
Auditorium	111 W 28 C F 2 (ELE) 12 S 28 P F 1 (ELE)	F42LL F41SSILL	60 26	6.7 0.3	SW 2600 SW 2600	17,3		4 ft	ft LED Tube ft LED Tube	200732x2 200732x2 200732x1	30	3.3 0.2	SW SW	2,600 2,600	8,658 468	8,658 343	3.3		24,275.70 \$0		18.3 26.8
Stage Stage Right Stage Left	2 W 28 C F 2 (ELE) 2 W 28 C F 2 (ELE)	F42LL F42LL	60	0.1	SW 520 SW 520		62 2 62 2	4 ft	ft LED Tube ft LED Tube	200732x2 200732x2	30	0.1	SW	520 520	31	31 31	0.1	\$ 8.40 \$ \$ 8.40 \$	437.40 \$0 437.40 \$0		52.1 52.1
Corridor (Outside Auditorium) Gymnasium	20 1T 32 R F 2 (ELE) 25 T 54 W F 3 (ELE) (T-5)	F42LL F43GHL	60 177	1.2 4.4	SW 6240 SW 2600	7,4 11,5	05 25	T 5	ft LED Tube 54 W F 3 (ELE) (T-5)	200732x2 F43GHL	30 177	0.6 4.4	SW SW	6,240 2,600	3,744 11,505	3,744	0.0	s - s	3,554.00 \$0 - \$0		7.0
Stairwell Cafeteria	9 1T 32 R F 2 (ELE) 110 T 28 R F 2 (ELE)	F42LL F42LL	60 60	0.5 6.6	SW 6240 SW 2000	3,3 13,2 2,1		T 3	ft LED Tube 38 R LED	200732x2 RTLED38	30 38	0.3 4.2	SW SW	6,240 2,000	1,685 8,360	1,685 4,840 1,092		\$ 782.82 \$	1,599.30 \$0 25,987.50 \$0		7.0 33.2 14.9
Parent Survey Kitchen Dishwasher Room	14	F42LL F42LL	60 60	0.8	SW 2600 SW 2000 SW 2000	2,1 1,4 6,7		4 ft	ft LED Tube ft LED Tube ft LED Tube	200732x2 200732x2	30	0.4	SW SW SW	2,600 2,000	1,092 720	1,092 720 3,360	0.4	\$ 167.11 \$	2,487.80 \$0 2,132.40 \$0 9,951.20 \$0		14.9 18.3 18.3
Kitchen Basement (Under Kitchen)	56 1T 32 R F 2 (ELE) 4 W 34 F 4 (ELE) 1'x8' 5 W 34 F 4 (FIF) 1'x8'	F42LL F44ILL F44II I	60 112 112	3.4 0.4 0.6	SW 2000 SW 6240 SW 520	6,7 2,7		4 ft	ft LED Tube 74 R LED 74 R LED	200732x2 RTLED50	50	1.7 0.2 0.3	SW SW SW	2,000 6,240 520	3,360 1,248	3,360 1,548 161	0.2	\$ 543.45 \$ \$ 210.61 \$ \$ 43.39 \$			18.3 4.5 27.2
Pantry Locker Room Locker Room	5 W 34 F 4 (ELE) 1'X8' 2 S 28 P F 1 (ELE) 2 S 28 P F 1 (ELE)	F44ILL F41SSILL F41SSILL	26 26	0.6 0.1	SW 520 SW 2600 SW 2600	1	35 2 35 2	4 ft	ft LED Tube	RTLED50 200732x1 200732x1	15	0.3 0.0	SW SW SW	520 2,600 2,600	130 78	161 57 57	0.0	\$ 43.39 \$ \$ 8.75 \$ \$ 8.75 \$	234.40 \$0		27.2 26.8 26.8
Corridor A 1 Starway 22	2	F43SSILL F43SSILL F42LL	72 60	1.0	SW 6240 SW 6240	6,2 5,2	90 14 42 14	T 5	ft LED Tube 59 R LED ft LED Tube	RTLED38	38	0.5 0.4	SW	6,240 6,240	3,320 2,621	2,970 2,621	0.5	\$ 404.24 \$ \$ 356.68 \$	3,307.50 \$0 2,487.80 \$0		8.2 7.0
Basement Storage Child Study	15 S 32 C F 2 (ELE) 18 1T 32 C F 2 (ELE)	F42LL F42ILL	60 59	0.9 1.1	SW 520 SW 2600		68 15	4 ft	ft LED Tube	200732x2 200732x2 200732x2	30 30	0.5 0.5	SW	520 2,600	234 1,404	234 1,357	0.5 0.5	\$ 62.98 \$ \$ 207.69 \$	2,665.50 \$0 3,936.60 \$0		42.3 19.0
Child Study Office Child Study Office	6 1T 32 C F 2 (ELE) 6 1T 32 C F 2 (ELE) 9 1T 32 R F 2 (ELE)	F42ILL F42ILL	59 59	0.4	SW 2600 SW 2600	9	20 6	4 ft 4 ft	ft LED Tube ft LED Tube	200732x2 200732x2	30	0.2 0.2	SW SW	2,600 2,600	468 468	452 452	0.2	\$ 69.23 \$ \$ 69.23 \$	1,312.20 \$0 1,312.20 \$0		19.0 19.0
Corridor Detention Room	30 S 28 P F 1 (ELE)	F42LL F41SSILL	60 26	0.5 0.8	SW 6240 SW 2600	3,3 2,0	28 30	4 ft	ft LED Tube ft LED Tube	200732x2 200732x1	30 15	0.3 0.5	SW SW	6,240 2,600	1,685 1,170	1,685 858	0.3	\$ 229.29 \$ \$ 131.30 \$	1,599.30 \$0 3,516.00 \$0		7.0 26.8
101 Athletic Office	19 W 34 F 4 (ELE) 1'x8' 6 W 34 F 4 (ELE) 1'x8'	F44ILL F44ILL	112 112	2.1 0.7	SW 2600 SW 2600	5,5 1,7	47 6	T 7	74 R LED 74 R LED	RTLED50 RTLED50	50	1.0 0.3	SW	2,600 2,600	2,470 780	3,063 967	0.4	\$ 148.01 \$			9.6 9.6
Athletic Office Auto Shop	2 S 28 P F 1 (ELE) 27 W 34 F 4 (ELE) 1'x8'	F41SSILL F44ILL	26 112	0.1 3.0	SW 2600 SW 2600	7,8	62 27	T 7	ft LED Tube 74 R LED	200732x1 RTLED50	15 50	0.0	SW	2,600 2,600	78 3,510	57 4,352	1.7		6,378.75 \$0		26.8 9.6
Auto Shop 209 207	8 S 32 C F 2 (ELE) 4 T 32 R F 4 (ELE)	F42LL F44ILL	60 112	0.5	SW 2600 SW 2600	1,2	65 4	T 7	ft LED Tube 74 R LED	200732x2 RTLED50	30 50	0.2	SW	2,600 2,600	624 520	624 645	0.2	\$ 98.67 \$	1,421.60 \$0 945.00 \$0		14.9 9.6
207 207 Restroom 208	2 T 32 R F 4 (ELE) 1 W 28 C F 2 (ELE) 6 1T 32 R F 2 (ELE)	F44ILL F42LL F42LI	112 60 60	0.2 0.1 0.4	SW 2600 SW 3120 SW 2600	1	82 2 87 1 36 6	4 ft	74 R LED ft LED Tube ft LED Tube	RTLED50 200732x2 200732x2	30	0.1 0.0 0.2	SW SW SW	2,600 3,120 2,600	260 94 468	322 94 468	0.0	\$ 49.34 \$ \$ 13.87 \$ \$ 71.62 \$	472.50 \$0 218.70 \$0 1.066.20 \$0		9.6 15.8 14.9
208 Corridor D 261	6 11 32 R F 2 (ELE) 20 1T 32 R F 2 (ELE) 30 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60	1.2 1.8	SW 2600 SW 6240 SW 2600	7,4	88 20	4 ft	ft LED Tube ft LED Tube ft LED Tube	200732x2 200732x2 200732x2	30	0.2 0.6 0.9	SW SW SW	6,240 2,600	3,744 2,340	3,744 2,340	0.6	\$ 509.54 \$	3,554.00 \$0 5,331.00 \$0		7.0 14.9
264 270	60 1T 32 R F 2 (ELE) 18 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60	3.6 1.1	SW 2600 SW 2600	9,3	60 60	4 ft	It LED Tube It LED Tube It LED Tube	200732x2 200732x2 200732x2	30 30	1.8 0.5	SW	2,600 2,600 2,600	4,680 1,404	4,680 1,404	1.8	\$ 716.18 \$	10,662.00 \$0 3,198.60 \$0		14.9 14.9
265 269	48 1T 32 R F 2 (ELE) 18 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	2.9	SW 2600 SW 2600	7,4	88 48 08 18		ft LED Tube ft LED Tube		30	1.4 0.5	SW	2,600 2,600	3,744 1,404	3,744 1,404	1.4		8,529.60 \$0 3,198.60 \$0		14.9 14.9 14.9
267 - Health Office 267 - Health Office	11 1T 32 R F 2 (ELE) 6 T28 R F 2 (ELE) 9 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60	0.7	SW 2600 SW 2600	1,7	16 11	4 ft	ft LED Tube 38 R LED ft LED Tube	200732x2 200732x2 RTLED38 200732x2	30	0.3	SW SW SW	2,600 2,600 2,600	858	858 343 702	0.3	\$ 131.30 \$	1,954.70 \$0 1,417.50 \$0 1,599.30 \$0		14.9 27.0 14.9

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				EXISTING COND	ITIONS							RETROFIT (CONDITIONS							COST & SAVING	SS ANALYSIS		
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixture	s Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual \$ Saved	NJ Smart Retrofit Cost Lighting Inc		Simple F
Uniq	que description of the location - Room number/Room name: Floor number (if applicable)	before the retrofit	40 R F(U) = 2'x2' Troff 40 w Recess. Floor lamps U shape		Value from Table of Standard Fixture Wattages	(Watts/Fixt) * (Fixt No.)	control device	Estimated daily hours for the usage group	(kW/space) * (Annual Hours)	No. of fixtures after the retrofit	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 contro device	Estimated annual hours for the usage group	(kW/space) * (Annual Hours)		(Original Annual kW) - (Retrofit Annual kW)	(\$/kWh)	Cost for renovations to lighting system Prescriptive Lighting Measures	Length of time for renovations cost to be recovered	Length o renovatio be reco
	266 - Teachers Lounge	14	1T 32 R F 2 (ELE)	F42LL	60	0.8		2600	2,184	1 14	4 ft LED Tube	200732x2	30	0.4	SW	2,600	1,092	1,092	0.4	\$ 167.11		14.9	
	266 - Teachers Lounge Women's Restroon	1	S 17 C F 1(ELE)	F21ILL	20	0.0	SW	3120	62	2 1	2 ft LED Tube	200714x2	16	0.0	SW	3,120	50	12	0.0	\$ 1.85	\$ 157.70 \$0	85.3	
	266 - Teachers Lounge Men's Restroon	1	S 17 C F 1(ELE)	F21ILL	20	0.0	SW	3120	62	2 1	2 ft LED Tube	200714x2	16	0.0	SW	3,120	50		0.0	\$ 1.85		85.3	
	Boy's Restroom	5	1T 32 R F 2 (ELE)	F42LL	60	0.3	SW	3120	936	5	4 ft LED Tube	200732x2	30	0.2	SW	3,120	468	468		\$ 69.35	\$ 888.50 \$0	12.8	
	Girl's Restroom	5	1T 32 R F 2 (ELE)	F42LL	60	0.3	SW	3120	936		4 ft LED Tube	200732x2	30	0.2	SW	3,120	468	468		\$ 69.35	\$ 888.50 \$0	12.8	
	Corridor A 2	40	T 32 R F 3 (ELE)	F43SSILL	72	2.9	SW	6240	17,971		T 59 R LED	RTLED38	38	1.5	SW	6,240	9,485	8,486		\$ 1,154.97		8.2	
	210 - Office	4	W 28 C F 2 (ELE)	F42LL	60	0.2	SW	2600	624		4 ft LED Tube	200732x2	30	0.1	SW	2,600	312	312		\$ 47.75		18.3	
	210 - Office Storage 210 - Office Storage	2	W 28 C F 2 (ELE)	F42LL	60	0.1	SW	520	62		4 ft LED Tube	200732x2	30	0.1	SW	520	31	31		\$ 8.40		52.1	+
	210 - Office Storage 210 - Office Conference Room	2	W 28 C F 2 (ELE)	F42LL F42LL	60	0.1	SW	520	62 288		4 ft LED Tube	200732x2	30	0.1	SW	520	31 144	31 144	0.1	\$ 8.40 \$ 26.91		52.1	+
_	210 - Office Conference Room 213A	4	W 28 C F 2 (ELE)			0.2		1200			4 ft LED Tube	200732x2	30			1,200		390				32.5	
_	213A 213	36	W 28 C F 2 (ELE) W 32 P F 2 (ELE)	F42LL F42LL	60	0.3 2.2	SW	2600	780 5.616		4 ft LED Tube	200732x2 200732x2	30	0.2 1.1	SW	2,600	390 2.808	2.808		\$ 59.68 \$ 429.71	\$ 1,093.50 \$0 \$ 7.873.20 \$0	18.3 18.3	_
_	214A	36 15	W 32 P F 2 (ELE)	F42LL F42LL	60	0.9	SW	2600 2600	2.340		4 ft LED Tube	200732X2 200732X2	30	0.5	SW	2,600	1,170	1,170		\$ 179.05		18.3	_
_	Media Center	64	1B 32 P F 2 (ELE)	F42LL	60	3.8	SW	2600	9,984		4 ft LED Tube	200732x2 200732x2	30	1.9	SW	2,600	4,992	4,992		\$ 763.93		18.3	+
-	Media Centei	90	1T 32 R F 2 (ELE)	F42LL	60	5.4	SW	2600	14.040		4 ft LED Tube	200732X2 200732X2	30	2.7	SW	2,600	7,020	7.020		\$ 1.074.28		14.9	+
_	Media Center Office	30	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2600	312		4 ft LED Tube	200732X2 200732X2	30	0.1	SW	2,600	156	156		\$ 23.87		14.9	_
-	214B	5	W 28 C F 2 (ELE)	F42LL	60	0.3	SW	2600	780		4 ft LED Tube	200732X2 200732X2	30	0.1	SW	2,600	390	390		\$ 59.68		18.3	+
_	215	19	1T 32 R F 1	F41LI	32	0.6	SW	2600	1.498		4 ft LED Tube	200732x2	15	0.2	SW	2,600	702	796		\$ 121.75		21.5	_
	216	24	1T 32 R F 1	F41LL	32	0.8	SW	2600	1,490		4 ft LED Tube	200732X1	15	0.3	SW	2,600	936	1.061		\$ 162.34		21.5	_
_	217	18	1T 32 R F 1	F41LL	32	0.6	SW	2600	1,337		4 ft LED Tube	200732X1	15	0.4	SW	2,600	702	796		\$ 121.75		21.5	_
_	219	18	1T 32 R F 1	F41LL	32	0.6	SW	2600	1,498		4 ft LED Tube	200732x1	15	0.3	SW	2,600	702	796		\$ 121.75	\$ 2,613.60 \$0	21.5	+
	220	20	1T 32 R F 1	F41LL	32	0.6	SW	2600	1,664		4 ft LED Tube	200732x1	15	0.3	SW	2,600	780	884		\$ 135.28		21.5	+
_	222A/B	36	1T 32 R F 1	F41LL	32	1.2	SW	2600	2 995		4 ft LED Tube	200732x1	15	0.5	SW	2,600	1,404	1.591		\$ 243.50	\$ 5,227.20 \$0	21.5	+
	223/221	30	1T 32 R F 1	F41LL	32	1.0	SW	2600	2.496	30	4 ft LED Tube	200732x1	15	0.5	SW	2,600	1.170	1,326	0.5	\$ 202.92		21.5	_
	201	15	1T 32 R F 1	F41LL	32	0.5	SW	2600	1,248		4 ft LED Tube	200732x1	15	0.2	SW	2,600	585	663		\$ 101.46		21.5	+
	202	18	1T 32 R F 1	F41LL	32	0.6	SW	2600	1.498		4 ft LED Tube	200732x1	15	0.3	SW	2,600	702	796		\$ 121.75		21.5	+
	203	18	1T 32 R F 1	F41LL	32	0.6	SW	2600	1.498	3 18	4 ft LED Tube	200732x1	15	0.3	SW	2,600	702	796	0.3	\$ 121.75	\$ 2,613.60 \$0	21.5	
	205	18	1T 32 R F 1	F41LL	32	0.6	SW	2600	1,498	3 18	4 ft LED Tube	200732x1	15	0.3	SW	2,600	702	796	0.3	\$ 121.75		21.5	
	206	18	1T 32 R F 1	F41LL	32	0.6	SW	2600	1,498	3 18	4 ft LED Tube	200732x1	15	0.3	SW	2,600	702	796	0.3	\$ 121.75	\$ 2,613.60 \$0	21.5	-
	207A	15	1T 32 R F 1	F41LL	32	0.5	SW	2600	1,248	3 15	4 ft LED Tube	200732x1	15	0.2	SW	2,600	585	663	0.3	\$ 101.46	\$ 2,178.00 \$0	21.5	_
	208B	15	1T 32 R F 1	F41LL	32	0.5	SW	2600	1,248	15	4 ft LED Tube	200732x1	15	0.2	SW	2,600	585	663		\$ 101.46	\$ 2,178.00 \$0	21.5	
	Corridor C 2	7	1T 32 R F 2 (ELE)	F42LL	60	0.4	SW	6240	2,621		4 ft LED Tube	200732x2	30	0.2	SW	6,240	1,310	1,310		\$ 178.34		7.0	
	Boy's Restroom	5	S 28 P F 1 (ELE)	F41SSILL	26	0.1	SW	3120	406	5	4 ft LED Tube	200732x1	15	0.1	SW	3,120	234	172		\$ 25.43		23.0	
	Girl's Restroom	5	S 28 P F 1 (ELE)	F41SSILL	26	0.1	SW	3120	406		4 ft LED Tube	200732x1	15	0.1	SW	3,120	234	172		\$ 25.43		23.0	
ĺ	Corridor C 2	6	1T 32 R F 2 (ELE)	F42LL	60	0.4	SW	6240	2,246		4 ft LED Tube	200732x2	30	0.2	SW	6,240	1,123	1,123		\$ 152.86		7.0	
	Corridor C 2	4	T 32 R F 3 (ELE)	F43SSILL	72	0.3	SW	6240	1,797		T 59 R LED	RTLED38	38	0.2	SW	6,240	948	849		\$ 115.50		8.2	
	215	10	T 32 R F 3 (ELE)	F43SSILL	72	0.7	SW	2600	1,872		T 59 R LED	RTLED38	38	0.4	SW	2,600	988	884		\$ 135.28	\$ 2,362.50 \$0	17.5	_
	282-B Gymnasium	18	T 54 W F 3 (ELE) (T-5)	F43GHL	177	3.2	SW	2600	8,284		T 54 W F 3 (ELE) (T-5)	F43GHL	177	3.2	SW	2,600	8,284		0.0	\$ -	\$ - \$0		
	281-A	10	T 32 R F 3 (ELE)	F43SSILL	72	0.7	SW	2600	1,872		T 59 R LED	RTLED38	38	0.4	SW	2,600	988	884		\$ 135.28		17.5	-
	Boys Locker Room	20	1T 32 R F 2 (ELE)	F42LL	60	1.2	SW	2600	3,120		4 ft LED Tube	200732x2	30	0.6	SW	2,600	1,560	1,560		\$ 238.73		14.9	-
	Entryway	13	1T 32 R F 2 (ELE)	F42LL	60	0.8	SW	2125	1,658	3 13	4 ft LED Tube	200732x2	30	0.4	SW	2,125	829	829	0.4	\$ 132.20	\$ 2,310.10 \$0	17.5	+
1		3.969			+	213.4	1 	 	619.679	3,969		+	8.202	112.4	+	<u> </u>	325,690	293.988	100.9	\$44.074	\$690.686 \$4.800	$\overline{}$	-
		3,303	<u> </u>	1	-	213.4			013,079	3,909	1	+	0,202	112.4	-			d Savings	100.9	100.9	\$7,619	$-\!\!\!+\!\!\!-\!\!\!\!-$	+
																		Savings	1	100.9 293.988	\$7,619 \$36,455		+

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	Occupancy Sensors			EXISTING COND	DITIONS							RETROFI	T CONDITIONS							COST & SAVIN	GS ANALYSIS			
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixt	ures Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Ho	eurs Annual kWh	Annual kWh Saved	Annual kW Save	d Annual \$ Saved	Retrofit Cost	NJ Smart Start Lighting	With Out	Simple Payb
d Code U	Jnique description of the location - Room number/Room name: Floor number (if applicable)	No. of Fixtures No. of fixtures before the retrofit	Lighting Fixture Code	Code from Table of Standard Fixture Wattages	Value from Table of	(Watts/Fixt) * (Fixt	Pre-inst.	Estimated annual hours for the	(kW/space) * (Annual Hours)		after "Lighting Fixture Code" Example 2T 40 R F(U) = 2'x2' Troff 40 w	Code from Table of Standard Fixture	Value from Table of	(Watts/Fixt) * (Number of	Retrofit contro	Estimated annual hours	(kW/space) *	(Original Annual		(kW Saved) *	Cost for renovations to	Incentive	Length of time for renovations	Length of time
	name. Floor names (it approache)	before the reading		i ixtare trattages	Standard Fixture	,	control device	usage group	(Allindar Frodro)	uio roti oiti	Recess. Floor 2 lamps U shape	Wattages	Standard Fixture	Fixtures)	acviso	for the usage group		Annual kWh)	Annual kW)	(\$1.1111)	lighting system		cost to be recovered	be recovere
LED	UN-240	6	S 32 C F 2 (ELE)	F42LL	Wattages 60	0.4	SW	520	187.2	6	S 32 C F 2 (ELE)	F42LL	Wattages 60	0.4	occ	520	187.2	0.0	0.0	\$0.00	\$128.25	\$20.00		#DIV/0!
LED LED	UN-241 461.5	12	T 32 R F 3 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F43SSILL F42LL	72 60 60	0.3 0.7 0.4	SW SW SW	520 2600 520	149.8 1,872.0 187.2	12	T 32 R F 3 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F43SSILL F42LL F42LL	72 60 60	0.3 0.7 0.4	C-OCC	520 1200 520	149.8 864.0 187.2	1,008.0	0.0	\$0.00 \$124.99	\$128.25 \$270.00 \$128.25	\$20.00 \$35.00 \$20.00	2.2	#DIV/0! 1.9 #DIV/0!
LED	UN-242 462 463	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60	1.1	SW SW	2600 2600	2,808.0 2,808.0	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60	1.1	C-OCC	1820	1,965.6 1,965.6	842.4	0.0	\$104.46 \$104.46	\$270.00 \$270.00	\$35.00 \$35.00	2.6	2.2
LED	403 UN-243 UN-244	6	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60	0.4	SW SW	2600 2600 520	936.0 62.4	6	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60	0.4	C-0CC	1820 520	655.2 62.4	280.8	0.0	\$34.82 \$0.00	\$270.00 \$270.00 \$128.25	\$35.00 \$35.00 \$20.00	7.8	6.7 #DIV/01
LED	UN-245 UN-246	2 6	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.1	SW SW	520 2600	62.4 936.0	2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.1	OCC C-OCC	520 1820	62.4 655.2	0.0 280.8	0.0	\$0.00 \$34.82	\$128.25 \$270.00	\$20.00 \$35.00	7.8	#DIV/0! 6.7
LED	464 465	18 18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.1	SW SW	2600 2600	2,808.0 2,808.0	18 18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.1	C-OCC	1820 1820	1,965.6 1,965.6	842.4 842.4	0.0	\$104.46 \$104.46	\$270.00 \$270.00	\$35.00 \$35.00	2.6 2.6	2.2
LED	466 UN-249	14 5	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0.8	SW SW	2600 2600	2,184.0 780.0	14 5	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.8	C-OCC	3000 1820	2,520.0 546.0	-336.0 234.0	0.0	-\$41.66 \$29.02	\$270.00 \$270.00	\$35.00 \$35.00	9.3	-5.6 8.1
LED LED	467 468 UN-251	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60	1.1 1.1 0.4	SW SW SW	2600 2600 520	2,808.0 2,808.0 187.2	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60	1.1 1.1 0.4	C-0CC	1820 1820 520	1,965.6 1,965.6 187.2	842.4 842.4	0.0	\$104.46 \$104.46	\$270.00 \$270.00 \$128.25	\$35.00 \$35.00 \$20.00	2.6	2.2 2.2 #DIV/0!
LED LED	UN-252 UN-253	6	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0.4	SW SW	520 520	187.2	6	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0.4	OCC	520 520	187.2	0.0	0.0	\$0.00	\$128.25 \$128.25	\$20.00 \$20.00 \$20.00		#DIV/0 #DIV/0
LED LED	UN-254 489	2 18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.1 1.1	SW SW	2600 2600	312.0 2,808.0	2 18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.1 1.1	C-OCC	1820 1820	218.4 1,965.6	93.6 842.4	0.0	\$11.61 \$104.46	\$270.00 \$270.00	\$35.00 \$35.00	23.3 2.6	20.2
LED LED	UN-255 UN-257	5 5	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.3	SW SW	520 520	156.0 156.0	5 5	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.3 0.3	000	520 520	156.0 156.0	0.0	0.0	\$0.00 \$0.00	\$128.25 \$128.25	\$20.00 \$20.00		#DIV/0 #DIV/0
LED	UN-258 UN-247	1	1T 32 R F 2 (ELE) S 17 C F 1(ELE) S 17 C F 1(ELE)	F42LL F21ILL F21ILL	60 20	0.1	SW SW SW	780 3120	46.8 62.4 62.4	1	1T 32 R F 2 (ELE) S 17 C F 1(ELE) S 17 C F 1(ELE)	F42LL F21ILL F21ILL	60 20	0.1	NONE NONE	780 3120	46.8 62.4 62.4	0.0	0.0	\$0.00 \$0.00	\$0.00	\$0.00 \$0.00		#DIV/0 #DIV/0 #DIV/0
OLED PLED	UN-248 461 460	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F21LL F42LL F42LL	60	0.0 1.1	SW SW	3120 2600 2600	2,808.0 2,808.0	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0.0 1.1	C-OCC	3120 1820 1820	1,965.6 1,965.6	842.4 842.4	0.0	\$104.46 \$104.46	\$270.00 \$270.00	\$0.00 \$35.00 \$35.00	2.6 2.6	2.2
LED	459 Corridor D	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.1	SW	2600 6240	2,808.0 4,492.8	18 12	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	1.1	C-OCC NONE	1820 6240	1,965.6	842.4 0.0	0.0	\$104.46 \$0.00	\$270.00 \$0.00	\$35.00 \$0.00	2.6	2.2 #DIV/0
LED	Corridor D 409	12	T 32 R F 3 (ELE) S 28 P F 1 (ELE)	F43SSILL F41SSILL	72 26	0.9	SW SW	6240 2600	5,391.4 676.0	12 10	T 32 R F 3 (ELE) S 28 P F 1 (ELE)	F43SSILL F41SSILL	72 26	0.9	NONE C-OCC	6240 1820	5,391.4 473.2 851.8	0.0 202.8	0.0	\$0.00 \$25.15	\$0.00 \$270.00	\$0.00 \$35.00	10.7	#DIV/0 9.3
LED	410 411	18 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 0.5	SW SW	2600 2600	1,216.8 1,216.8	18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 0.5	C-OCC	1820 1820	851.8	365.0 365.0	0.0	\$45.26 \$45.26 \$45.26	\$270.00 \$270.00	\$35.00 \$35.00	6.0	5.2 5.2
LED LED DLED	412 413 UN-260	18 16	S 28 P F 1 (ELE) S 28 P F 1 (ELE) S 17 C F 1(ELE)	F41SSILL F41SSILL F21ILL	26 26 20	0.5 0.4 0.0	SW SW SW	2600 2600 520	1,216.8 1,081.6 10.4	18 16 1	S 28 P F 1 (ELE) S 28 P F 1 (ELE) S 17 C F 1(ELE)	F41SSILL F41SSILL F21ILL	26 26 20	0.5 0.4 0.0	C-OCC NONE	1820 1820 520	851.8 757.1 10.4	365.0 324.5 0.0	0.0	\$45.26 \$40.24 \$0.00	\$270.00 \$270.00 \$0.00	\$35.00 \$35.00 \$0.00	6.0	5.2 5.8 #DIV/0
LED LED	414-C 415	18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.0 0.5 0.3	SW SW	2600	1,216.8	18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.0 0.5 0.3	C-OCC C-OCC	1820 1820	851.8 567.8	365.0 243.4	0.0	\$45.26 \$30.18	\$270.00 \$270.00	\$35.00 \$35.00	6.0 8.9	5.2 7.8
LED LED	400 (Gym) 407	8 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.2	SW	2600 2600 2600	811.2 540.8 1,216.8 1,014.0	8	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.2 0.5	NONE C-OCC	2600 1820	540.8 851.8	0.0 365.0	0.0	\$0.00 \$45.26 \$37.72	\$0.00 \$270.00	\$0.00 \$35.00	6.0	#DIV/0 5.2
LED LED	408 406	15 22	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.4	SW	2600 2600	1,487,2	15 22	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.4 0.6	C-0CC	1820 1820	709.8 1,041.0	304.2 446.2	0.0	\$55.32	\$270.00 \$270.00	\$35.00 \$35.00	7.2 4.9	6.2 4.2
LED LED	405 UN-273	1	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.6	SW	2600 520	1,622.4 13.5	1	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.6	NONE NONE	1820 520	1,135.7 13.5	486.7 0.0	0.0	\$60.35 \$0.00	\$270.00 \$0.00	\$35.00 \$0.00	4.5	3.9 #DIV/0
.ED .ED	UN-274 UN-275 UN-276	2	S 28 P F 1 (ELE) S 32 C F 2 (ELE) S 32 C F 2 (ELE)	F41SSILL F42LL F42LL	60 60	0.0 0.1 0.4	SW SW	520 520 2600	62.4	2	S 28 P F 1 (ELE) S 32 C F 2 (ELE) S 32 C F 2 (ELE)	F41SSILL F42LL F42LL	60	0.0 0.1 0.4	NONE NONE	520 520	62.4	0.0	0.0	\$0.00 \$0.00 \$62.50	\$0.00 \$0.00 \$128.25	\$0.00 \$0.00 \$20.00	21	#DIV/ #DIV/
ED ED	UN-277 404L	6	S 32 C F 2 (ELE) S 32 C F 2 (ELE)	F42LL F42LL	60 60	0.4	SW	2600 2600 2600	936.0 936.0 936.0	6	S 32 C F 2 (ELE)	F42LL F42LL	60	0.4	OCC C-OCC	1200 3000	432.0 1,080.0	504.0	0.0	\$62.50 -\$17.86	\$128.25 \$270.00	\$20.00 \$35.00	2.1	1.7
ED ED	403C 402	18 18	S 32 C F 2 (ELE) S 32 C F 2 (ELE) S 32 C F 2 (ELE)	F42LL F42LL F42LL	60 60	1.1	SW SW SW	2600 2600 2600 2600	2,808.0 2,808.0	18 18	S 32 C F 2 (ELE) S 32 C F 2 (ELE) S 32 C F 2 (ELE) S 32 C F 2 (ELE)	F42LL F42LL F42LL	60 60	1.1	C-OCC	1820 1820	1,965.6 1,965.6	842.4 842.4	0.0	\$104.46 \$104.46	\$270.00 \$270.00	\$35.00 \$35.00	2.6 2.6	2.2
.ED	401 UN-272	15	S 32 C F 2 (ELE) 1T 32 R F 2 (ELE) S 17 C F 1(ELE)	F42LL	60	0.9	SW	2600 520	2,340.0 62.4	15	S 32 C F 2 (ELE) 1T 32 R F 2 (ELE) S 17 C F 1(ELE)	F42LL	60	0.9 0.1	NONE NONE	1820 520	1,638.0 62.4	702.0	0.0	\$87.05 \$0.00	\$270.00 \$0.00	\$35.00 \$0.00	3.1	2.7 #DIV/
LED .ED	UN-271 UN-270 UN-268	2	1T 32 R F 2 (ELE) S 34 C F 2	F21ILL F42LL F42EE	60 72	0.0	SW SW	520 520 3120	62.4 449.3	2	1T 32 R F 2 (ELE) S 34 C F 2	F21ILL F42LL F42EE	60	0.0 0.1 0.1	NONE NONE	520 520	62.4 292.0	0.0	0.0	\$0.00 \$0.00 \$19.50	\$0.00 \$0.00 \$270.00	\$0.00 \$0.00 \$35.00	13.8	#DIV/ #DIV/
74 31	UN-269 UN-267	1 3	I 50 S 34 C F 2	I50/1 F42EE	50 72	0.1	SW	780 520	39.0 112.3	1 3	150 S 34 C F 2	I50/1 F42EE	50 72	0.1	NONE OCC	780 520	39.0 112.3	0.0	0.0	\$0.00 \$0.00	\$0.00 \$128.25	\$0.00 \$20.00	10.0	#DIV/0
B1 LED	UN-266 425	3 15	S 34 C F 2 S 28 P F 1 (ELE)	F42EE F41SSILL	72 26	0.2	SW SW	520 2600	112.3 1,014.0	3 15	S 34 C F 2 S 28 P F 1 (ELE)	F42EE F41SSILL	72 26	0.2 0.4	000 C-000	520 1820	112.3 709.8	0.0 304.2	0.0	\$0.00 \$37.72	\$128.25 \$270.00	\$20.00 \$35.00	7.2	#DIV/0 6.2
LED LED	423 426 424	18 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL F41SSILL	26 26 26	0.5 0.5 0.4	SW SW SW	2600 2600 2600	1,216.8 1,216.8 1,014.0	18 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL F41SSILL	26 26	0.5 0.5 0.4	C-OCC	1820 1820	851.8 851.8 709.8	365.0 365.0 304.2	0.0	\$45.26 \$45.26 \$37.72	\$270.00 \$270.00 \$270.00	\$35.00 \$35.00 \$35.00	6.0 6.0 7.2	5.2 5.2 6.2
.ED	422 421	15 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.4	SW SW	2600 2600	1,014.0	15 15 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.4	C-OCC C-OCC	1820 1820	709.8 851.8	304.2 365.0	0.0	\$37.72 \$45.26	\$270.00 \$270.00 \$270.00	\$35.00 \$35.00	7.2 6.0	6.2
.ED	420 419	18 6	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 0.2	SW SW	2600 2600	1,216.8	18 6	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 0.2	C-OCC	1820 1820	851.8 283.9	365.0 121.7	0.0	\$45.26 \$15.09	\$270.00 \$270.00	\$35.00 \$35.00	6.0 17.9	5.2 15.6
.ED	418 417	18 12	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5	SW SW	2600 2600	1,216.8 811.2	18 12	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 0.3	C-OCC	1820 1820	851.8 567.8	365.0 243.4	0.0	\$45.26 \$30.18	\$270.00 \$270.00	\$35.00 \$35.00	6.0 8.9	5.2 7.8
ED ED	416 Corridor A Corridor A	15 21 14	S 28 P F 1 (ELE) 1T 32 R F 2 (ELE) T 32 R F 3 (ELE)	F41SSILL F42LL F43SSILL	60	0.4 1.3 1.0	SW SW SW	2600 6240 6240	1,014.0 7,862.4 6,289.9		S 28 P F 1 (ELE) 1T 32 R F 2 (ELE) T 32 R F 3 (ELE)	F41SSILL F42LL F43SSILL	60 72	0.4 1.3 1.0	NONE NONE			0.0	0.0	\$37.72 \$0.00 \$0.00	\$270.00 \$0.00	\$35.00 \$0.00 \$0.00	7.2	6.2 #DIV/ #DIV/
.ED	UN-301 UN-302	2 2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.1	SW	3120	374.4 374.4	2 2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0.1	000	2028 2028	243.4 243.4	131.0 131.0	0.0	\$16.25 \$16.25	\$128.25 \$128.25	\$20.00 \$20.00	7.9 7.9	6.7
.ED	UN-300 UN-299	2 2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.1 0.1	SW SW SW	3120 780 520	93.6 62.4	2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.1 0.1	NONE OCC	780 520	62.4	0.0	0.0	\$0.00 \$0.00	\$0.00 \$128.25	\$0.00 \$20.00		#DIV/
.ED	480 UN-298	26 2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.6 0.1	SW	2600 520	4,056.0 62.4	2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.6 0.1 0.1	OCC OCC	1820 520	2,839.2 62.4	1,216.8	0.0	\$150.88 \$0.00	\$270.00 \$128.25	\$35.00 \$20.00	1.8	1.6 #DIV/
ED ED	UN-297 482B 483	33	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60 60	0.1 2.0 1.7	SW SW	520 2600 2600	62.4 5,148.0 4.524.0	33	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60	2.0	0000	520 1820 1820	62.4 3,603.6 3,166.8	1,544.4 1,357.2	0.0	\$0.00 \$191.51 \$168.29	\$128.25 \$270.00 \$270.00	\$20.00 \$35.00 \$35.00	1.4	#DIV/ 1.2 1.4
ED ED	UN-295 448B	2 25	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL F42LL	60 60	0.1	SW SW SW SW	2600 520 2600 2600	4,524.0 62.4 3,900.0	2 25	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.1 1.5	OCC C-OCC	520 1820	62.4 2,730.0	1,170.0	0.0	\$168.29 \$0.00 \$145.08	\$128.25 \$270.00	\$35.00 \$20.00 \$35.00	1.9	#DIV
ED ED	485B 486B	25 25	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL	60 60	1.5 1.5	SW	2600	3,900.0 3,900.0	25 25	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.5 1.5	C-OCC C-OCC	1820 1820	2,730.0 2,730.0	1,170.0 1,170.0	0.0	\$145.08 \$145.08	\$270.00 \$270.00	\$35.00 \$35.00	1.9 1.9	1.6
ED ED	487 488B 489B	25 32 32	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60 60	1.5 1.9 1.9	SW SW SW	2600 2600 2600	3,900.0 4,992.0 4,992.0	25 32	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60	1.5 1.9	C-OCC	1820 1820	2,730.0 3,494.4 3,494.4	1,170.0 1,497.6 1,497.6	0.0	\$145.08 \$185.70 \$185.70	\$270.00 \$270.00 \$270.00	\$35.00 \$35.00 \$35.00	1.9 1.5 1.5	1.6 1.3 1.3
ED ED	UN-305 UN-304	2 2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL	60	0.1 0.1	SW	2600 520 520	62.4 62.4	2 2	1T 32 R F 2 (FLF)	F42LL	60 60	0.1 0.1	OCC	520 520	62.4	0.0	0.0	\$0.00 \$0.00	\$128.25 \$128.25	\$20.00 \$20.00	1.5	#DIV
ED ED	UN-303 UN-268	2 2	1T 32 R F 2 (ELE)	F42LL F42LL F42LL F42LL	60 60	0.1 0.1	SW SW SW SW	520 520	62.4 62.4	2 2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60	0.1 0.1	OCC OCC	520 520 520	62.4 62.4	0.0	0.0	\$0.00 \$0.00	\$128.25 \$128.25	\$20.00 \$20.00		#DI\ #DI\
D D	Corridor C Corridor C	3 21	1T 32 R F 2 (ELE) T 28 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL	60 60	0.2 1.3	SW	6240 6240 520	1,123.2 7,862.4 561.6	3 21	1T 32 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL	60 60	0.2 1.3	NONE NONE	6240 6240		0.0	0.0	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00		#DI\ #DI\
D D	UN-198 366 367	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60 60	1.1 1.1 1.1	SW SW SW	520 2600 2600	561.6 2,808.0 2,808.0	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60	1.1 1.1	C-OCC	520 1820	561.6 1,965.6 1,965.6	842.4 842.4	0.0	\$0.00 \$104.46 \$104.46	\$128.25 \$270.00 \$270.00	\$20.00 \$35.00 \$35.00	2.6 2.6	#DI\ 2.
D D	368 369	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60	1.1	SW SW	2600 2600 2600	2,808.0 2,808.0	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	1.1	C-OCC	1820 1820	1,965.6 1,965.6	842.4 842.4	0.0	\$104.46 \$104.46	\$270.00 \$270.00 \$270.00	\$35.00 \$35.00 \$35.00	2.6 2.6	2.
ED ED	370 365	18 30	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.1	SW SW	2600 2600	2,808.0 4,680.0	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.1	C-OCC	1820 1820	1,965.6 3,276.0	842.4 1,404.0	0.0	\$104.46 \$174.10	\$270.00 \$270.00	\$35.00 \$35.00	2.6 1.6	2.2
ED ED	UN-192 UN-193	2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.1 0.1	SW SW	520 520	62.4 62.4		1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.1 0.1	OCC	520 520	62.4 62.4	0.0	0.0	\$0.00 \$0.00	\$128.25 \$128.25	\$20.00 \$20.00		#DIV
ED ED	UN-194 UN-195 364	2 2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60 60	0.1 0.1 1.8	SW SW SW	520 520 2600	62.4 62.4 4,680.0	2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60 60	0.1 0.1 1.8	000	520 520 1820	62.4 62.4 3,276.0	0.0 0.0 1.404.0	0.0	\$0.00 \$0.00 \$174.10	\$128.25 \$128.25 \$270.00	\$20.00 \$20.00 \$35.00	1.6	#DIV #DIV
.ED .ED	363 361	36 18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	2.2 1.1	SW SW	2600	5,616.0 2,808.0	36 18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	2.2 1.1	C-OCC	1820 1820	3,931.2 1,965.6	1,684.8 842.4	0.0	\$208.92 \$104.46	\$270.00 \$270.00 \$270.00	\$35.00 \$35.00	1.3	1.
.ED	360 359 (Work Room)	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.1 0.4	SW SW	2600 2600 2600	2,808.0 1,092.0	7	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.1 0.4	C-OCC	1820 1820	1,965.6 764.4	842.4 327.6	0.0	\$104.46 \$40.62	\$270.00 \$270.00	\$35.00 \$35.00	2.6 6.6	2.: 2.: 5.i
.ED	UN-191 UN-190	2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.1 0.1	SW SW	520 520	62.4 62.4	2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.1 0.1	NONE NONE		62.4 62.4	0.0	0.0	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00		#DIV
LED LED	UN-189 UN-188 UN-205	4 4 4	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60 60	0.2 0.2	SW SW SW	520 520 520	124.8 124.8 124.8	4 4	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60 60	0.2 0.2 0.2	000	520 520 520	124.8 124.8	0.0	0.0	\$0.00 \$0.00 \$0.00	\$128.25 \$128.25 \$128.25	\$20.00 \$20.00 \$20.00		#DIV. #DIV.
LED LED	UN-205 UN-204 Corridor D	4 12	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.2 0.2 0.7	SW SW	520 520 6240	124.8 124.8 4,492.8	4 12	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60	0.2 0.2 0.7	OCC NONE	520 6240	124.8	0.0	0.0	\$0.00 \$0.00 \$0.00	\$128.25 \$128.25 \$0.00	\$20.00 \$20.00 \$0.00		#DIV
LED	Corridor D 310	12	T 32 R F 3 (ELE) S 28 P F 1 (ELE)	F43SSILL F41SSILL	72 26	0.9	SW SW	6240 2600 2600	4,492.8 5,391.4 811.2	12	T 32 R F 3 (ELE) S 28 P F 1 (ELE)	F43SSILL F41SSILL	72 26	0.9	NONE C-OCC	6240 1820	5,391.4 567.8	0.0	0.0	\$0.00 \$30.18	\$0.00 \$270.00	\$0.00 \$0.00 \$35.00	8.9	#DIV/ 7.8
ED	311 312A	18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 0.5	SW	2600 2600	1,216.8 1,216.8	18 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 0.5	C-OCC	1820 1820	851.8	365.0 365.0	0.0	\$45.26 \$45.26	\$270.00 \$270.00	\$35.00 \$35.00	6.0 6.0	5.2 5.2

															l l							NJ Smart Start	Simple Paybac	∠k
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Watts per Fixture	kW/Space	Exist Control	Annual Hours		Number of Fixture		Fixture Code	Watts per Fixture	kW/Space	Retrofit Control	Annual Hours	Annual kWh	Annual kWh Saved	Annual kW Saved	Annual \$ Saved	Retrofit Cost	Lighting Incentive	With Out Incentive	Simple F
Uni	nique 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	(Watts/Fixt) * (Fixt No.)		Estimated annual (k hours for the usage group		No. of fixtures aft the retrofit	er "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	(Watts/Fixt) * (Number of Fixtures)	Retrofit control device	Estimated annual hours for the usage	(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	
					Fixture Wattages			usage group			Necess. 11001 2 lamps 0 shape	Wattages	Fixture Wattages	i ixtures)		group		Allitual KWII)	Allifudi KVV)		inglitting system		recovered	20100
	312B 313	18 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 0.5	SW SW	2600 2600 2600	1,216.8 1,216.8 1,216.8	18 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 0.5	C-OCC	1820 1820		365.0 365.0	0.0	\$45.26 \$45.26	\$270.00 \$270.00	\$35.00 \$35.00	6.0 6.0	
	309 307	18 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 0.5	SW	2600	1,216.8	18 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 0.5	C-OCC	1820 1820		365.0 365.0	0.0	\$45.26 \$45.26	\$270.00 \$270.00	\$35.00 \$35.00	6.0 6.0	_
	308 306 305	18 6	S 28 P F 1 (ELE) T 28 R F 2 (ELE) S 28 P F 1 (ELE)	F41SSILL F42LL F41SSILL	60 26	0.5 0.4 0.4	SW	2600 2600 2600	1,216.8 936.0 1,014.0	18 6	S 28 P F 1 (ELE) T 28 R F 2 (ELE) S 28 P F 1 (ELE)	F41SSILL F42LL F41SSILL	60 26	0.5 0.4 0.4	000	1820 1200	432.0	365.0 504.0 304.2	0.0	\$45.26 \$62.50 \$37.72	\$270.00 \$128.25 \$270.00	\$20.00 \$20.00	6.0 2.1	
	304 303	6	W 28 C F 2 (ELE) S 28 P F 1 (ELE)	F42LL F41SSILL	60	0.4	SW	2600 2600 2600	936.0 1,216.8	6	W 28 C F 2 (ELE) S 28 P F 1 (ELE)	F42LL F41SSILL	60	0.4	000	1200 1820		504.0 365.0	0.0	\$62.50 \$45.26	\$128.25 \$270.00	\$20.00 \$35.00	2.1	#
	302 301	18 15	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 0.4	SW	2600 2600	1,216.8	18 15	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 0.4	C-OCC	1820 1820	851.8 709.8	365.0 304.2	0.0	\$45.26 \$37.72	\$270.00 \$270.00	\$35.00 \$35.00	6.0 7.2	4
	326 323	18 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 0.5	SW	2600 2600	1,216.8 1,216.8	18 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 0.5	C-OCC	1820 1820	851.8	365.0 365.0		\$45.26 \$45.26	\$270.00 \$270.00	\$35.00 \$35.00	6.0	
	324 325 322	18 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL F41SSILL	26 26	0.5 0.5 0.4	SW SW SW	2600 2600 2600	1,216.8 1,216.8 1,014.0	18 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL F41SSILL	26 26	0.5 0.5	C-OCC	1820 1820	851.8	365.0 365.0 304.2	0.0	\$45.26 \$45.26	\$270.00 \$270.00 \$270.00	\$35.00 \$35.00 \$35.00	6.0	_
	321 320	18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5	SW	2600 2600 2600	1,216.8 1,216.8	18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5	C-OCC	1820 1820		365.0 365.0	0.0	\$45.26 \$45.26	\$270.00 \$270.00 \$270.00	\$35.00 \$35.00 \$35.00	6.0	#
	319 318	6 12	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.2 0.3	SW SW	2600 2600	405.6 811.2	6 12	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.2 0.3	OCC C-OCC	1200 1820		218.4 243.4	0.0	\$27.08 \$30.18	\$128.25 \$270.00	\$20.00 \$35.00	4.7 8.9	
	317 316	12 24	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.3 0.6	SW	2600 2600	811.2 1,622.4	12 24	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.3 0.6	C-OCC	1820 1820	1,135.7	243.4 486.7	0.0	\$30.18 \$60.35	\$270.00 \$270.00	\$35.00 \$35.00	8.9 4.5	
	315 314 Corridor A		S 28 P F 1 (ELE) S 28 P F 1 (ELE) T 32 R F 3 (ELE)	F41SSILL F41SSILL F43SSILL	26 26	0.6 0.5	SW	2600 2600	1,622.4 1,216.8	24 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE) T 32 R F 3 (ELE)	F41SSILL F41SSILL F43SSILL	26 26	0.6 0.5	C-OCC C-OCC NONE	1820 1820	851.8	486.7 365.0		\$60.35 \$45.26	\$270.00 \$270.00	\$35.00 \$35.00	4.5 6.0	+
	UN-226 UN-227	3	1 32 R F 3 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F43SSILL F42LL F42LL	60	0.2	SW	6240 3120 3120	20,666.9 561.6 561.6	3	17 32 R F 3 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F43SSILL F42LL F42LL	60	0.2	C-OCC	6240 2028 2028	20,666.9 365.0 365.0	196.6 196.6	0.0	\$0.00 \$24.37 \$24.37	\$270.00 \$270.00	\$0.00 \$35.00 \$35.00	11.1	
	380 381B	27	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.6 2.9	SW SW	2600 2600	4,212.0 7,488.0	27 48	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.6 2.9	C-OCC	1820 1820	2,948.4 5,241.6	1,263.6 2,246.4	0.0	\$156.69 \$278.55	\$270.00 \$270.00	\$35.00 \$35.00	1.7	-
	UN-230 UN-231	2	T 28 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL	60 60	0.1 0.1	SW SW	520 520	62.4 62.4		T 28 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL	60 60	0.1 0.1	NONE	520	62.4 62.4	0.0	0.0	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	$\pm \overline{-}$	
	UN-232 UN-233 UN-234		T 28 R F 2 (ELE) T 28 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL	60 60	0.1 0.1	SW	520 520	62.4 62.4	2 2	T 28 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL F42LL	60 60	0.1 0.1	NONE NONE NONE	520	62.4 62.4	0.0	0.0	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00		
	New Storage (Music) 382		T 28 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60 60	0.1 0.1 1.3	SW SW SW	520 520 2600	62.4 62.4 3,276.0	2 21	T 28 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60 60	0.1 0.1 1.3	NONE NONE C-OCC		62.4 62.4 2,293.2	0.0 0.0 982.8	0.0	\$0.00 \$0.00 \$121.87	\$0.00 \$0.00 \$270.00	\$0.00 \$0.00 \$35.00	22	
	383B 384	14 6	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.8 0.4	SW	2600 2600	2,184.0 936.0	14	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.8 0.4	C-OCC OCC	1820 1200	1,528.8 432.0	655.2 504.0		\$81.24 \$62.50	\$270.00 \$128.25	\$35.00 \$20.00	3.3 2.1	
	Corridor C Gym Connect	3	T 28 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.2 0.2	SW SW	2600 2600	3,120.0 468.0	20 3	T 28 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.2 0.2	C-OCC	1820 2000	360.0	936.0 108.0	0.0	\$116.06 \$13.39	\$270.00 \$270.00	\$35.00 \$35.00	2.3 20.2	
	Gym Lobby Gym Lobby Gym Office	15	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.2	SW	2600 2600	624.0 2,340.0	4 15	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.2 0.9	C-OCC	2000 1820	1,638.0	144.0 702.0	0.0	\$17.86 \$87.05	\$270.00 \$270.00	\$35.00 \$35.00	15.1 3.1	_
	Gym Boys Locker Room	32	1T 32 R F 2 (ELE) High Bay MH 200 35 Feet High 1T 32 R F 2 (ELE)	F42LL MH200/1 F42LL	60 232 60	7.4 2.4	SW SW SW	2600 2600 2600	936.0 19,302.4 6,240.0	32 40	1T 32 R F 2 (ELE) High Bay MH 200 35 Feet High 1T 32 R F 2 (ELE)	F42LL MH200/1 F42LL	60 232 60	7.4 2.4	NONE NONE	2600 2600 2600	720.0 19,302.4 6,240.0	216.0 0.0 0.0	0.0	\$26.78 \$0.00 \$0.00	\$270.00 \$0.00 \$0.00	\$35.00 \$0.00 \$0.00	10.1	#
	Girl's Locker Room Team Room Boys		1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	2.4	SW	2600 2600	6,240.0 2,184.0	40 14	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	2.4	NONE NONE	2600 2600	6,240.0 2,184.0	0.0		\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	1	
	Team Room Girls Main Office	14	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.8 1.9	SW SW	2600 2600	2,184.0 4,992.0	14 32	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.8 1.9	NONE C-OCC		2,184.0 2,304.0	0.0 2,688.0	0.0	\$0.00 \$333.31	\$0.00 \$270.00	\$0.00 \$35.00	0.8	
	Main Office Side Room Main Office Side Room		T 28 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.2 0.1	SW	2600 2600	624.0 156.0	4 1	T 28 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.2 0.1	00C	1200 1200	72.0	336.0 84.0	0.0	\$41.66 \$10.42	\$128.25 \$128.25	\$20.00 \$20.00	3.1 12.3	
	Main Office Kitchenette Maain Office Storage Principal's Office	1	T 28 R F 2 (ELE) T 32 R F 3 (ELE) T 28 R F 2 (ELE)	F42LL F43SSILL F42LL	60 72 60	0.2 0.1 0.2	SW SW SW	1700 520 2600	408.0 37.4 624.0	1	T 28 R F 2 (ELE) T 32 R F 3 (ELE) T 28 R F 2 (ELE)	F42LL F43SSILL F42LL	60 72 60	0.2 0.1 0.2	000	1190 520	37.4	122.4 0.0 336.0	0.0	\$15.18 \$0.00 \$41.66	\$128.25 \$128.25 \$270.00	\$20.00 \$20.00 \$35.00	6.5	\pm
	Main Office Corridor Office		17 32 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL F42LL	60	0.2 0.2 0.2	SW	2600 2600 2600	624.0 624.0	4 4	1T 32 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL F42LL	60	0.2 0.2 0.2	NONE C-OCC	2600 1200	624.0 288.0	0.0	0.0	\$0.00 \$41.66	\$0.00 \$270.00	\$0.00 \$35.00	6.5	#
	Office Office Storage	9	1T 32 R F 2 (ELE) S 32 C F 2 (ELE)	F42LL F42LL	60 60	0.5 0.1	SW SW	2600 520	1,404.0 31.2	9 1	1T 32 R F 2 (ELE) S 32 C F 2 (ELE)	F42LL F42LL	60 60	0.5 0.1	C-OCC NONE	1200 520	648.0 31.2	756.0 0.0	0.0	\$93.74 \$0.00	\$270.00 \$0.00	\$35.00 \$0.00	2.9	
	Main Office Teachers Lounge Exit 2B		1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.8 0.1	SW	2600 6240	2,184.0 374.4	14	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.8 0.1	C-OCC NONE		2,520.0 374.4	-336.0 0.0	0.0	-\$41.66 \$0.00	\$270.00 \$0.00	\$35.00 \$0.00		
	Women's Staff Restroom Men's Staff Restroom Corridor	1 1	I 100 I 100 T 28 R F 2 (ELE)	1100/1 1100/1 F42LL	100 100 60	0.1 0.1 0.7	SW SW	3120 3120 6240	312.0 312.0 4.118.4	1 1	I 100 I 100 I 28 R F 2 (FLF)	I100/1 I100/1 F42LL	100 100 60	0.1	NONE NONE		312.0 312.0 2.059.2	0.0	0.0	\$0.00 \$0.00 \$255.34	\$0.00 \$0.00 \$270.00	\$0.00 \$0.00 \$35.00	11	_
	170 Guidance Office	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	1.1	SW	2600 2600	2,808.0 2,964.0	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.1	C-OCC C-OCC	1820 1200	1,965.6 1,368.0	842.4 1,596.0	0.0	\$104.46 \$197.90	\$270.00 \$270.00 \$270.00	\$35.00 \$35.00	2.6	#
	Guidance Office Copy Room Guidance Office - Office	6	T 28 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.1 0.4	SW SW	2600 2600	312.0 936.0	2	T 28 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.1 0.4	OCC C-OCC	1200 1200	144.0 432.0	168.0 504.0	0.0	\$20.83 \$62.50	\$128.25 \$270.00	\$20.00 \$35.00	6.2 4.3	#
	Guidance Office 1 Guidance Office 2	1 1	T 28 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL	60 60	0.1 0.1	SW SW	2600 2600	156.0 156.0	1	T 28 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL	60 60	0.1 0.1	00C	1200 1200	72.0	84.0 84.0	0.0	\$10.42 \$10.42	\$128.25 \$128.25	\$20.00 \$20.00	12.3 12.3	-
	Guidance Office 3 Guidance Office 4	1	T 28 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL	60	0.1	SW SW	2600 2600	156.0 156.0	1	T 28 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL	60	0.1	OCC	1200 1200	72.0	84.0 84.0 84.0	0.0	\$10.42 \$10.42	\$128.25 \$128.25	\$20.00 \$20.00	12.3 12.3	
	Guidance Office 5 Guidance Office 6 Guidance Office 7	1 1	T 28 R F 2 (ELE) T 28 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL F42LL	60 60	0.1 0.1	SW SW	2600 2600 2600	156.0 156.0	1 1	T 28 R F 2 (ELE) T 28 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL F42LL	60 60	0.1 0.1	000	1200 1200	72.0	84.0 84.0	0.0	\$10.42 \$10.42 \$10.42	\$128.25 \$128.25 \$128.25	\$20.00	12.3 12.3 12.3	#
	Guidance Office 8 Guidance Office 9	1 1	T 28 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL	60 60	0.1 0.1	SW	2600 2600	156.0 156.0	1 1	T 28 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL	60 60	0.1 0.1	OCC	1200 1200 1200	72.0	84.0 84.0	0.0	\$10.42 \$10.42	\$128.25 \$128.25	\$20.00 \$20.00 \$20.00	12.3 12.3	#
	Guidance Office - Conference Room Main Entrance	2 130	T 28 R F 2 (ELE) 1T 32 R F 1	F42LL F41LL	60 32	0.1 4.2	SW SW	1200 6240	144.0 25,958.4	2 130	T 28 R F 2 (ELE) 1T 32 R F 1	F42LL F41LL	60 32	0.1 4.2	C-OCC NONE	840 6240	25,958.4	43.2 0.0	0.0	\$5.36 \$0.00	\$270.00 \$0.00	\$35.00 \$0.00	50.4	
	Main Entrance Main Entrance Display Case	6 12	O CF 26 S 30 C F 1 (MAG)	CFQ26/1-L F31SS	27 46	0.2	SW	6240 6240	1,010.9 3,444.5	6 12	O CF 26 S 30 C F 1 (MAG)	CFQ26/1-L F31SS	27 46	0.2	NONE NONE	6240 6240	1,010.9 3,444.5	0.0	0.0	\$0.00 \$0.00	\$0.00	\$0.00 \$0.00	<u> </u>	
	Auditorium Auditorium Stane	111	W 28 C F 2 (ELE) W 28 C F 2 (ELE) S 28 P F 1 (ELE)	F42LL F42LL F41SSILL	60 60 26	6.7 0.3	SW SW	2600 2600 2600	3,432.0 17,316.0 811.2	111	W 28 C F 2 (ELE) W 28 C F 2 (ELE) S 28 P F 1 (ELE)	F42LL F42LL F41SSILL	60 60 26	6.7	NONE NONE NONE	2600 2600 2600	3,432.0 17,316.0 811.2	0.0	0.0	\$0.00 \$0.00 \$0.00	\$0.00	\$0.00 \$0.00	#	
	Stage Stage Right Stage Left	2	W 28 C F 2 (ELE) W 28 C F 2 (ELE)	F42LL F42LL	60 60	0.1 0.1	SW	520 520	62.4 62.4	2 2	W 28 C F 2 (ELE) W 28 C F 2 (ELE)	F42LL F42LL	60 60	0.1 0.1	NONE NONE	520	62.4 62.4	0.0	0.0	\$0.00 \$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	1	
	Stage Left Corridor (Outside Auditorium) Gymnasium Stairwell	25	1T 32 R F 2 (ELE) T 54 W F 3 (ELE) (T-5)	F42LL F43GHL	60 177	1.2 4.4	SW SW	6240 2600	7,488.0 11,505.0	20 25	1T 32 R F 2 (ELE) T 54 W F 3 (ELE) (T-5)	F42LL F43GHL	60 177	1.2 4.4	NONE NONE NONE	6240	11.505.0	0.0	0.0	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	1	
	Cafeteria		1T 32 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL F42LL	60	0.5 6.6	SW SW	6240 2000	3,369.6 13,200.0	9 110	1T 32 R F 2 (ELE) T 28 R F 2 (ELE)	F42LL F42LL	60	0.5 6.6	C-OCC	1400		0.0 3,960.0	0.0	\$0.00 \$491.04	\$0.00 \$270.00	\$0.00 \$35.00	0.5	
	Parent Survey Kitchen Dishwasher Room Kitchen	14 12 56	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60 60	0.8 0.7 3.4	SW SW	2600 2000 2000	2,184.0 1,440.0 6,720.0	14 12	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60 60	0.8 0.7 3.4	NONE NONE	2600 2000 2000	1,440.0 6,720.0	0.0	0.0	\$0.00 \$0.00 \$0.00	\$0.00 \$0.00 \$0.00	\$0.00 \$0.00 \$0.00	 	
	Basement (Under Kitchen)	4	W 34 F 4 (ELE) 1'x8' W 34 F 4 (ELE) 1'x8'	F44ILL F44ILL	112	0.4 0.6	SW	6240	2,795.5	4 5	W 34 F 4 (ELE) 1'x8' W 34 F 4 (ELE) 1'x8'	F44ILL F44ILL	112 112	0.4 0.6	NONE NONE	6240	2,795.5 291.2	0.0	0.0	\$0.00 \$0.00 \$0.00	\$0.00	\$0.00	#	
	Pantry Locker Room Locker Room	2	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	112 26 26	0.1 0.1	SW	520 2600 2600	291.2 135.2 135.2	2 2	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.1 0.1	C-OCC	2000	104.0	31.2 31.2	0.0	\$3.87 \$3.87	\$270.00 \$270.00	\$35.00 \$35.00	69.8 69.8	+
	Corridor A 1 Starway 22	14 14	T 32 R F 3 (ELE) S 32 C F 2 (ELE)	F43SSILL F42LL	72 60	1.0 0.8	SW SW	6240 6240	6,289.9 5,241.6		T 32 R F 3 (ELE) S 32 C F 2 (ELE)	F43SSILL F42LL	72 60	1.0 0.8		6240 6240	6,289.9 5,241.6	0.0	0.0	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00		
	Basement Storage Child Study Child Study Office	18	S 32 C F 2 (ELE) 1T 32 C F 2 (ELE) 1T 32 C F 2 (ELE)	F42LL F42ILL F42ILL	60 59 59	0.9 1.1 0.4	SW SW	520 2600 2600	468.0 2,761.2 920.4	15 18	S 32 C F 2 (ELE) 1T 32 C F 2 (ELE) 1T 32 C F 2 (ELE)	F42LL F42ILL F42ILL	60 59	0.9 1.1 0.4	C-OCC	1200	1,274.4	0.0 1,486.8 495.6	0.0	\$0.00 \$184.36 \$61.45	\$270.00 \$270.00 \$270.00	\$35.00 \$35.00 \$35.00	1.5	
	Child Study Office Child Study Office Corridor	6 9	1T 32 C F 2 (ELE) 1T 32 R F 2 (ELE)	F42ILL F42LL	59 59 60	0.4 0.5	SW SW	2600 6240	920.4 3,369.6	6 9	1T 32 C F 2 (ELE) 1T 32 R F 2 (ELE)	F42ILL F42LL	59 59 60	0.4 0.4 0.5	C-OCC NONE	1200 1200 6240	424.8 3,369.6	495.6 0.0	0.0	\$61.45 \$0.00	\$270.00 \$0.00	\$35.00 \$0.00	4.4	+
	Detention Room 101	19	S 28 P F 1 (ELE) W 34 F 4 (ELE) 1'x8'	F41SSILL F44ILL	26 112	0.8 2.1	SW	2600 2600	2,028.0 5,532.8	30 19	S 28 P F 1 (ELE) W 34 F 4 (ELE) 1'x8'	F41SSILL F44ILL	26 112	0.8 2.1	C-OCC	1820 1820	1,419.6 3,873.0	608.4 1,659.8	0.0	\$75.44 \$205.82	\$270.00 \$270.00	\$35.00 \$35.00	3.6 1.3	\pm
	Athletic Office Athletic Office	6 2	W 34 F 4 (ELE) 1'x8' S 28 P F 1 (ELE)	F44ILL F41SSILL	112 26	0.7 0.1	SW	2600 2600	1,747.2 135.2	6 2	W 34 F 4 (ELE) 1'x8' S 28 P F 1 (ELE)	F44ILL F41SSILL	112 26	0.7 0.1	C-OCC NONE	1200 2600	806.4 135.2	940.8	0.0	\$116.66 \$0.00	\$270.00 \$0.00	\$35.00 \$0.00	2.3	
	Auto Shop Auto Shop	27 8	W 34 F 4 (ELE) 1'x8' S 32 C F 2 (ELE) T 32 R F 4 (ELE)	F44ILL F42LL	112 60	3.0 0.5	SW	2600 2600	7,862.4 1,248.0 1,164.8	27 8	W 34 F 4 (ELE) 1'x8' S 32 C F 2 (ELE) T 32 R F 4 (ELE)	F44ILL F42LL	112 60	3.0 0.5	C-OCC	1820 1820	873.6	2,358.7 374.4	0.0	\$292.48 \$46.43 \$43.33	\$270.00 \$270.00 \$270.00	\$35.00 \$35.00 \$35.00	0.9 5.8	
	209 207 207 Restroom	2	T 32 R F 4 (ELE) T 32 R F 4 (ELE) W 28 C F 2 (ELE)	F44ILL F44ILL F42LL	112 112	0.4 0.2	SW SW SW	2600 2600	1,164.8 582.4 187.2	2	T 32 R F 4 (ELE) T 32 R F 4 (ELE) W 28 C F 2 (ELE)	F44ILL F44ILL F42LL	112 112	0.4 0.2	C-OCC C-OCC	1820 1820 3120	407.7	349.4 174.7		\$21.67	\$270.00	\$35.00	6.2 12.5	1
	207 Restroom 208 Corridor D	6	W 28 C F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60 60	0.1 0.4 1.2	SW SW	3120 2600 6240	936.0 7,488.0	1 6 20	W 28 C F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60 60	0.1 0.4 1.2	NONE C-OCC NONE	3120 1820 6240	655.2	0.0 280.8 0.0		\$0.00 \$34.82 \$0.00	\$0.00 \$270.00 \$0.00	\$0.00 \$35.00 \$0.00	7.8	
	261 264	30	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60	1.2 1.8 3.6	SW SW	6240 2600 2600	4,680.0 9,360.0	30 60	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	1.8 3.6	C-0CC	1820	3,276.0	1,404.0 2,808.0	0.0	\$0.00 \$174.10 \$348.19	\$270.00 \$270.00	\$35.00 \$35.00	1.6	#
	270 265	18 48	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.1 2.9	SW	2600 2600	2,808.0 7,488.0	18 48	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.1 2.9	C-OCC	1820 1820	1,965.6 5,241.6	842.4 2,246.4	0.0	\$104.46 \$278.55	\$270.00 \$270.00	\$35.00 \$35.00	2.6 1.0	1
_	269 267 - Health Office	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.1 0.7	SW	2600 2600	2,808.0 1,716.0	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.1	C-OCC	1820	1,965.6	842.4 924.0	0.0	\$104.46 \$114.58	\$270.00 \$270.00	\$35.00 \$35.00	2.6 2.4	

																				000T 0 0	00 111111000			
				EXISTING COND	ITIONS							RETROFIT	CONDITIONS	1						COST & SAVIN	GS ANALYSIS	NJ Smart Start	Cimple Books - 1	
					Watts per								Watts per		Retrofit			Annual kWh				Lighting	Simple Payback With Out	^
	Area Description	No. of Fixtures	Standard Fixture Code	Fixture Code	Fixture	kW/Space	Exist Control	Annual Hours	Annual kWh	Number of Fixture	Standard Fixture Code	Fixture Code	Fixture	kW/Space	Control	Annual Hours	Annual kWh	Saved	Annual kW Save	d Annual \$ Saved	Retrofit Cost	Incentive	Incentive	Simple Paybac
Codo II	Jnique description of the location - Room number/Room		Lighting Fixture Code	Code from Table of Standard	Value from	(Watts/Fixt) * (Fixt		Estimated annual			r "Lighting Fixture Code" Example	Code from Table of	Value from	(Watts/Fixt) *	Retrofit contro		(kW/space) *	(Original Annual			Cost for	moditavo	Length of time	Length of time f
Code 0	name: Floor number (if applicable)	before the retrofit	Lighting Fixture Code	Fixture Wattages	Table of	No.)		hours for the	(Annual Hours)	the retrofit	2T 40 R F(U) = 2'x2' Troff 40 w	Standard Fixture	Table of	(Number of	device	annual hours	(Annual Hours)		kW) - (Retrofit	(\$/kWh)	renovations to		for renovations	renovations cost
	name: Froor names (in approasie)	Delete the reading		Tixtare Wattages	Standard	110.1	control device	usage group	(Allifadi Hodro)	uio rouroni	Recess. Floor 2 lamps U shape	Wattages	Standard	Fixtures)	devide	for the usage	(rumaar rioaro)	Annual kWh)	Annual kW)	(4/10011)	lighting system		cost to be	be recovered
					Fixture								Fixture			group		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					recovered	
					Wattages								Wattages											/
ED	266 - Teachers Loung∉	14	1T 32 R F 2 (ELE)	F42LL	60	0.8	SW	2600	2,184.0	14	1T 32 R F 2 (ELE)	F42LL	60	0.8	C-OCC	3000	2,520.0	-336.0	0.0	-\$41.66	\$270.00	\$35.00		-5.6
.ED	266 - Teachers Lounge Women's Restroon	1	S 17 C F 1(ELE)	F21ILL	20	0.0	SW	3120	62.4		S 17 C F 1(ELE)	F21ILL	20	0.0	NONE		62.4	0.0	0.0	\$0.00		\$0.00		#DIV/0!
.ED	266 - Teachers Lounge Men's Restroon	1	S 17 C F 1(ELE)	F21ILL	20	0.0	SW	3120	62.4	1 1	S 17 C F 1(ELE)	F21ILL	20	0.0	NONE		62.4	0.0	0.0	\$0.00		\$0.00		#DIV/0!
ED	Boy's Restroom	5	1T 32 R F 2 (ELE)	F42LL	60	0.3	SW	3120	936.0		1T 32 R F 2 (ELE)	F42LL	60	0.3	C-OCC			327.6	0.0	\$40.62		\$35.00	6.6	5.8
ED	Girl's Restroom	5	1T 32 R F 2 (ELE)	F42LL	60	0.3	SW	3120	936.0		1T 32 R F 2 (ELE)	F42LL	60	0.3	C-OCC			327.6	0.0	\$40.62		\$35.00	6.6	5.8
ED	Corridor A 2	40	T 32 R F 3 (ELE)	F43SSILL	72	2.9	SW	6240	17,971.2		T 32 R F 3 (ELE)	F43SSILL	72	2.9	NONE	6240	17,971.2	0.0	0.0	\$0.00		\$0.00		#DIV/0!
ED	210 - Office	4	W 28 C F 2 (ELE)	F42LL	60	0.2	SW	2600	624.0		W 28 C F 2 (ELE)	F42LL	60	0.2	C-OCC	1200		336.0	0.0	\$41.66		\$35.00	6.5	5.6
ED	210 - Office Storage	2	W 28 C F 2 (ELE)	F42LL	60	0.1	SW	520	62.4		W 28 C F 2 (ELE)	F42LL	60	0.1	OCC	520	62.4	0.0	0.0	\$0.00		\$20.00		#DIV/0!
ED	210 - Office Storage	2	W 28 C F 2 (ELE)	F42LL	60	0.1	SW	520	62.4	1 2	W 28 C F 2 (ELE)	F42LL	60	0.1	OCC	520	62.4	0.0	0.0	\$0.00		\$20.00		#DIV/0!
ED	210 - Office Conference Room	4	W 28 C F 2 (ELE)	F42LL	60	0.2	SW	1200	288.0		W 28 C F 2 (ELE)	F42LL	60	0.2	C-OCC	840		86.4	0.0	\$10.71		\$35.00	25.2	21.9
ED	213A	5	W 28 C F 2 (ELE)	F42LL	60	0.3	SW	2600	780.0		W 28 C F 2 (ELE)	F42LL	60	0.3	C-OCC	1820	546.0	234.0	0.0	\$29.02		\$35.00	9.3	8.1
ED	213	36	W 32 P F 2 (ELE)	F42LL	60	2.2	SW	2600	5,616.0		W 32 P F 2 (ELE)	F42LL	60	2.2	C-OCC	1820	3,931.2	1,684.8	0.0	\$208.92		\$35.00	1.3	1.1
ED	214A	15	W 32 P F 2 (ELE)	F42LL	60	0.9	SW	2600	2,340.0		W 32 P F 2 (ELE)	F42LL	60	0.9	C-OCC	1820	1,638.0	702.0	0.0	\$87.05		\$35.00	3.1	2.7
ED	Media Cente	64	1B 32 P F 2 (ELE)	F42LL	60	3.8	SW	2600	9,984.0		1B 32 P F 2 (ELE)	F42LL	60	3.8	C-OCC	1820	6,988.8	2,995.2	0.0	\$371.40		\$35.00	0.7	0.6
ED	Media Cente	90	1T 32 R F 2 (ELE)	F42LL	60	5.4	SW	2600	14,040.0		1T 32 R F 2 (ELE)	F42LL	60	5.4	C-OCC	1820		4,212.0	0.0	\$522.29		\$35.00	0.5	0.4
ED	Media Center Office	2	1T 32 R F 2 (ELE)	F42LL	60	0.1	SW	2600	312.0		1T 32 R F 2 (ELE)	F42LL	60	0.1	C-OCC	1200		168.0	0.0	\$20.83		\$35.00	13.0	11.3
ED	214B	5	W 28 C F 2 (ELE)	F42LL	60	0.3	SW	2600	780.0		W 28 C F 2 (ELE)	F42LL	60	0.3	C-OCC	1820		234.0	0.0	\$29.02		\$35.00	9.3	8.1
.ED	215	18	1T 32 R F 1	F41LL	32	0.6	SW		1,497.6		1T 32 R F 1	F41LL	32	0.6	C-OCC	1820		449.3	0.0	\$55.71		\$35.00	4.8	4.2
.ED	216	24	1T 32 R F 1	F41LL	32	0.8	SW	2600	1,996.8		1T 32 R F 1	F41LL	32	0.8	C-OCC	1820		599.0	0.0	\$74.28 \$55.71		\$35.00	3.6	3.2
.ED	217	18	1T 32 R F 1	F41LL	32	0.6	SW	2600	1,497.6		1T 32 R F 1	F41LL	32	0.6	C-OCC	1820		449.3	0.0	\$55.71		\$35.00	4.8	4.2
.ED	219	18	1T 32 R F 1	F41LL	32	0.6	SW	2600	1,497.6		1T 32 R F 1	F41LL	32	0.6	C-OCC	1820		449.3	0.0	\$55.71		\$35.00	4.8	4.2
.ED	220	20	1T 32 R F 1	F41LL	32	0.6	SW	2600	1,664.0		1T 32 R F 1	F41LL	32	0.6	C-OCC	1820		499.2	0.0	\$61.90		\$35.00	4.4	3.8
.ED	222A/B	36	1T 32 R F 1	F41LL	32	1.2	SW	2600	2,995.2		1T 32 R F 1	F41LL	32	1.2	C-OCC	1820		898.6	0.0	\$111.42		\$35.00	2.4	2.1
.ED	223/221	30	1T 32 R F 1	F41LL	32	1.0	SW	2600	2,496.0		1T 32 R F 1	F41LL	32	1.0	C-OCC	1820		748.8	0.0	\$92.85		\$35.00	2.9	2.5
.ED	201	15	1T 32 R F 1	F41LL	32	0.5	SW	2600	1,248.0		1T 32 R F 1	F41LL	32	0.5	C-OCC	1820		374.4	0.0	\$46.43 \$55.71		\$35.00	5.8	5.1
.ED	202	18	1T 32 R F 1	F41LL	32	0.6	SW	2600	1,497.6		1T 32 R F 1	F41LL	32	0.6	C-000	1820		449.3	0.0	\$55./1		\$35.00	4.8	4.2
.ED	200	18	1T 32 R F 1	F41LL	32	0.6	SW	2600	1,497.6		1T 32 R F 1	F41LL	32	0.6	C-OCC	1820		449.3	0.0	\$55.71 \$55.71		\$35.00	4.8	4.2
.ED	205	18	1T 32 R F 1 1T 32 R F 1	F41LL	32	0.6	SW	2600	1,497.6		1T 32 R F 1 1T 32 R F 1	F41LL F41LL	32	0.6	C-000	1820		449.3 449.3	0.0	\$55./1		\$35.00 \$35.00	4.8	4.2
	206	10		F41LL	32	0.6	SW	2600			11 32 R F 1 1T 32 R F 1		32	0.6	C-OCC	1820			0.0	\$55./1			4.8	4.2
.ED	207A 208B	15	1T 32 R F 1 1T 32 R F 1	F41LL F41LL	32	0.5	SW	2600 2600	1,248.0		11 32 R F 1 1T 32 R F 1	F41LL F41LL	32	0.5	C-OCC	1820 1820		374.4 374.4	0.0	\$46.43 \$46.43		\$35.00 \$35.00	5.8 5.8	5.1 5.1
	Corridor C 2	15	1T 32 R F 2 (ELE)	F41LL	32 60	0.5			2.620.8		1T 32 R F 2 (FLF)	F41LL	32	0.5	C-OCC			3/4.4	0.0	\$46.43		\$0.00	5.8	#DIV/0!
ED	Boy's Restroom	5		F42LL F41SSILL		0.4	SW	6240				F42LL F41SSILL	60	0.4	NONE		2,620.8	0.0	0.0					#DIV/0!
ED	Girl's Restroom	5	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILI	26	0.1	SW	3120	405.6		S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL	26 26	0.1	NONE	3120	100.0	0.0	0.0	\$0.00		\$0.00		#DIV/0!
ED ED	Corridor C 2	5	1T 32 R F 2 (ELE)	F41SSILL F42LL	26	0.1	SW	3120 6240	405.6 2,246.4		1T 32 R F 2 (ELE)	F41SSILL F42LL		0.1	NONE		405.6	0.0	0.0	\$0.00		\$0.00		#DIV/0!
	Corridor C 2	6		F43SSILL	60	0.4						F42LL F43SSILL	60	0.4		6240	-,	0.0	0.0	\$0.00		\$0.00		
ED	Corridor C 2	4	T 32 R F 3 (ELE)	F43SSILL F43SSILI	72	0.3	SW	6240	1,797.		T 32 R F 3 (ELE)	F43SSILL F43SSILL	72 72	0.3	NONE	6240 1820		561.6	0.0	\$0.00		\$0.00 \$35.00	2.0	#DIV/0!
ED 0	282-B Gymnasium	18	T 32 R F 3 (ELE) T 54 W F 3 (FLF) (T-5)	F43SSILL F43GHL	72 177	0.7	SW	2600 2600	1,872.0 8.283.6		T 32 R F 3 (ELE) T 54 W F 3 (ELE) (T-5)	F43SSILL F43GHL	177	3.2	C-OCC NONE		8.283.6	0.100	0.0	\$09.04		\$0.00	3.9	#DIV/01
ED	282-B Gymnasium 281-A	18	T 32 R F 3 (ELE)	F43SSILL	72	3.2	SW	2600	1,872.0		T 32 R F 3 (ELE)	F43GHL F43SSILL	72	0.7	COCC	1200	864.0	1.008.0	0.0	8124.00		\$35.00	2.2	#DIV/0!
ED	281-A Boys Locker Room	20	17 32 R F 3 (ELE)	F43SSILL F42LL	60	1.2	SW	2600	1,872.0		1 32 R F 3 (ELE) 1T 32 R F 2 (ELE)	F43SSILL F42LL	60	1.2	NONE		3.120.0	1,008.0	0.0	\$124.99		\$35.00	2.2	1.9 #DIV/0!
ED	Entryway	13	1T 32 R F 2 (ELE)	F42LL F42LL	60	0.8	SW	2125	1,657.5		1T 32 R F 2 (ELE)	F42LL F42LL	60	0.8			3, 12U.U	0.0	0.0	\$108.81		\$35.00	2.5	#DIV/0! 2.2
EU	Elitiyway	13	11 32 R F 2 (ELE)	F4ZLL	60	0.8	SVV	2125	1,007.3	13	11 32 K F 2 (ELE)	F4ZLL	60	0.8	C-OCC	1000 #N/A	#VALUE!	#VALUE!	#N/A	#VALUE!	\$270.00	\$35.00	#VALUE!	#VALUE!
Tot	tol	3,969				242.4	1	1	619678.7	2000.0	1	_	_	242.4	U	#IN/A		#VALUE! 115203.9		#VALUE!	49997.3	00000	#VALUE!	#VALUE!
100	ldi	3,969				213.4			6196/8./	3969.0	I			213.4		I			0.0	14285.3	49997.3	0.0800	1	+
																		d Savings Savings	1	115.204	\$0 \$14.285		1	

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	ng Replacements with Occupancy Sensors			EXISTING CONDI	ITIONS						RETROFI	T CONDITIONS						COST & SAVING	GS ANALYSIS			
					Watts per							Watts per	r	Retrofit			Annual kWh			NJ Smart Start Lighting	Simple Payback With Out	
Field Code U	Area Description Jnique description of the location - Room number/Room	No. of Fixtures No. of fixtures	Standard Fixture Code Lighting Fixture Code	Fixture Code Code from Table of Standard	Fixture Value from	kW/Space (Watts/Fixt) * (Fixt	Exist Control Annual Hours Pre-inst. Estimated daily	Annual kWh (kW/space) *	Number of Fixtures af	res Standard Fixture Code fter Lighting Fixture Code	Fixture Code Code from Table of	Fixture Value from	kW/Space (Watts/Fixt) *	Control Retrofit control	Annual Hours	(kW/space) *		Annual \$ Saved (kWh Saved) *	Retrofit Cost Cost for	Incentive Prescriptive	Incentive Length of time	Simple Payback Length of time for
	name: Floor number (if applicable)	before the retrofit		Fixture Wattages	Table of Standard	No.)	control device hours for the usage group	(Annual Hours)	the retrofit		Standard Fixture Wattages	Table of Standard	(Number of Fixtures)	device	annual hours for the usage	(Annual Hours)	kWh) - (Retrofit Annual kWh) Annual kW)		enovations to ighting system	Lighting Measures	for renovations cost to be	renovations cost to be recovered
					Fixture Wattages							Fixture Wattages			group						recovered	
15LED 35LED	UN-240 UN-241	6 4	S 32 C F 2 (ELE) T 32 R F 3 (ELE)	F42LL F43SSILL	72	0 0.4 2 0.3		20 187 20 150	4	4 ft LED Tube T 59 R LED	200732x2 RTLED38	30 38 30	0.2 0.2 0.4	OCC	520 520	94	94 0.2 71 0.1	\$ 25.19 \$ 19.03	\$ 1,194.45 \$ 1,073.25	\$ 20	47.4 56.4 11.7	46.6 55.3
32LED 32LED	461.5 UN-242	6	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60	0 0.7	SW 5		6	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30	0.4 0.2 0.5	000	1,20 520	94	1,440 0.4 94 0.2 1,825 0.5	\$ 205.73 \$ 25.19	\$ 2,402.40 \$ 1,194.45 \$ 3,468.60	\$ 20	11.7 47.4 13.0	11.5 46.6 12.9
32LED 32LED 32LED	462 463 UN-243	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 1.1	SW 26 SW 26 SW 26	00 2,808 00 2,808 00 936	18	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30 30 30	0.5 0.2	C-OCC	1,820	983	1,825 0.5 1,825 0.5 608 0.2	\$ 267.08 \$ 267.08 \$ 89.03	\$ 3,468.60 \$ 1,336.20	\$ 35	13.0 13.0 15.0	12.9
32LED 32LED	UN-244 UN-245	2 2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60		SW 5 SW 5	20 62 20 62	2	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.1	OCC	520	31	31 0.1 31 0.1	\$ 8.40 \$ 8.40	\$ 483.65 \$ 483.65	\$ 20	57.6 57.6	55.2 55.2
32LED 32LED	UN-246 464	6 18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 0.4 0 1.1	SW 26 SW 26		6 18	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.2 0.5	C-OCC	1,820	328	1,825 0.5	\$ 89.03 \$ 267.08	\$ 1,336.20 \$ 3,468.60	\$ 35	15.0 13.0	14.6 12.9
32LED 32LED	465 466	18 14	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 1.1 0 0.8	SW 26 SW 26	2,808 2,184	18 14	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30	0.5 0.4	C-OCC	1,820 3,000	983 1,260	1,825 0.5 924 0.4	\$ 267.08 \$ 146.28	\$ 3,468.60 \$ 2,757.80	\$ 35 \$ 35	13.0 18.9	12.9 18.6
32LED 32LED	UN-249 467	5 18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 1.1	SW 26 SW 26	2,808		4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.2 0.5	C-OCC	1,82	273 983		\$ 74.19 \$ 267.08		\$ 35		15.1 12.9
32LED 32LED	468 UN-251 UN-252	18 6	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 1.1 0 0.4 0 0.4	SW 26 SW 5 SW 5	20 187	18	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30	0.5	OCC	1,820 520	983	1,825 0.5 94 0.2	\$ 267.08 \$ 25.19	\$ 1,194.45	\$ 20	13.0 47.4	12.9 46.6
32LED 32LED 32LED	UN-253 UN-254	2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL		0 0.1	SW 5 SW 5	20 62	2	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30 30	0.2 0.1 0.1	000	520	94	31 0.1	\$ 25.19 \$ 8.40	\$ 483.65	\$ 20		46.6 55.2 19.9
32LED 32LED	489 UN-255	18	1T 32 R F 2 (ELE)	F42LL F42LL		0 1.1	SW 26		18	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30 30	0.5	C-OCC OCC	1,820	983	203 0.1 1,825 0.5 78 0.2	\$ 29.68 \$ 267.08 \$ 20.99		\$ 35		12.9 47.5
32LED 32LED	UN-257 UN-258	5	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 0.3		20 156 30 47	5	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.2	OCC NONE	520 780	78	78 0.2 23 0.0	\$ 20.99 \$ 5.17		\$ 20	48.4 34.4	47.5 34.4
220LED 220LED	UN-247 UN-248	1	S 17 C F 1(ELE) S 17 C F 1(ELE)	F21ILL F21ILL	20	0 0.0	SW 31 SW 31	20 62	1	2 ft LED Tube 2 ft LED Tube	200714x2 200714x2	16 16	0.0	NONE NONE	3,12i 3,12i	50	12 0.0 12 0.0	\$ 1.85 \$ 1.85		\$ - \$ -	85.3 85.3	85.3 85.3
32LED 32LED	461 460	18 18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 1.1 0 1.1	SW 26 SW 26	2,808	18 18	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30	0.5 0.5	C-OCC	1,82	983	1,825 0.5 1,825 0.5	\$ 267.08 \$ 267.08	\$ 3,468.60	\$ 35	13.0 13.0	12.9 12.9
32LED 32LED	459 Corridor D	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) T 32 R F 3 (ELE)	F42LL F42LL F43SSII I	60	0 1.1	SW 26 SW 62 SW 62	00 2,808 40 4,493 40 5,391	18	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 RTLED38	30 30 38	0.5	NONE NONE	6,24 6,24	983 0 2,246 0 2,845	1,825 0.5 2,246 0.4 2,546 0.4	\$ 267.08 \$ 305.73 \$ 346.49	\$ 3,468.60 \$ 2,132.40 \$ 2,835.00		13.0 7.0	12.9 7.0
35LED 20LED 20LED	Corridor D 409 410	12 10 18	T 32 R F 3 (ELE) S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F43SSILL F41SSILL F41SSILI	26	2 0.9 6 0.3 6 0.5	SW 62 SW 26 SW 26	40 5,391 00 676 00 1,217	12 10	T 59 R LED 4 ft LED Tube 4 ft LED Tube	200732x1 200732x1	38 15 15	0.5 0.2 0.3	C-OCC	1,82	2,845	2,546 0.4 403 0.1 725 0.2	\$ 346.49 \$ 58.27 \$ 104.89	\$ 2,835.00 \$ 1,442.00 \$ 2,379.60	\$ 35	8.2 24.7 22.7	8.2 24.1 22.4
20LED 20LED 20LED	410 411 412	18	S 28 P F 1 (ELE) S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL F41SSILL	28	6 0.5 6 0.5	SW 26 SW 26	00 1,217 00 1,217	18	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x1 200732x1 200732x1	15 15 15	0.3 0.3	C-OCC	1,820	491	725 0.2 725 0.2 725 0.2	\$ 104.89 \$ 104.89	\$ 2,379.60 \$ 2,379.60 \$ 2,379.60		22.7 22.7 22.7	22.4 22.4 22.4
20LED 220LED	413 UN-260	16	S 28 P F 1 (ELE) S 17 C F 1(ELE)	F41SSILL F21ILL	20	6 0.4 0 0.0	SW 26 SW 5	00 1,082 20 10	16	4 ft LED Tube 2 ft LED Tube	200732x1 200714x2	15 16	0.2	C-OCC NONE	1,82	437	645 0.2 2 0.0	\$ 93.24 \$ 0.56	\$ 2,145.20 \$ 157.70	\$ 35 \$ -	23.0 281.7	22.6 281.7
20LED 20LED	414-C 415	18 12	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	20	6 0.5 6 0.3	SW 26 SW 26	00 1,217 00 811	18 12	4 ft LED Tube 4 ft LED Tube	200732x1 200732x1	15 15	0.3	C-OCC	1,82	491 328	725 0.2 484 0.1	\$ 104.89 \$ 69.93	\$ 2,379.60 \$ 1,676.40	\$ 35 \$ 35	22.7 24.0	22.4 23.5
20LED 20LED	400 (Gym) 407	8 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26	6 0.2 6 0.5	SW 26 SW 26		8 18	4 ft LED Tube 4 ft LED Tube	200732x1 200732x1	15 15	0.1 0.3	NONE C-OCC	2,60	491	229 0.1 725 0.2	\$ 35.01 \$ 104.89	\$ 937.60 \$ 2,379.60	\$ 35	26.8 22.7	26.8 22.4
20LED 20LED	408 406 405	15 22	S 28 P F 1 (ELE) S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	20	6 0.4 6 0.6	SW 26 SW 26		15 22	4 ft LED Tube 4 ft LED Tube	200732x1 200732x1	15 15	0.2	C-OCC	1,82	601	605 0.2 887 0.2	\$ 87.41 \$ 128.20	\$ 2,028.00 \$ 2,848.40	\$ 35	23.2	22.8
20LED 20LED 20LED	405 UN-273 UN-274	1 1	S 28 P F 1 (ELE) S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL F41SSILL	26	6 0.6 6 0.0 6 0.0	SW 26 SW 5 SW 5		1 1	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x1 200732x1 200732x1	15 15 15	0.4 0.0	NONE NONE	520	655	967 0.3 6 0.0 6 0.0	\$ 139.86 \$ 1.54 \$ 1.54	\$ 3,082.80 \$ 117.20 \$ 117.20		22.0 76.1 76.1	21.8 76.1 76.1
15LED 15LED	UN-275 UN-276	2	S 32 C F 2 (ELE) S 32 C F 2 (ELE)	F4733LL F42LL F42LL	60		SW 5	20 62	2	4 ft LED Tube 4 ft LED Tube	200732x2	30 30	0.0	NONE		31	31 0.1	\$ 8.40 \$ 102.87		\$ -	42.3 11.6	42.3 11.4
15LED 15LED	UN-277 404L	6	S 32 C F 2 (ELE) S 32 C F 2 (ELE)	F42LL F42LL	60	0 0.4	SW 26 SW 26 SW 26	00 936 00 936	6	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30 30	0.2	OCC C-OCC	1,20	216	720 0.2 720 0.2 396 0.2	\$ 102.87 \$ 62.69	\$ 1,194.45	\$ 20	11.6 21.3	11.4
15LED 15LED	403C 402	18 18	S 32 C F 2 (ELE) S 32 C F 2 (ELE)	F42LL F42LL	60	0 1.1 0 1.1	SW 26 SW 26	00 2,808 00 2,808	18 18	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30	0.5 0.5	C-OCC	1,820	983	1,825 0.5 1,825 0.5	\$ 267.08 \$ 267.08	\$ 3,468.60 \$ 3,468.60	\$ 35	13.0 13.0	12.9 12.9
15LED 32LED	401 UN-272	15 2	S 32 C F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 0.9 0 0.1	SW 26 SW 5	20 2,340 20 62	15 2	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30	0.5 0.1	C-OCC NONE	1,82 0	819	31 0.1	\$ 222.57 \$ 8.40	\$ 2,935.50 \$ 355.40	\$ -	13.2 42.3	13.0 42.3
220LED 32LED	UN-271 UN-270 UN-268	2	S 17 C F 1(ELE) 1T 32 R F 2 (ELE)	F21ILL F42LL F42EE	20	0 0.0	SW 5 SW 5 SW 31	20 10 20 62	1 2	2 ft LED Tube 4 ft LED Tube	200714x2 200732x2	16 30	0.0	NONE NONE	520 520		2 0.0 31 0.1	\$ 0.56 \$ 8.40	\$ 355.40	\$ -	281.7 42.3	281.7 42.3
81 74 81	UN-269 UN-267	1 2	S 34 C F 2 I 50 S 34 C F 2	150/1 F42FF	50	0 0.1	SW 7	20 449 30 39 20 112	1 2	S 28 C F 2 CF 26 S 28 C F 2	F42SSILL CFQ26/1-L F42SSILL	48 27 48	0.1 0.0 0.1	NONE OCC	780	195		\$ 35.19 \$ 3.96 \$ 10.08	\$ 20.25	\$ -	14.2 5.1 46.9	13.2 5.1 44.9
81 20LED	UN-266 425	3	S 34 C F 2 S 28 P F 1 (FLF)	F42EE F41SSILI	72	2 0.2		20 112	3	S 28 C F 2 4 ft LED Tube	F4233ILL F42SSILL 200732x1	48 15	0.1 0.1 0.2	000	520	75	37 0.1 37 0.1 605 0.2	\$ 10.08 \$ 87.41		\$ 20	46.9 46.9 23.2	44.9 44.9 22.8
20LED 20LED	423 426	18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	20	6 0.5 6 0.5	SW 26 SW 26	00 1,217	18 18	4 ft LED Tube 4 ft LED Tube	200732x1 200732x1	15	0.3	C-OCC	1,82	491	725 0.2 725 0.2	\$ 104.89 \$ 104.89	\$ 2,379.60 \$ 2,379.60	\$ 35	22.7	22.4 22.4
20LED 20LED	424 422	15 15	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26	6 0.4 6 0.4	SW 26 SW 26	00 1,014 00 1,014	15 15	4 ft LED Tube 4 ft LED Tube	200732x1 200732x1	15 15	0.2 0.2	C-OCC	1,82	410	605 0.2 605 0.2	\$ 87.41 \$ 87.41	\$ 2,028.00 \$ 2,028.00	\$ 35 \$ 35		22.8 22.8
20LED 20LED	421 420	18 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL	26	6 0.5 6 0.5	SW 26 SW 26	00 1,217	18 18	4 ft LED Tube 4 ft LED Tube	200732x1 200732x1	15 15	0.3 0.3	C-OCC	1,82	491	725 0.2	\$ 104.89 \$ 104.89	\$ 2,379.60 \$ 2,379.60	\$ 35	22.7 22.7	22.4 22.4
20LED 20LED	419 418 417	6 18	S 28 P F 1 (ELE) S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL F41SSIII	20	6 0.2 6 0.5 6 0.3	SW 26 SW 26 SW 26	00 1,217	6 18	4 ft LED Tube 4 ft LED Tube	200732x1 200732x1	15 15	0.1	C-OCC	1,82	164		\$ 34.96 \$ 104.89	\$ 2,379.60		22.7	26.8 22.4
20LED 20LED 32LED	417 416 Corridor A	15	S 28 P F 1 (ELE) S 28 P F 1 (ELE)	F41SSILL F41SSILL F42LL	26	6 0.4 0 1.3	SW 26 SW 62	00 1,014	12 15	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x1 200732x1 200732x2	15 15 30	0.2 0.2 0.6	C-OCC NONE	1,820 1,820 6,240	328 410 3.931	484 0.1 605 0.2 3.931 0.6	\$ 69.93 \$ 87.41 \$ 535.02	\$ 1,676.40 \$ 2,028.00 \$ 3,731.70	\$ 35	24.0 23.2 7.0	23.5 22.8 7.0
35LED 32LED	Corridor A UN-301	14	T 32 R F 3 (ELE) 1T 32 R F 2 (ELE)	F43SSILL F42LL	72	2 1.0	SW 62 SW 31		14	T 59 R LED 4 ft LED Tube	RTLED38 200732x2	38 30	0.5	NONE	6,24	3,320	2,970 0.5 253 0.1	\$ 404.24 \$ 35.87	\$ 3,307.50 \$ 483.65	\$ -	8.2 13.5	8.2 12.9
32LED 32LED	UN-302 UN-300	2 2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 0.1	SW 31 SW 7	20 374 30 94	2 2	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.1	OCC NONE	2,02	122	253 0.1 47 0.1	\$ 35.87 \$ 10.33	\$ 483.65 \$ 355.40	\$ 20	13.5 34.4	12.9 34.4
32LED 32LED	UN-299 480	2 26	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 0.1 0 1.6	SW 5 SW 26	20 62 00 4,056	2 26	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2		0.1 0.8	OCC C-OCC	520 1,820	31 1,420	31 0.1 2,636 0.8	\$ 8.40 \$ 385.79	\$ 483.65 \$ 4,890.20	\$ 20 \$ 35	57.6 12.7	55.2 12.6
32LED 32LED	UN-298 UN-297	2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 0.1	SW 5 SW 5	20 62 20 62	2	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.1 0.1	000	520 520	31	31 0.1 31 0.1	\$ 8.40 \$ 8.40			57.6 57.6	55.2 55.2
32LED 32LED	482B 483	33 29	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 2.0	SW 26 SW 26	00 5,148 00 4,524	33 29	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	1.0 0.9	C-OCC	1,820	1,802		\$ 489.65 \$ 430.30	\$ 5,423.30	\$ 35	12.5 12.6	12.5 12.5
32LED 32LED 32LED	UN-295 448B 485B	2 25 25	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60	0 0.1 0 1.5 0 1.5	SW 5 SW 26 SW 26		25 25	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30 30 30	0.1 0.8 0.8	C-000	1,820 1,820	31 1,365 1,365		\$ 8.40 \$ 370.95 \$ 370.95	\$ 483.65 \$ 4,712.50 \$ 4,712.50	\$ 35	57.6 12.7 12.7	55.2 12.6 12.6
32LED 32LED	486B 487	25 25	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 1.5 0 1.5	SW 26	3,900	25 25 25	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30 30 30	0.8 0.8	C-OCC	1,820	1,365	2.535 0.8	\$ 370.95 \$ 370.95	\$ 4,712.50 \$ 4,712.50	\$ 35 \$ 35	12.7 12.7	12.6 12.6 12.6
32LED 32LED	488B 489B	32 32	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 1.9 0 1.9	SW 26 SW 26	00 4,992 00 4,992	32 32	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2 200732x2 200732x2	30 30 30	1.0	C-OCC	1,820	1,747	3,245 1.0 3,245 1.0	\$ 474.82 \$ 474.82	\$ 5,956.40 \$ 5,956.40	\$ 35 \$ 35	12.5 12.5	12.5 12.5
32LED 32LED	UN-305 UN-304	2 2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60		SW 5	20 62	2 2	4 ft LED Tube 4 ft LED Tube	200732x2	30	0.1 0.1	000	520 520	31	31 0.1	\$ 8.40 \$ 8.40	\$ 483.65	\$ 20	57.6 57.6	55.2 55.2
32LED 32LED	UN-303 UN-268	2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL		0 0.1	SW 5 SW 5	20 62 20 62	2	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30 30	0.1 0.1	OCC	520 520	31		\$ 8.40 \$ 8.40		\$ 20		55.2 55.2
32LED 40LED 32LED	Corridor C Corridor C UN-198	3 21 18	1T 32 R F 2 (ELE) T 28 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL		0 0.2 0 1.3 0 1.1	SW 62 SW 62 SW 5	40 1,123 40 7,862 20 562	3 21	4 ft LED Tube T 38 R LED 4 ft LED Tube			0.1 0.8 0.5	NONE	6,24 6,24 52	562 4,980 281	2,883 0.5	\$ 76.43 \$ 392.35 \$ 75.58	\$ 533.10 \$ 4,961.25 \$ 3,326.85	\$ -	7.0 12.6 44.0	7.0 12.6 43.8
32LED 32LED 32LED	366 367	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60		SW 26	2,808	18	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30	0.5 0.5	C-OCC	1,820	983	281 0.5 1,825 0.5	\$ 267.08	\$ 3,468.60	\$ 35		12.9 12.9
32LED 32LED	368 369	18 18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 1.1	SW 26 SW 26	00 2,808		4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30 30 30	0.5 0.5	C-OCC C-OCC	1,82	983	1,825 0.5	\$ 267.08 \$ 267.08 \$ 267.08		\$ 35	13.0	12.9 12.9 12.9
32LED 32LED	370 365	18 30	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 1.1 0 1.8	SW 26 SW 26	00 2,808 00 4,680	18	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2 200732x2	30	0.5 0.9	C-OCC	1,820	983	1,825 0.5 3,042 0.9	\$ 267.08 \$ 445.14	\$ 3,468.60 \$ 5,601.00	\$ 35 \$ 35	13.0 12.6	12.9 12.5
32LED 32LED	UN-192 UN-193	2 2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 0.1 0 0.1	SW 5	20 62 20 62	2 2	4 ft LED Tube 4 ft LED Tube	200732x2	30	0.1 0.1	00C	520 520	31 31	31 0.1 31 0.1	\$ 8.40 \$ 8.40	\$ 483.65 \$ 483.65	\$ 20 \$ 20	57.6 57.6	55.2 55.2
32LED 32LED	UN-194 UN-195	2 2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0.1	SW 5 SW 5		2 2	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.1 0.1	000	520 520	31	31 0.1 31 0.1	\$ 8.40 \$ 8.40	\$ 483.65	\$ 20	57.6 57.6	55.2 55.2
32LED 32LED 32LED	364 363 361	30 36 18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60	0 1.8 0 2.2 0 1.1	SW 26 SW 26 SW 26		30 36	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30 30	0.9 1.1	C-OCC	1,82	1,638 1,966 983	3,650 1.1	\$ 445.14 \$ 534.17 \$ 267.08	\$ 5,601.00 \$ 6,667.20 \$ 3,468.60	\$ 35		12.5 12.4
32LED 32LED 32LED	360 359 (Work Room)	18	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60	0 1.1	SW 26	00 2.808	18 18 7	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30	0.5 0.5 0.2	C-0CC	1,820	983	1,825 0.5 1,825 0.5 710 0.2	\$ 267.08 \$ 267.08 \$ 103.87	\$ 3,468.60 \$ 3,468.60 \$ 1,513.90	\$ 35	13.0 13.0 14.6	12.9 12.9 14.2
32LED 32LED	UN-191 UN-190	2 2	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 0.1	SW 5 SW 5	20 62 20 62	2 2	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30 30 30	0.1 0.1	NONE NONE	520 520		710 0.2 31 0.1 31 0.1	\$ 8.40 \$ 8.40	\$ 355.40	\$ -	42.3 42.3	42.3 42.3
32LED 32LED	UN-189 UN-188	4 4	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 0.2 0 0.2	SW 5 SW 5	20 125 20 125	4 4	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30 30 30	0.1 0.1	00C	520 520	62	62 0.1 62 0.1	\$ 16.80 \$ 16.80	\$ 839.05 \$ 839.05	\$ 20 \$ 20	50.0 50.0	48.8 48.8
32LED 32LED	UN-205 UN-204	4	1T 32 R F 2 (ELE) 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 0.2	SW 5 SW 5	20 125	4	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2 200732x2 200732x2 200732x2 200732x2	30 30	0.1 0.1	00C	520 520	62	62 0.1 62 0.1	\$ 16.80 \$ 16.80	\$ 839.05	\$ 20	50.0 50.0	48.8 48.8
32LED 35LED	Corridor D Corridor D	12	1T 32 R F 2 (ELE) T 32 R F 3 (ELE) S 28 P F 1 (ELE)	F42LL F43SSILL	72	0 0.7	SW 62 SW 62 SW 26	40 5,391	12	4 ft LED Tube T 59 R LED	KILLDSO		0.4	NONE NONE	6,24l 6,24l		2.546 0.4	\$ 305.73 \$ 346.49			7.0 8.2	7.0 8.2
20LED 20LED	310 311 312A	12 18	S 28 P F 1 (ELE)	F41SSILL F41SSILL F41SSILL	26	6 0.3 6 0.5	SW 26	00 811 00 1,217 00 1,217	12	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x1 200732x1	15 15 15	0.2 0.3	C-OCC	1,82	328 491 491	484 0.1 725 0.2 725 0.2	\$ 69.93 \$ 104.89 \$ 104.89	\$ 1,676.40 \$ 2,379.60 \$ 2,379.60	\$ 35		23.5 22.4
20LED	312A	18	S 28 P F 1 (ELE)	F41SSILL	26	6 0.5	SW 26	Juj 1,217	18	H ILED INDE	200732x1	15	0.3	C-0CC	1,82	491	725 0.2	a 104.89	a 2,379.60	φ 35	22.7	22.4

Area Description	No. of Fixtures Standard Fixture Code		atts per Fixture	kW/Space Exist Control Annual	Hours Annual kWh	Number of Fixture	s Standard Fixture Code	Fixture Code	CONDITIONS Watts per Fixture	kW/Space	Retrofit Control	Annual U	s Annual kWh	Annual kWh Saved An	nnual kW Saved Annual \$ Sa	ved Retrofit Cost	NJ Smart Start Lighting Incentive	Simple Paybact With Out Incentive	Simp
nique description of the location - Room number/Ro name: Floor number (if applicable)			from (W	/atts/Fixt) * (Fixt control device control device hours for	daily (kW/space) *	No. of fixtures afte	r Lighting Fixture Code	Code from Table of Standard Fixture	Value from Table of	(Watts/Fixt) * (Number of		Annual Hour Estimated annual hours	(kW/space) *	(Original Annual (Or	riginal Annual (kWh Saved) () - (Retrofit (\$/kWh)	* Cost for renovations to	Prescriptive Lighting	Length of time for renovations	e Lengt
,, ,, ,, ,, ,, ,, ,		Stand Fixtur	dard re	usage gro				Wattages	Standard Fixture	Fixtures)		for the usage group			nual kW)	lighting system	Measures	cost to be recovered	be
312B 313	18 S 28 P F 1 (ELE) 18 S 28 P F 1 (ELE)	F41SSILL F41SSILL	iges 26	0.5 SW 0.5 SW	2600 1,2 2600 1,2	217 18 217 18	4 ft LED Tube	200732x1	Wattages 15	0.3	C-OCC	1,82	20 491	725 0.2		4.89 \$ 2,379.6		22.7 22.7	#
313 309 307	18 S 28 P F 1 (ELE) 18 S 28 P F 1 (ELE)	F41SSILL F41SSILL F41SSILL	26 26	0.5 SW 0.5 SW	2600 1,2	217 18 217 18 217 18	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x1 200732x1 200732x1	15 15 15	0.3 0.3 0.3	0-000	1,82	0 491 0 491	725 0.2 725 0.2 725 0.2	\$ 10	4.89 \$ 2,379.6 4.89 \$ 2,379.6 4.89 \$ 2,379.6	0 \$ 35	22.7 22.7 22.7	
308 306	18 S 28 P F 1 (ELE) 6 T 28 R F 2 (ELE)	F41SSILL F42LL	26 60	0.5 SW 0.4 SW	2600 1,2 2600 9	217 18 936 6	4 ft LED Tube T 38 R LED	200732x1 RTLED38	15 38	0.3 0.2	C-OCC OCC	1,82	0 491 00 274	725 0.2	\$ 10	4.89 \$ 2,379.6 2.10 \$ 1,545.7	0 \$ 35	22.7	+
305 304	15 S 28 P F 1 (ELE) 6 W 28 C F 2 (ELE)	F41SSILL F42LL	26 60	0.4 SW 0.4 SW	2600	014 15 936 6	4 ft LED Tube 4 ft LED Tube	200732x1 200732x2	15 30	0.2 0.2	C-OCC	1,82 1,20	0 410 0 216	720 0.2	\$ 10	7.41 \$ 2,028.0 2.87 \$ 1,440.4	5 \$ 20	14.0	
303 302	18 S 28 P F 1 (ELE) 18 S 28 P F 1 (ELE) 15 S 28 P F 1 (ELE)	F41SSILL F41SSILL F41SSILL	26 26	0.5 SW 0.5 SW 0.4 SW	2600 1,2	217 18	4 ft LED Tube 4 ft LED Tube	200732x1 200732x1	15 15	0.3	C-OCC	1,82	90 491 20 491	725 0.2	\$ 10	4.89 \$ 2,379.6 4.89 \$ 2,379.6	0 \$ 35	22.7	
326 323	15 S 28 P F 1 (ELE) 18 S 28 P F 1 (ELE) 18 S 28 P F 1 (FL F)	F41SSILL F41SSILL F41SSILL	26 26	0.4 SW 0.5 SW 0.5 SW	2600 1,0 2600 1,2 2600 1,2	014 15 217 18 217 18	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x1 200732x1 200732x1	15 15 15	0.2 0.3 0.3	C-OCC C-OCC	1,82	0 410 0 491	605 0.2 725 0.2 725 0.2	\$ 10	7.41 \$ 2,028.0 4.89 \$ 2,379.6 4.89 \$ 2,379.6	0 \$ 35	23.2 22.7 22.7	\pm
324 325	18 S 28 P F 1 (ELE) 18 S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 SW 0.5 SW	2600 1,2 2600 1,2	217 18 217 18	4 ft LED Tube 4 ft LED Tube	200732x1 200732x1	15 15	0.3 0.3	C-OCC	1,82	0 491 20 491	725 0.2	\$ 10	4.89 \$ 2,379.6 4.89 \$ 2,379.6	0 \$ 35	22.7	#
322 321	15 S 28 P F 1 (ELE) 18 S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.4 SW 0.5 SW	2600 1,0 2600 1,2	014 15 217 18	4 ft LED Tube 4 ft LED Tube	200732x1 200732x1	15 15	0.2 0.3	C-OCC	1,82	20 410 20 491	605 0.2 725 0.2		7.41 \$ 2,028.0 4.89 \$ 2,379.6	0 \$ 35 0 \$ 35		\exists
320 319 318	18 S 28 P F 1 (ELE) 6 S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.5 SW 0.2 SW 0.3 SW	2600	406 6	4 ft LED Tube 4 ft LED Tube	200732x1 200732x1	15 15	0.3 0.1	OCC	1,82	0 491 0 108 0 328	298 0.1	\$ 4	4.89 \$ 2,379.6 1.88 \$ 831.4	5 \$ 20	19.9	
318 317 316	12 S 28 P F 1 (ELE) 12 S 28 P F 1 (ELE) 24 S 28 P F 1 (ELE)	F41SSILL F41SSILL F41SSILL	26 26	0.3 SW 0.3 SW 0.6 SW	2600 8	811 12 811 12 622 24	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x1 200732x1 200732x1	15 15 15	0.2 0.2 0.4	C-OCC	1,82	0 328 0 328 0 655		\$ 6	9.93 \$ 1,676.4 9.93 \$ 1,676.4 9.86 \$ 3,082.8	0 \$ 35	24.0 24.0 22.0	
315 314	24 S 28 P F 1 (ELE) 18 S 28 P F 1 (ELE)	F41SSILL F41SSILL	26 26	0.6 SW 0.5 SW		622 24 217 18	4 ft LED Tube 4 ft LED Tube	200732X1 200732X1 200732X1	15 15	0.4 0.3	C-OCC C-OCC	1,82	0 655 0 491	967 0.3 725 0.2	\$ 13	9.86 \$ 3,082.8 4.89 \$ 2,379.6	0 \$ 35	22.0	#
Corridor A UN-226	46 T 32 R F 3 (ELE) 3 1T 32 R F 2 (ELE)	F43SSILL F42LL	72 60	3.3 SW 0.2 SW	6240 20,6 3120 5	667 46 562 3	T 59 R LED 4 ft LED Tube	RTLED38 200732x2	38 30	1.7	NONE C-OCC	6,24 2,02	10 10,908 18 183		\$ 1,32 \$ 5	8.21 \$ 10,867.5 3.80 \$ 803.1	0 \$ -	8.2 14.9	=
UN-227 380	3 1T 32 R F 2 (ELE) 27 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.2 SW 1.6 SW	2600 4,2	562 3 212 27	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.1 0.8	C-OCC	2,02 1,82	28 183 20 1,474		\$ 40	3.80 \$ 803.1 0.63 \$ 5,067.9	0 \$ 35	14.9 12.6	
381B UN-230 UN-231	48 1T 32 R F 2 (ELE) 2 T 28 R F 2 (ELE) 2 T 28 R F 2 (ELE)	F42LL F42LL F42LL	60 60	2.9 SW 0.1 SW 0.1 SW	2600 7,4 520 520	488 48 62 2	4 ft LED Tube T 38 R LED T 38 R LED	200732x2 RTLED38 RTLED38	30 38 38	1.4 0.1	NONE NONE	1,82	2,621	4,867 1.4 23 0.0 23 0.0		2.22 \$ 8,799.6 6.16 \$ 472.5 6.16 \$ 472.5		12.4 76.7 76.7	+
UN-232 UN-233	2 T 28 R F 2 (ELE) 2 T 28 R F 2 (ELE)	F42LL F42LL F42LL	60	0.1 SW 0.1 SW		62 2	T 38 R LED T 38 R LED	RTLED38	38	0.1 0.1	NONE NONE	52	20 40		\$ 5 5	5.16 \$ 472.5 6.16 \$ 472.5 6.16 \$ 472.5	0 \$ -	76.7 76.7	#
UN-234 New Storage (Music)	2 T 28 R F 2 (ELE) 2 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.1 SW 0.1 SW	520 520	62 2 62 2	T 38 R LED 4 ft LED Tube	RTLED38 200732x2	38 30	0.1 0.1	NONE NONE	52	20 40 20 31	23 0.0 31 0.1	\$	6.16 \$ 472.5 8.40 \$ 355.4	0 \$ -	76.7 42.3	#
382 383B	21 1T 32 R F 2 (ELE) 14 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.3 SW 0.8 SW 0.4 SW	2600 2.1	276 21 184 14	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30 30	0.6 0.4	C-OCC	1,82 1,82	1,147 20 764	1,420 0.4	\$ 20	1.60 \$ 4,001.7 7.73 \$ 2,757.8	0 \$ 35	12.8 13.3	
384 Corridor C Gym Connect	6 1T 32 R F 2 (ELE) 20 T 28 R F 2 (ELE) 3 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60	0.4 SW 1.2 SW 0.2 SW	2600 S 2600 3,1	936 6 120 20 468 3	4 ft LED Tube T 38 R LED 4 ft LED Tube	200732x2 RTLED38 200732x2	30 38 30	0.2 0.8 0.1	C-OCC	1,20	00 216 20 1,383 00 180	720 0.2 1,737 0.4	\$ 24	2.87 \$ 1,194.4 8.57 \$ 4,995.0 2.51 \$ 803.1	0 \$ 35	11.6 20.1 18.9	\pm
Gym Connect Gym Lobby Gym Lobby	3 11 32 R F 2 (ELE) 4 1T 32 R F 2 (ELE) 15 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60	0.2 SW 0.2 SW 0.9 SW	2600 (468 3 624 4 340 15	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30 30 30	0.1 0.1	0-000	2,00	00 180 00 240 00 819	384 0.1 1,521 0.5	\$ 5	2.51 \$ 803.1 6.67 \$ 980.8 2.57 \$ 2,935.5	0 \$ 35	17.3 13.2	#
Gym Office Gym	6 1T 32 R F 2 (ELE)	F42LL MH200/1	60 232	0.4 SW 7.4 SW	2600	936 6 302 32	4 ft LED Tube FXLED78	200732X2 200732X2 FXLED78/1	30 78	0.2 2.5	C-OCC NONE	2,00 2,60	360	576 0.2	\$ \$	5.01 \$ 1,336.2 0.75 \$ 27,014.2	0 \$ 35	15.7	#
Boys Locker Room Girl's Locker Room	32 High Bay MH 200 35 Feet High 40 1T 32 R F 2 (ELE) 40 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	2.4 SW 2.4 SW	2600 6,2 2600 6,2	240 40 240 40	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	1.2	NONE NONE	2,60	00 3,120 00 3,120	3,120 1.2 3,120 1.2	\$ 47	7.46 \$ 7,108.0 7.46 \$ 7,108.0	0 \$ -	14.9 14.9	#
Team Room Boys Team Room Girls	14 1T 32 R F 2 (ELE) 14 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.8 SW 0.8 SW	2600 2,1	184 14 184 14	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30 30	0.4 0.4	NONE NONE	2,60	0 1,092	1,092 0.4	\$ 16	7.11 \$ 2,487.8 7.11 \$ 2,487.8	0 \$ -	14.9 14.9	+
Main Office Main Office Side Room Main Office Side Room	32 1T 32 R F 2 (ELE) 4 T 28 R F 2 (ELE) 1 1T 32 R F 2 (ELE)	F42LL F42LL F42LL	60 60	1.9 SW 0.2 SW 0.1 SW	2600 6	992 32 624 4	4 ft LED Tube T 38 R LED 4 ft LED Tube	200732x2 RTLED38	30 38 30	1.0 0.2	OCC	1,20	00 1,152 00 182	3,840 1.0 442 0.1	\$ 6	8.62 \$ 5,956.4 1.40 \$ 1,073.2 7.14 \$ 305.9		10.9 17.5 17.8	\pm
Main Office Kitchenette Maain Office Storage	1 1132 R F 2 (ELE) 4 T 28 R F 2 (ELE) 1 T 32 R F 3 (ELE)	F42LL F42LL F43SSILL	60	0.1 SW 0.2 SW 0.1 SW		156 1 408 4 37 1	T 38 R LED T 59 R LED	200732x2 RTLED38 RTLED38	38 38	0.0 0.2	000	1,19	00 181	120 0.0 227 0.1 18 0.0	\$ 3	4.81 \$ 1,073.2 4.76 \$ 364.5	5 \$ 20	30.8 76.6	#
Principal's Office Main Office Corridor	4 T28 R F 2 (ELE) 4 1T 32 R F 2 (ELE)	F42LL F42LL	60	0.2 SW 0.2 SW		624 4 624 4	T 38 R LED 4 ft LED Tube	RTLED38 200732x2	38 30	0.2 0.1	C-OCC NONE	1,20 2,60	182	442 0.1 312 0.1	\$ 6	1.40 \$ 1,215.0 7.75 \$ 710.8	0 \$ 35	19.8 14.9	#
Office Office	4 T 28 R F 2 (ELE) 9 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.2 SW 0.5 SW	2600 6 2600 1,4	624 4 404 9	T 38 R LED 4 ft LED Tube	RTLED38 200732x2	38 30	0.2 0.3	C-OCC	1,20	00 182 00 324	442 0.1 1,080 0.3	\$ 6	1.40 \$ 1,215.0 4.30 \$ 1,869.3	0 \$ 35 0 \$ 35	19.8 12.1	-
Office Storage Main Office Teachers Lounge	1 S 32 C F 2 (ELE) 14 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.1 SW 0.8 SW		31 1 184 14	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.0	NONE C-OCC	3,00	0 16 0 1,260		\$ 14	4.20 \$ 177.7 6.28 \$ 2,757.8 5.48 \$ 177.7	0 \$ 35	42.3 18.9	_
Exit 2B Women's Staff Restroom Men's Staff Restroom	1 1732 R F 2 (ELE) 1 1000 1 1100	F42LL I100/1 I100/1	100 100	0.1 SW 0.1 SW 0.1 SW	3120 3	374 1 312 1 312 1	4 ft LED Tube CF 26 CF 26	200732x2 CFQ26/1-L CFQ26/1-L	30 27 27	0.0 0.0	NONE NONE	3,12	20 84	228 0.1	\$ 3	5.48 \$ 177.7 3.75 \$ 40.5 3.75 \$ 40.5	0 \$ -	7.0 1.2 1.2	#
Corridor 170	11 T 28 R F 2 (ELE) 18 1T 32 R F 2 (ELE)	F42LL F42LL	60	0.7 SW 1.1 SW	6240 4,1	118 11 808 18	T 38 R LED 4 ft LED Tube	RTLED38	38 30	0.4 0.5	C-OCC	3,12	1,304	2,814 0.2	\$ 36	7.23 \$ 2,868.7	5 \$ 35	7.8 13.0	#
Guidance Office Guidance Office Copy Room	19 1T 32 R F 2 (ELE) 2 T 28 R F 2 (ELE)	F42LL F42LL	60 60	1.1 SW 0.1 SW	2600 2,5 2600 3	964 19 312 2	4 ft LED Tube T 38 R LED	200732x2 200732x2 RTLED38	30 38	0.6 0.1	C-OCC OCC	1,20	00 684 00 91	1,825 0.5 2,280 0.6 221 0.0	\$ 3	5.74 \$ 3,646.3 0.70 \$ 600.7	0 \$ 35 5 \$ 20	11.2 19.6	-
Guidance Office - Office Guidance Office 1	6 1T 32 R F 2 (ELE) 1 T 28 R F 2 (ELE)	F42LL F42LL	60 60	0.4 SW 0.1 SW	2600	936 6 156 1	4 ft LED Tube T 38 R LED	200732x2 RTLED38	30 38	0.2 0.0	000 000	1,20	00 216 00 46	720 0.2 110 0.0	\$ 1	2.87 \$ 1,336.2 5.35 \$ 364.5	0 \$ 20	13.0 23.7	+
Guidance Office 2 Guidance Office 3	1 T 28 R F 2 (ELE) 1 T 28 R F 2 (ELE) 1 T 28 R F 2 (ELE)	F42LL F42LL F42LL	60 60	0.1 SW 0.1 SW 0.1 SW	2600	156 1 156 1	T 38 R LED T 38 R LED T 38 R LED	RTLED38 RTLED38 RTLED38	38 38	0.0	000	1,20	00 46 00 46	110 0.0	\$ 1	5.35 \$ 364.5 5.35 \$ 364.5	0 \$ 20	23.7 23.7 23.7	\pm
Guidance Office 4 Guidance Office 5 Guidance Office 6	1 128 K F 2 (ELE) 1 T 28 R F 2 (ELE) 1 T 28 R F 2 (ELE)	F42LL F42LL F42LL	60 60	0.1 SW 0.1 SW 0.1 SW	2600	156 1 156 1	T 38 R LED T 38 R LED	RTLED38 RTLED38	38 38 38	0.0 0.0	000	1,20	00 46 00 46	110 0.0	\$ 1	5.35 \$ 364.5 5.35 \$ 364.5 5.35 \$ 364.5	0 \$ 20		#
Guidance Office 7 Guidance Office 8	1 T 28 R F 2 (ELE) 1 T 28 R F 2 (ELE)	F42LL F42LL	60 60	0.1 SW 0.1 SW	2600	156 1 156 1	T 38 R LED	RTLED38	38 38	0.0	OCC	1,20	00 46		\$ 1	5.35 \$ 364.5 5.35 \$ 364.5	0 \$ 20	23.7	#
Guidance Office 9 Guidance Office - Conference Room	1 T 28 R F 2 (ELE) 2 T 28 R F 2 (ELE)	F42LL F42LL	60 60	0.1 SW 0.1 SW	1200	156 1 144 2	T 38 R LED T 38 R LED	RTLED38 RTLED38	38 38 15	0.0 0.1	OCC C-OCC	1,20	00 46 00 64	110 0.0 80 0.0	\$ 1 3 \$ 1	5.35 \$ 364.5 3.26 \$ 742.5	0 \$ 20 0 \$ 35	23.7 56.0	-
Main Entrance Main Entrance	130 1T 32 R F 1 6 O CF 26	F41LL CFQ26/1-L	32 27	4.2 SW 0.2 SW	6240 1,0	958 130 011 6	4 ft LED Tube O CF 26	200732x1 CFQ26/1-L	27	2.0 0.2	NONE NONE	6,24	1,011	- 0.0	\$	6.82 \$ 18,876.0 - \$ -	\$ -	10.1	\pm
Main Entrance Display Case Auditorium Auditorium	12 S 30 C F 1 (MAG) 22 W 28 C F 2 (ELE) 111 W 28 C F 2 (ELE)	F31SS F42LL F42LL	46 60	0.6 SW 1.3 SW 6.7 SW	2600 3,4	444 12 432 22 316 111	S 25 C F 1 4 ft LED Tube 4 ft LED Tube	F31ILL 200732x2	26 30	0.3 0.7 3.3	NONE NONE	6,24 2,60	0 1,716	1,716 0.7	\$ 26	3.82 \$ 1,701.0 2.60 \$ 4,811.4 4.94 \$ 24,275.7	0 \$ -	8.3 18.3 18.3	#
Stage Stage Right	12 S 28 P F 1 (ELE) 2 W 28 C F 2 (ELE)	F42LL F41SSILL F42LL	26 60	0.3 SW 0.1 SW	2600 8	316 111 B11 12 62 2	4 ft LED Tube 4 ft LED Tube	200732x2 200732x1 200732x2	30 15 30	0.2 0.1	NONE NONE	2,60 2,60	00 468	343 0.1	\$ 5	4.94 \$ 24,275.7 2.52 \$ 1,406.4 3.40 \$ 437.4	0 \$ -	26.8 52.1	#
Stage Left Corridor (Outside Auditorium)	2 W 28 C F 2 (ELE) 20 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	0.1 SW 1.2 SW	520 6240 7,4	62 2 488 20	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.1 0.6	NONE NONE	52 6,24	20 31 40 3,744	31 0.1 3,744 0.6	\$	8.40 \$ 437.4 9.54 \$ 3,554.0	0 \$ -	52.1 7.0	\pm
Gymnasium Stairwell	25 T 54 W F 3 (ELE) (T-5) 9 1T 32 R F 2 (ELE)	F43GHL F42LL	177 60	4.4 SW 0.5 SW	2600 11,5 6240 3,3	505 25 370 9	T 54 W F 3 (ELE) (T-5) 4 ft LED Tube	F43GHL 200732x2	177 30	4.4 0.3	NONE NONE	2,60 6,24	00 11,505 10 1,685	- 0.0 1,685 0.3	\$ \$ \$ 22	- \$ - 9.29 \$ 1,599.3	\$ - 0 \$ -	7.0	\pm
Cafeteria Parent Survey Kitchen Dishwasher Room	110 T 28 R F 2 (ELE) 14 1T 32 R F 2 (ELE) 12 1T 32 R F 2 (FLE)	F42LL F42LL F42LL	60 60	6.6 SW 0.8 SW 0.7 SW		200 110 184 14	T 38 R LED 4 ft LED Tube	RTLED38 200732x2	38 30	4.2 0.4	NONE	1,40 2,60		7,348 2.4 1,092 0.4	\$ 1,09	3.81 \$ 26,257.5 7.11 \$ 2,487.8 8.45 \$ 2.132.4	0 \$ -	24.0 14.9	#
Kitchen Dishwasher Room Kitchen Basement (Under Kitchen)	12 11 32 K F 2 (ELE) 56 1T 32 K F 2 (ELE) 4 W 34 F 4 (ELE) 1'x8'	F42LL F42LL F44ILL	60 112	0.7 SW 3.4 SW 0.4 SW	2000 6,7	440 12 720 56 796 4	4 ft LED Tube 4 ft LED Tube T 74 R LED	200732x2 200732x2 RTLED50	30 30 50	0.4 1.7 0.2	NONE NONE	2,00 2,00 6,24	3,360		\$ 54	6.45 \$ 2,132.4 3.45 \$ 9,951.2 0.61 \$ 945.0	0 \$ -	18.3 18.3 4.5	#
Pantry Locker Room	5 W 34 F 4 (ELE) 1'x8' 2 S 28 P F 1 (ELE)	F44ILL F41SSILL	112 26	0.6 SW 0.1 SW	520 2	291 5 135 2	T 74 R LED 4 ft LED Tube	RTLED50 200732x1	50 15	0.2 0.3 0.0	NONE C-OCC	52	0 130 0 60	161 0.3 75 0.0	\$ \$ 4	3.39 \$ 1,181.2 0.99 \$ 504.4	5 \$ - 0 \$ 35	27.2 45.9	#
Locker Room Corridor A 1	2 S 28 P F 1 (ELE) 14 T 32 R F 3 (ELE)	F41SSILL F43SSILL	26 72	0.1 SW 1.0 SW	2600 f 6240 6,2	135 2 290 14	4 ft LED Tube T 59 R LED	200732x1 RTLED38	15 38	0.0 0.5	C-OCC NONE		60 3,320	75 0.0 2.970 0.5	\$ 1 5 \$ 40	0.99 \$ 504.4 4.24 \$ 3,307.5	0 \$ 35 0 \$ -	45.9 8.2	\pm
Starway 22 Basement Storage Child Study	14 S 32 C F 2 (ELE) 15 S 32 C F 2 (ELE) 18 1T 32 C F 2 (FLE)	F42LL F42LL F42ILL	60 60	0.8 SW 0.9 SW 1.1 SW	520		4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	0.4 0.5	NONE C-OCC	6,24 52	20 234	2,621 0.4 234 0.5	\$ \$	6.68 \$ 2,487.8 2.98 \$ 2,935.5	0 \$ 35	7.0 46.6	\pm
Child Study Child Study Office Child Study Office	18 1T 32 C F 2 (ELE) 6 1T 32 C F 2 (ELE) 6 1T 32 C F 2 (ELE)	F42ILL F42ILL F42ILL	59 59	1.1 SW 0.4 SW 0.4 SW		761 18 920 6	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30 30	0.5 0.2 0.2	0-000	1,20	00 648 00 216	704 0.2		1.44 \$ 4,206.6 0.48 \$ 1,582.2 0.48 \$ 1,582.2	0 \$ 35	14.0 15.7 15.7	#
Corridor Detention Room	9 1T 32 F 2 (ELE) 30 S 28 P F 1 (ELE)	F42LL F41SSILL	60 26	0.5 SW 0.8 SW	6240 3,3 2600 2,0	920 6 370 9 028 30	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x1	30 30 15	0.2 0.3 0.5	NONE C-OCC	6,24 1,82	819	1,209 0.3	\$ \$ 22 \$ \$ 17	9.29 \$ 1,599.3 4.82 \$ 3,786.0	0 \$ -	7.0 21.7	#
101 Athletic Office	19 W 34 F 4 (ELE) 1'x8' 6 W 34 F 4 (ELE) 1'x8'	F44ILL F44ILL	112 112	2.1 SW 0.7 SW	2600 5,5 2600 1,7	533 19 747 6	T 74 R LED T 74 R LED	RTLED50 RTLED50	50 50	1.0 0.3	C-OCC	1,82	1,729 00 360	3,804 1.2 1,387 0.4	\$ 56	0.59 \$ 4,758.7 0.09 \$ 1,687.5	5 \$ 35 0 \$ 35	8.5 8.4	\pm
Athletic Office Auto Shop	2 S 28 P F 1 (ELE) 27 W 34 F 4 (ELE) 1'x8'	F41SSILL F44ILL	26 112	0.1 SW 3.0 SW	2600 1 2600 7,8	135 2 862 27	4 ft LED Tube T 74 R LED	200732x1 RTLED50	15 50	0.0 1.4	NONE C-OCC	2,60 1,82	00 78 20 2,457	57 0.0 5,405 1.7	\$ \$ 75	8.75 \$ 234.4 6.62 \$ 6,648.7	5 \$ 35	26.8 8.3	\pm
Auto Shop 209 207	8 S 32 C F 2 (ELE) 4 T 32 R F 4 (ELE) 2 T 32 R F 4 (FLF)	F42LL F44ILL F44II I	112	0.5 SW 0.4 SW	2600 1,2 2600 1,1	248 8 165 4	4 ft LED Tube T 74 R LED	200732x2 RTLED50	30 50	0.2	C-OCC	1,82	20 437 20 364		! \$ 11	8.70 \$ 1,691.6 8.02 \$ 1,215.0	0 \$ 35 0 \$ 35	14.3 10.3	\pm
207 207 Restroom 208	2 T 32 R F 4 (ELE) 1 W 28 C F 2 (ELE) 6 1T 32 R F 2 (ELE)	F44ILL F42LL F42LL	112 60	0.2 SW 0.1 SW 0.4 SW		582 2 187 1 936 6	T 74 R LED 4 ft LED Tube 4 ft LED Tube	RTLED50 200732x2 200732x2	50 30 30	0.1 0.0 0.2	NONE C-OCC	1,82 3,12 1,83	182 20 94 20 328	94 0.0) \$ 1	9.01 \$ 742.5 3.87 \$ 218.7 9.03 \$ 1,336.2	0 \$ 35 0 \$ -	12.6 15.8 15.0	#
Corridor D 261	20 1T 32 R F 2 (ELE) 30 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	1.2 SW 1.8 SW	6240 7,4 2600 4,6	488 20 680 30	4 ft LED Tube 4 ft LED Tube 4 ft LED Tube	200732x2 200732x2 200732x2	30 30	0.2 0.6 0.9	NONE C-OCC	6,24		3,744 0.6		9.03 \$ 1,336.2 9.54 \$ 3,554.0 5.14 \$ 5,601.0	0 \$ -	7.0 12.6	#
264 270	60 1T 32 R F 2 (ELE) 18 1T 32 R F 2 (ELE)	F42LL F42LL	60	3.6 SW 1.1 SW	2600 9,3 2600 2,8	360 60 808 18	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	1.8 0.5	C-OCC	1,82	20 3,276 20 983	6,084 1.8 1,825 0.5	\$ 89	0.28 \$ 10,932.0 7.08 \$ 3,468.6	0 \$ 35 0 \$ 35	12.3 13.0	\pm
265 269	48 1T 32 R F 2 (ELE) 18 1T 32 R F 2 (ELE)	F42LL F42LL	60 60	2.9 SW 1.1 SW	2600 7,4 2600 2,8	488 48 808 18	4 ft LED Tube 4 ft LED Tube	200732x2 200732x2	30 30	1.4 0.5	C-OCC	1,82 1,82	2,621 983	4,867 1.4 1,825 0.5 1,320 0.3	\$ 71	2.22 \$ 8,799.6 7.08 \$ 3,468.6	0 \$ 35 0 \$ 35	12.4 13.0	Ξ
267 - Health Office 267 - Health Office	11 1T 32 R F 2 (ELE) 6 T 28 R F 2 (ELE)	F42LL F42LL	60	0.7 SW 0.4 SW 0.5 SW	2600 1,7	716 11 936 6	4 ft LED Tube T 38 R LED	200732x2 RTLED38	30 38	0.3 0.2	C-0CC	1,20	00 396 00 274	1,320 0.3 662 0.1		8.59 \$ 2,224.7 2.10 \$ 1,687.5	0 \$ 35	11.8 18.3	+

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			EXISTING CONDIT	TIONS						DETROCIT	CONDITIONS						COST 6 CAV	NGS ANALYSIS		
			EXISTING CONDIT	HUNS						REIROFII	CONDITIONS						COST & SAV	NGS ANALTSIS	I Cmart Start Cimple Day	uhaak
				Watts per							Watts per		Retrofit			Annual kWh			NJ Smart Start Simple Pag Lighting With O	
	Area Description	No. of Fixtures Standard Fixture Code	Fixture Code	Fixture	kW/Space	Exist Control	Annual Hours Annual kWi	Number of Fix	tures Standard Fixture Code	Fixture Code	Fixture	kW/Space		Annual Hours	Annual kWh		ved Annual \$ Saved	Retrofit Cost	Incentive Incenti	

ode	Unique description of the location - Room number/Room		Code from Table of Standard	Value from	(Watts/Fixt) * (Fixt		Estimated daily (kW/space) *		after Lighting Fixture Code	Code from Table of	Value from	(Watts/Fixt) *	Retrofit contro	ol Estimated	(kW/space) *	(Original Annual (Original Annu		Cost for P	escriptive Length of t	
	name: Floor number (if applicable)	before the retrofit	Fixture Wattages	Table of	No.)	control device	hours for the (Annual Hours)	the retrofit		Standard Fixture	Table of	(Number of	device	annual hours	(Annual	kWh) - (Retrofit kW) - (Retrofit	(\$/kWh)		ghting for renovat	
				Standard			usage group			Wattages	Standard	Fixtures)		for the usage	Hours)	Annual kWh) Annual kW)		lighting system N	easures cost to be	be recov
				Fixture							Fixture			group					recovered	/
				Wattages							Wattages									
	266 - Teachers Loung€	14 1T 32 R F 2 (ELE)	F42LL	60		SW	2600 2,	184 14	4 ft LED Tube	200732x2	30	0.4	C-OCC	3,000	1,260		\$ 146.28		35 18.9	
	266 - Teachers Lounge Women's Restroon	1 S 17 C F 1(ELE)	F21ILL	20	0.0	SW	3120	62 1	2 ft LED Tube	200714x2	16	0.0	NONE	3,120		12 0.0	\$ 1.85		- 85.3	
_	266 - Teachers Lounge Men's Restroon	1 S 17 C F 1(ELE)	F21ILL	20	0.0	SW	3120	62 1	2 ft LED Tube	200714x2	16	0.0	NONE	3,120		12 0.0 632 0.2	\$ 1.85		- 85.3	
	Boy's Restroom	5 1T 32 R F 2 (ELE)	F42LL	60	0.3	SW		936 5	4 ft LED Tube	200732x2	30	0.2	C-OCC	2,028	304		\$ 89.67		35 12.9	
)	Girl's Restroom	5 1T 32 R F 2 (ELE)	F42LL	60	0.3	SW		936 5	4 ft LED Tube	200732x2	30	0.2	C-OCC	2,028	304		\$ 89.67		35 12.9	
)	Corridor A 2	40 T 32 R F 3 (ELE)	F43SSILL	72	2 2.9	SW		971 40	T 59 R LED	RTLED38	38	1.5	NONE	6,240			\$ 1,154.97		- 8.2	
)	210 - Office	4 W 28 C F 2 (ELE)	F42LL	60	0.2	SW	2600	624 4	4 ft LED Tube	200732x2	30	0.1	C-OCC	1,200			\$ 68.58		35 16.7	
	210 - Office Storage	2 W 28 C F 2 (ELE)	F42LL	60	0.1	SW	520	62 2	4 ft LED Tube	200732x2	30	0.1	OCC	520		31 0.1	\$ 8.40		20 67.4	
	210 - Office Storage	2 W 28 C F 2 (ELE)	F42LL	60	0 0.1	SW		62 2	4 ft LED Tube	200732x2	30	0.1	OCC	520		31 0.1	\$ 8.40		20 67.4	
	210 - Office Conference Room	4 W 28 C F 2 (ELE)	F42LL	60	0.2	SW		288 4	4 ft LED Tube	200732x2	30	0.1	C-OCC	840	101	187 0.1	\$ 32.27		35 35.5	
	213A	5 W 28 C F 2 (ELE)	F42LL	60	0.3	SW		780 5	4 ft LED Tube	200732x2	30	0.2	C-OCC	1,820	273		\$ 74.19		35 18.4	
-	213	36 W 32 P F 2 (ELE)	F42LL	60	0 2.2	SW		616 36 340 15	4 ft LED Tube	200732x2	30	1.1	C-OCC	1,820	1,966		\$ 534.17 \$ 222.57		35 15.2	
+	214A	15 W 32 P F 2 (ELE)	F42LL	60	0.9	SW				200732x2	30	0.5	C-OCC	1,820					35 16.0	
	Media Center	64 1B 32 P F 2 (ELE)	F42LL	60	0 3.8	SW		984 64	4 ft LED Tube	200732x2	30	1.9	C-OCC	1,820	3,494		\$ 949.63		35 15.0	
	Media Center Media Center Office	90 1T 32 R F 2 (ELE) 2 1T 32 R F 2 (ELE)	F42LL F42LL	60	0 5.4	SW		040 90	4 ft LED Tube	200732x2	30	2.7	C-OCC	1,820	4,914		\$ 1,335.42		35 12.2	
+				60	0 0.1	SW	2000	312 2	4 ft LED Tube	200732x2	30	0.1	C-OCC	1,200	72	240 0.1	\$ 34.29		35 18.2	
	214B	5 W 28 C F 2 (ELE)	F42LL	60	0.3	SW		780 5	4 ft LED Tube	200732x2	30	0.2	C-OCC	1,820	273	507 0.2	\$ 74.19		35 18.4	
+	215	18 1T 32 R F 1 24 1T 32 R F 1	F41LL	32	2 0.6	SW		430 10	4 ft LED Tube	200732x1	15	0.3	C-OCC	1,820	491		\$ 147.87 \$ 197.15		35 19.5	
+	216	24 1T 32 R F 1 18 1T 32 R F 1	F41LL F41LI	37	2 0.8	SW		997 24 498 18	4 ft LED Tube	200732x1	15	0.4	C-OCC	1,820	655		\$ 197.15		35 19.0	
	211			32		SW				200732x1	15	0.3	C-OCC	1,820					35 19.5	
	219 220	18 1T 32 R F 1 20 1T 32 R F 1	F41LL F41LL	37	2 0.6	SW		498 18 664 20	4 ft LED Tube 4 ft LED Tube	200732x1	15 15	0.3	0.000	1,820	491	1,006 0.3	\$ 147.87 \$ 164.30		35 19.5	
	220 222A/B	20 11 32 R F 1 36 1T 32 R F 1	F41LL F41LI	32	2 0.6	SW				200732x1		0.3	C-OCC	1,820	546				35 19.3	
,	222A/B 223/221		F41LL F41LI	3,	2 1.2			995 36 496 30	4 ft LED Tube	200732x1	15	0.5	0.000	1,820	983	2,012 0.6	\$ 295.73		35 18.6	
	223/221	30 1T 32 R F 1 15 1T 32 R F 1	F41LL F41LI	32	2 1.0	SW			4 ft LED Tube	200732x1	15	0.5	C-OCC	1,820	819		\$ 246.44		35 18.8	
)	201			3,	2 0.5	SW		248 15 498 18	4 ft LED Tube 4 ft LED Tube	200732x1	15	0.2	C-OCC	1,820	410	839 0.3 1.006 0.3	\$ 123.22 \$ 147.87		35 19.9	
+	202	18 1T 32 R F 1 18 1T 32 R F 1	F41LL F41LL	32	2 0.6	SW				200732x1	15	0.3	C-OCC	1,820	491		\$ 147.87		35 19.5	
-	203	18 1T 32 R F 1	F41LL F41LI	3.	2 0.6	SW		498 18 498 18	4 ft LED Tube	200732x1 200732x1	15 15	0.3	0.000	1,820	491	1,006 0.3	\$ 147.87		35 19.5 35 19.5	
+	205	18 1T 32 R F 1	F41LL F41LI	3,	2 0.6	SW		498 18 498 18	4 ft LED Tube	200732X1 200732X1	15	0.3	0-000	1,820	491		\$ 147.87		35 19.5	
+	206 207A	15 1T 32 R F 1	F41LL F41LL	3.	2 0.6	SW		498 18 248 15	4 ft LED Tube	200732X1 200732X1	15	0.3	0.000	1,820	491	839 0.3			35 19.5	
+	207A 208B	15 1T 32 R F 1	F41LL F41LL	3.	2 0.5	SW		248 15	4 ft LED Tube	200732X1 200732X1	15	0.2	C-OCC	1,820	410		\$ 123.22 \$ 123.22		35 19.9	
+	Corridor C 2	7 1T 32 R F 2 (ELE)	F41LL F42LL	3.	0.5	SW	2000 1,	248 15	4 ft LED Tube	200732x1 200732x2		0.2	NONE	1,020		1.310 0.2	\$ 123.24		- 7.0	
+	Boy's Restroom	5 S 28 P F 1 (ELE)	F41SSILI	01	6 0.1	SW	0240 2,	406 5	4 ft LED Tube	200732X2 200732X1	30 15	0.2	NONE	6,240			\$ 178.34		- 7.0	
+	Girl's Restroom	5 S 28 P F 1 (ELE) 5 S 28 P F 1 (ELE)	F41SSILL F41SSILL	21	6 0.1	SW						0.1		3,120	234				- 23.0	
+	Corridor C 2	6 1T 32 R F 2 (FLF)	F41SSILL F42LL	21	0.1	SW		406 5	4 ft LED Tube 4 ft LED Tube	200732x1	15 30	0.1	NONE	3,120 6.240	1.123	172 0.1	\$ 25.43 \$ 152.86		- 23.0	2
+	Corridor C 2	4 T 32 R F 3 (ELE)	F42LL F43SSILI	01	0.4	SW		246 6 797 4	T 59 R LED	200732x2 RTLED38	38	0.2		6,240		849 0.1	\$ 152.80			
+	COITIGOT C 2	10 T 32 R F 3 (ELE)	F43SSILL F43SSILL	7.	2 0.3	SW		872 10	T 59 R LED	RTLED38	38	0.2	NONE	6,240	948	1.180 0.3	\$ 172.03		- 8.2 35 15.3	
+	282-B Gymnasium	18 T 54 W F 3 (ELE) (T-5)	F43SSILL F43GHL	17	7 3.2	SW		284 18	T 54 W F 3 (ELE) (T-5)	F43GHL	177	3.2	C-OCC NONE	2,600	8,284		\$ 172.0	\$ 2,032.50	35 15.3	
+	262-B Gyrinasiuni 281-A	10 T 32 R F 3 (ELE)	F43SSILL	171	2 0.7	SW		872 10	T 59 R I FD					2,000	0,264	1.416 0.3			25 42.4	
	281-A Boys Locker Room	10 1 32 R F 3 (ELE) 20 1T 32 R F 2 (ELE)	F43SSILL F42LL	//	0.7	SW		120 20	4 ft LED Tube	RTLED38 200732x2	38	0.4	C-OCC NONE	2,600		1,416 0.3	\$ 201.25 \$ 238.73		35 13.1 - 14.9	
	Entryway	13 1T 32 R F 2 (ELE)	F42LL F42LL	00	0 0.8	SW		658 13	4 ft LED Tube	200732X2 200732X2	30	0.6	C-OCC	2,000	1,560	1,560 0.6	\$ 238.73		35 13.8	
+	CIIIIyway	13 11 32 R F 2 (ELE)	F#ZLL	DI	U.0	OVV	2120 1,	000 13	+ IL LED TUDE	200732X2	30	0.4	0-000	#N/A	390	1,208 U.4	\$ 186.61	φ ∠,580.10 S	35 13.8	#V/
Τ-	ntol .	3,969		1	213.4	-	619.679	3,969			-	112.4	U	#IN/A	265,893		F4 40°	740.004	644.400	#7/
10	otal	3,303	· ·		213.4		619,679	3,969				112.4			,	100.9		740,684	\$11,460	
																and Savings	100.9	\$7,619		
																h Savings	353,785	\$43,869 \$51,489		. 14
																			14.4	

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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

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With New Jersey SmartStart Buildings ...

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

New Jersey SmartStart Buildings can provide a range of support — at no cost to you — to yield 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. This means you must submit an application form (and applicable worksheets) and receive an approval letter from the program before any equipment is installed (click here for complete Terms and Conditions.) Upon receipt of an approval letter, you may proceed to install the equipment listed on your approved application. Equipment installed prior to the date of the approval letter is not eligible for an incentive. Any customer and/or agent who purchases equipment prior to the receipt of an 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 construction project, or replacing/adding equipment.

Smart-Growth Eligibility: Check to make sure your project is eligible for incentives.

Incentives for new construction are available only for projects in areas designated for growth in the NJ State Development and Redevelopment Plan. Public school (K-12) new construction projects are exempted from this restriction and are eligible for incentives throughout the State.

Customers, or their trade allies, can determine if a location is in a designated growth area by referring to the Smart Growth Site Evaluator Tool available from the HMFA website. Contact a program representative if you are uncertain about project eligibility. The Smart Growth policies will be implemented consistent with Board Orders as described more fully in the C&I Operational Procedure Manual.

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

Support for Custom Energy-Efficiency Measures

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

incentives for Qualifying Equipment and Projects

Financial incentives are available for large and small projects. These incentives offset some — or maybe even all! — of the added cost to purchase qualifying energy-efficient equipment, which provides significant long-term energy savings. Ranges of incentives are available for qualifying 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 incentives for equipment not listed here, contact a program representative. Annual financial incentives may be

Program Updates

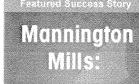
Notice of 2013 Changes to C&I Programs

Warranty and Lease Terms for CHP/Fuel Cells Increased to 10

Large Combined Heat & Power/Fuel Cell Program Update

Board Order - Standby Charges for Distributed Generation Customers

Other updates posted.



NJ SmartStart Buildings custom measures case Study presented at Globalcon Conference





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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 proces

submit an Equipment Application, and appropriate Equipment Worksheets, for the type or 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 specifications needed for your project) and a current utility bill(s).

In order to be eligible to receive financial incentives under this Program, Applicants must receive electric and/or gas service from one of 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.



Program Updates

Notice of 2013 Changes to C&I Programs

Warranty and Lease Terms for CHP/Fuel Cells Increased to 10

Large Combined Heat & Power/Fuel Cell Program Update

Board Order - Standby Charges for Distributed Generation Customers

Other updates posted.

Featured Success Story Mannington Mills:

NJ SmartStart Buildings custom measures case study presented of Globalcon Conference





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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 Path)

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 Enthaloy Economizer Controls (\$250) Occupancy Controlled Thermostats (\$75 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 Measure Path) Gas furnaces (\$300-\$400 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

II. DIRECT INSTALL

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Direct Install - Steps to Participation





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SIX SIMPLE STEPS TO PARTICIPATION

CONTACT THE PARTICIPATING CONTRACTOR IN YOUR AREA

Identify the contractor assigned and trained to provide Direct Install services in the county where your project is located. Using the contact information provided, call or send an e-mail to the participating contractor to discuss your project. The contractor will schedule an energy assessment and work with you to complete the program application and participation agreement

If you're unable to contact the participating contractor or have questions, you may contact us at 866 -NJSMART or send an e-mail to DirectInstall@NJCleanEnergy.com.

REVIEW RESULTS

After the energy assessment, the contractor will review the results with you, including what measures qualify and your share of the project cost.

MOVE FORWARD

You will sign a scope of work document to proceed with implementation of qualifying measures.

ARRANGE INSTALLATION

You and the participating contractor will set a convenient start date for the installation

CONFIRM INSTALLATION

Once the participating contractor completes the installation, you accept the work by signing a project completion form.

COMPLETE TRANSACTION

You pay the participating contractor your share of the project cost and New Jersey's Clean Energy Program pays the rest.



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III. PAY FOR PERFORMANCE (P4P)







2012 PAY FOR PERFORMANCE PROGRAM Existing Buildings Incentive Structure

Incentive #1: Energy Reduction Plan

Incentive Amount:......\$0.10 per sq ft Minimum Incentive:.......\$5,000

Maximum Incentive::.....\$50,000 or 50% of facility annual energy cost (whichever is less)

This incentive is designed to offset the cost of services associated with the development of the Energy Reduction Plan (ERP) and is paid upon ERP approval. Incentive is contingent on implementation of recommended measures outlined in the ERP.

Incentive #2: Installation of Recommended Measures

Minimum Performance Target:.....15%

Electric Incentives

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 per projected kWh saved

Gas Incentives

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

This incentive is based on projected energy savings outlined in the ERP. Incentive is paid upon successful installation of recommended measures.

Incentive #3: Post-Construction Benchmarking Report

Minimum Performance Target:.....15%

Electric Incentives

Base Incentive based on 15%	savings:\$0.09 per actual kWh saved
For each % over 15% add:	\$0.005 per actual kWh saved
Maximum Incentive:	\$0.11 per actual kWh saved

Gas Incentives

Base Incentive based on 15% savings: \$0.90 pe	er actual Therm saved
For each % over 15% add:\$0.05 pe	er actual Therm saved
Maximum Incentive:\$1.25 pe	r actual Therm saved

Incentive Cap:25% of total project cost

This incentive will be released upon submittal of a Post-Construction Benchmarking Report that verifies that the level of savings actually achieved by the installed measures meets or exceeds the minimum performance threshold. To validate the savings and achievement of the Energy Target, the EPA Portfolio Manager shall be used. Savings should be rounded to the nearest percent. Total value of Incentive #2 and Incentive #3 may not exceed 50% of the total project cost. Incentives will be limited to \$1 million per gas and electric account per building; maximum of \$2 million per project. See Participation Agreement for details.

IV. ENERGY SAVINGS IMPROVEMENT PLAN (ESIP)

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Energy Savings Improvement Program

A new State law 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 "Energy Savings Improvement Program" (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.

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

Local Government School Districts (K-12)

The Board also adopted protocols to measure energy savings.

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. Local units considering an ESIP should carefully review the Local Finance Notice, the law, and consult with qualified professionals to determine how they should approach the

FIRST STEP - ENERGY AUDIT

For local governments interested in pursuing an ESIP, the first step is to perform an energy audit. As explained in the Local Finance Notice, this may be done internally if an agency has qualified staff to conduct the audit. If not, the audit must be implemented by an independent contractor and not by the energy savings company producing the Energy Reduction Plan.

Pursuing a Local Government Energy Audit through New Jersey's Clean Energy Program is a valuable first step to the ESIP approach - and it's free. **Incentives provide 100% of the cost of the audit.**

ENERGY REDUCTION PLANS

If you have an ESIP plan you would like to submit to the Board of Public Utilities, please email it 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)

Program Updates

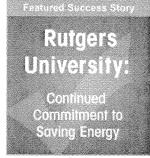
Notice of 2013 Changes to C&I Programs

Warranty and Lease Terms for CHP/Fuel Cells Increased to 10

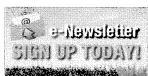
Large Combined Heat & Power/Fuel Cell Program Update

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Other updates posted.







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department of community affairs nequicolaris division of local government services

LFN 2011-17

June 16, 2011

Contact Information

Director's Office

- V. 609.292.6613
- F. 609.292.9073

Local Government Research

- V. 609.292.6110
- F. 609.292.9073

Financial Regulation and Assistance

- **V.** 609.292.4806
- F. 609.984.7388

Local Finance Board

- V. 609.292.0479
- F. 609.633.6243

Local Management Services

- V. 609.292.7842
- **F.** 609.633.6243

Authority Regulation

- V. 609.984.0132
- F. 609.984.7388

Mail and Delivery

101 South Broad St.

PO Box 803

Trenton, New Jersey 08625-0803

Web: www.nj.gov/dca/lgs E-mail: dlgs@dca.state.nj.us

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Local Finance Notice

Chris Christie

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Update on Implementing Energy Savings Improvement Programs

This Local Finance Notice provides guidance concerning Energy Savings Improvement Program (ESIP) matters that affect local units covered under the Local Public Contracts Law (LPCL, N.J.S.A. 40A:11) and the Public School Contracts Law (PSCL, N.J.S.A. 18A:18A).

The Notice covers a model ESCO (Energy Services Company) Request for Proposal document and provides information on using the "Do-It-Yourself" process for implementing an ESIP. This Notice supplements <u>Local Finance Notice 2009-11</u> concerning ESIPs.

Model ESCO Request for Proposal Document

General Issues

The Division of Local Government Services and the Board of Public Utilities have completed development of a model ESCO Request for Proposal Document. It is designed to assist all organizations (contracting units) covered by the LPCL and PSCL hire an energy services company (ESCO) to develop and implement an Energy Savings Plan (ESP) as part of an Energy Savings Improvement Program as authorized under N.J.S.A. 40A:11-4.6 and 18A:18A-4.6.

Specifically, the document serves as the starting point for these government agencies to select an ESCO through the competitive contracting procedure (N.J.S.A. 40A:11-4.1 et seq. and 18A:18A-4.1 et seq.).

Notwithstanding the efforts of the State agencies to ensure that the RFP is consistent with all relevant procurement procedures, laws, and regulations, there are several issues contracting unit personnel should keep in mind:

- 1) Local legal advisors should review the document to ensure it is consistent with any allowable local practices and legal considerations.
- 2) The individual responsible for managing the project should review the entire RFP in order to be able to answer questions and ensure the document meets local needs.
- 3) Forms have been carefully designed to meet the need of this specific process. Care should be taken if proposed forms are removed and replaced with ones normally used by the contracting unit.

The RFP also uses a formal process for potential proposers to submit questions and requests for clarifications. Appendix B is a form for the submission of these requests and is referred to throughout the text.

Contracting units are also reminded the Competitive Contracting process does not allow for negotiating proposals. While legal elements of the contract (project development agreement) may require legal determinations and modifications, the process does not allow for negotiation of price or related substantive elements and any element that would have provided less than a level playing field for proposers.

Contracting units are also cautioned that setting qualification standards that arbitrarily limit competition is inconsistent with public bidding requirements.

Office of State Comptroller Filing: Contracting units are also reminded of their obligations to meet State Comptroller requirements for public contracts. In accordance with N.J.S.A 52:15C-10, contracting units must notify OSC as early as practicable, but no later than 30 days before advertisement, of any negotiation or solicitation of a contract that may exceed \$10 million. Contracting units must also provide post-award notification for any contract for an amount exceeding \$2 million. Notification must be given within 20 days of the award.

Substantive Edits:

Several sections are highlighted in green. These sections should be carefully edited to meet contracting unit needs. This has important application to evaluation criteria in Section D. Once finalized, the green highlight should be removed.

Section B-16; Insurance should be reviewed by the contracting unit's Risk Management professionals to be sure the standards are appropriate to the contracting unit and the work to be done.

The following Sections also require local decisions and editing:

- A-3: # of copies of proposal and # of CDs to be submitted
- A-4: Web posting address, if desired
- A-5: If extra credit is to be provided on evaluation scoring for attending site walk through
- B-11: Delete LPCL or PSCL section as appropriate
- B-34: Use only if PSCL
- C-1: Explanation of type of audit information
- C-3(k): Include if ESCO is to provide financing option
- Use of Appendix F and Proposal Requirements #8: These forms are related to submission
 of Political Contribution Disclosure forms. Only PSCL agencies are required to use these
 forms as pursuant to Public School Fiscal Accountability Procedures (N.J.A.C. 6A23A6.3). The forms and references to it should be removed for all LPCL users.

Under the ESIP DIY approach, there would be no conflict in a properly procured single organization conducting the audit, developing the ESP, then preparing plans and specifications. This does not apply when using the ESCO approach, where the auditor and ESCO must be independent.

Once construction plans and specifications are complete, the contracting unit would then conduct the bidding process as it would any public works construction project: manage the project as it sees fit (the firm that did the plans could also serve as construction manager), and then contract as necessary for commissioning and final third party verification. The two verification steps (the ESP and verifying implementation) must be performed by an organization independent of the ones preparing the ESP, overseeing construction and commissioning.

By following this process, the contracting unit can then apply to the Local Finance Board for the issuance of ESIP-based energy saving obligations or enter into appropriate lease financing.

The ESIP approach to energy improvement provides a range of options for contracting units to accrue energy savings while improving the environment, taking advantage of low-cost financing and state and federal incentives. DLGS and the BPU encourage comments and questions (through the ESIP web page) on this new opportunity so we can improve it as time goes on.

Approved: Thomas H. Neff, Director, Division of Local Government Services

Table of Web Links

Page	Shortcut text	Internet Address	
1, 4	Local Finance Notice 2009-11	http://www.nj.gov/dca/lgs/lfns/09lfns/2009-11.doc	
2	ESIP webpage	http://www.nj.gov/dca/lgs/lpcl/esip.htm	
2	email comments	mailto:lpcl@dca.state.nj.us	
2	to register (via email	mailto:lpcl@dca.state.nj.us	
2	GovConnect Local Procurement	http://www.nj.gov/dca/surveys/ppsurvey.htm	
3	State Comptroller requirements.	http://www.nj.gov/comptroller/compliance/index.html	



NEWARK PUBLIC SCHOOL DISTRICT EAST SIDE HIGH SCHOOL

Cost of Electricity \$0.14 /kWh Electricity Usage 1,747,200 kWh/yr System Unit Cost /kW \$4,000

Photovoltaic (PV) Solar Power Generation - Screening Assessment

	Budgetary	Annual Utility Savings			Estimated	Total	Federal Tax	New Jersey Renewable	Payback (without	Payback (with	
	Cost					Maintenance	Savings	Credit	** SREC	SREC	SREC
Γ						Savings					
Γ	\$	kW	kWh	therms	\$	\$	\$	\$	\$	Years	Years
	\$520,000	130.0	162,366	0	\$22,731	0	\$22,731	\$0	\$25,167	22.9	10.9
_						(0000) 0000 (4-37	A . = =	//		

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

Area Output*

5,022 m2 54.053 ft2

Perimeter Output*

3,425 ft

Available Roof Space for PV:

(Area Output - 10 ft x Perimeter) x 85%

16,832 ft2

Approximate System Size:

Is the roof flat? (Yes/No) Yes

watt/ft2 134,660 DC watts

Array Tilt Angle

kW Enter into PV Watts 130

> Enter into PV Watts (always 20 if flat, if pitched - enter estimated roof angle) Enter into PV Watts (default)

Array Azimuth Zip Code Enter into PV Watts DC/AC Derate Factor Enter info PV Watts 0.83

PV Watts Output

PV Watts Inputs***

162,366 annual kWh calculated in PV Watts program

% Offset Calc

Usage 1,747,200 (from utilities) PV Generation

162,366 (generated using PV Watts) 9%

% offset

http://www.freemaptools.com/area-calculator.htm

http://www.flettexchange.com_

http://gisatnrel.nrel.gov/PVWatts_Viewer/index.html

÷



AC Energy & Cost Savings



East Side 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:	130.0 kW			
DC to AC Derate Factor:	0.830			
AC Rating:	107.9 kW			
Array Type:	Fixed Tilt			
Array Tilt:	20.0°			
Array Azimuth:	180.0°			
Energy Specifications				
Cost of Electricity:	14.0 ¢/kWh			

Results					
Month	Month Solar Radiation (kWh/m ² /day)		Energy Value (\$)		
1	2.78	9496	1329.44		
2	3.54	10941	1531.74		
3	4.35	14485	2027.90		
4	4.95	15354	2149.56		
5	5.69	17826	2495.64		
6	5.86	17242	2413.88		
7	5.73	17215	2410.10		
8	5.47	16263	2276.82		
9	4.91	14570	2039.80		
10	3.99	12637	1769.18		
11	2.68	8482	1187.48		
12	2.35	7855	1099.70		
Year	4.36	162366	22731.24		

Output Hourly Performance Data

*

Output Results as Text

About the Hourly Performance Data

Saving Text from a Browser

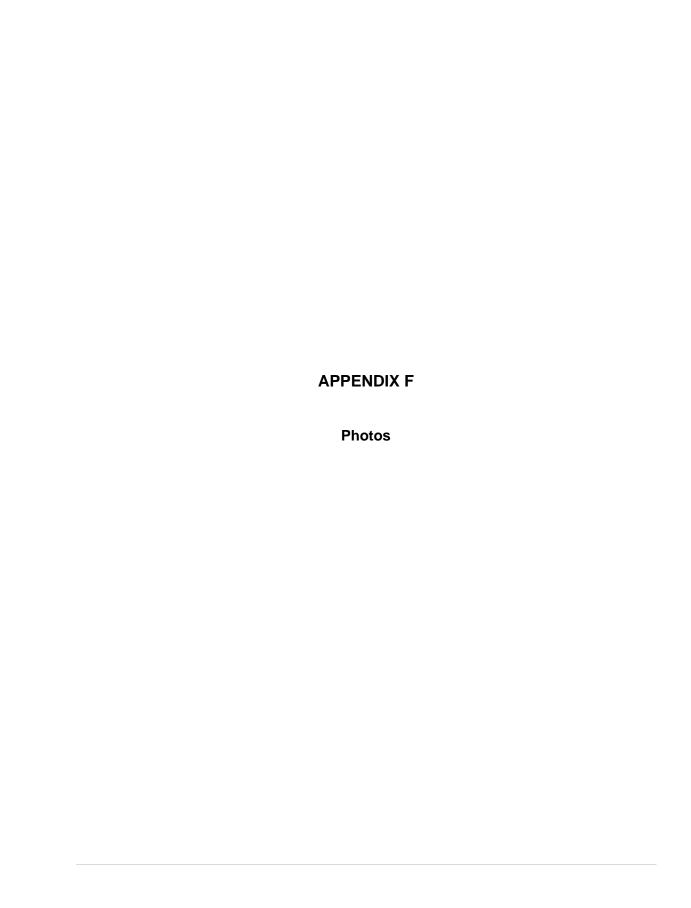
Run PVWATTS v.1 for another US location or an International location Run PVWATTS v.2 (US only)

Please send questions and comments regarding PVWATTS to Webmaster

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





1: Existing steam to hot water heat exchangers



2: Example of steam boiler (one of three)



3: Example of pumps in boiler room



4: Johnson Metasys controls system



5: DHW heater and storage tanks



6: Walk-In cooler unit in basement under kitchen



7: Sample gymnasium lighting fixture



8: Alternative gymnasium lighting fixture





ENERGY STAR[®] Statement of Energy Performance

68

East Side High School

Primary Property Function: K-12 School

Gross Floor Area (ft²): 302,353

Built: 1910

ENERGY STAR® Score¹

For Year Ending: May 31, 2013 Date Generated: May 13, 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 & Conta	ct Information					
Property Address East Side High Scho 238 Van Buren St. Newark, New Jersey		Property Owner	-	Primary Contact		
Property ID: 391666	67					
Energy Consump	otion and Energy Us	se Intensity (EUI)				
Site EUI 85.1 kBtu/ft² Annual Energy by Fu Electric - Grid (kBtu) Natural Gas (kBtu) Source EUI 129.7 kBtu/ft²		5,830,425 (23%)	% Diff from National Annual Emissions	ite EUI (kBtu/ft²) ource EUI (kBtu/ft²) al Median Source EUI	101.5 154.7 -16% 1,795	
	amp of Verifying		is true and correct t	o the best of my knowledge	e.	
Signature:		Date:				
Licensed Profession	onal					
, ()	- 					

Professional Engineer Stamp (if applicable)