CHERRY HILL TOWNSHIP SCHOOLS
KINGSTON ELEMENTARY SCHOOL

320 KINGSTON ROAD
CHERRY HILL, NJ 08034

FACILITY ENERGY REPORT

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I. HISTORIC ENERGY CONSUMPTION/COST

The energy usage for the facility has been tabulated and plotted in graph form as depicted within this section. Each energy source has been identified and monthly consumption and cost noted per the information provided by the Owner.

Electric Utility Provider:	Public Service Electric & Gas
Electric Utility Rate Structure:	General Lighting & Power (GLP)
Third Party Supplier:	South Jersey Energy Company

Natural Gas Utility Provider:	South Jersey Natural Gas
Utility Rate Structure:	Large Volume Gas (LVG)
Third Party Supplier:	Hess

The electric usage profile represents the actual electrical usage for the facility. The electric utility measures consumption in kilowatt-hours (KWH) and maximum demand in kilowatts (KW). One KWH usage is equivalent to 1000 watts running for one hour. One KW of electric demand is equivalent to 1000 watts running at any given time. The basic usage charges are shown as generation service and delivery charges along with several non-utility generation charges. Rates used in this report reflect the historical data received for the facility.

The gas usage profile within each facility report shows the actual natural gas energy usage for the facility. The gas utility measures consumption in cubic feet x 100 (CCF), and converts the quantity into Therms of energy. One Therm is equivalent to 100,000 BTUs of energy.

Table 1
Electricity Billing Data

ELECTRIC USAGE SUMMARY

Utility Provider: PSE&G
Rate: GLP
Meter No: 728007238
Account # 6961040918
Third Party Utility South Jersey Electric Company
TPS Meter / Acct No:

MONTH OF USE	CONSUMPTION KWH	DEMAND KW	TOTAL BILL
May-10	19,560	87.9	$3,063
Jun-10	19,560	106.8	$4,048
Jul-10	7,800	78.0	$2,057
Aug-10	6,720	34.8	$1,390
Sep-10	17,160	97.2	$3,643
Oct-10	19,440	87.6	$3,059
Nov-10	21,480	78.0	$3,304
Dec-10	23,880	74.4	$3,623
Jan-11	18,420	72.0	$2,771
Feb-11	22,080	72.0	$3,315
Mar-11	19,440	69.6	$2,945
Apr-11	16,920	86.4	$2,705
Totals	**212,460**	**106.8 Max**	**$35,923**

AVERAGE DEMAND **78.7 KW average**

AVERAGE RATE **$0.169** **$/kWh**

Figure 1
Electricity Usage Profile

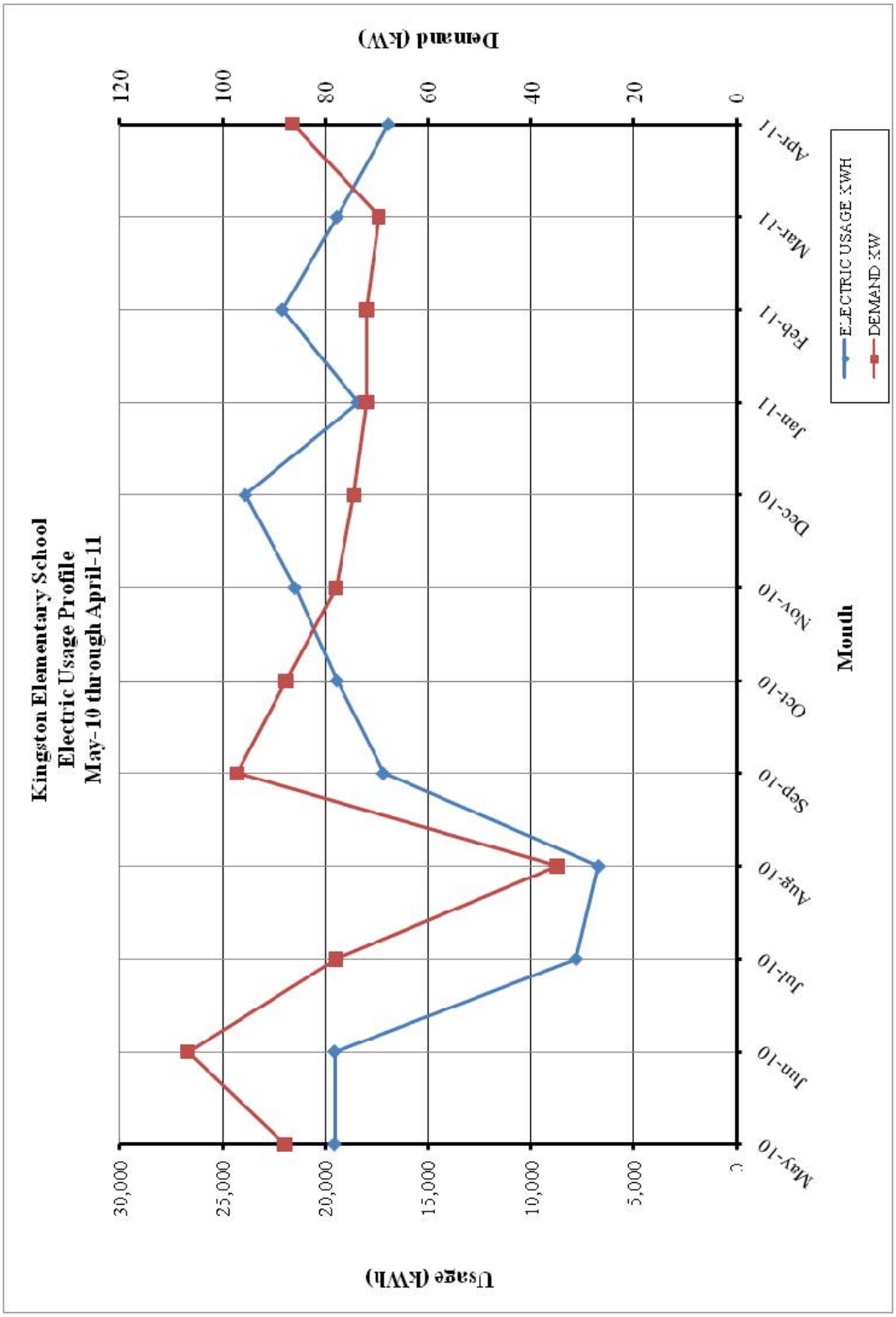
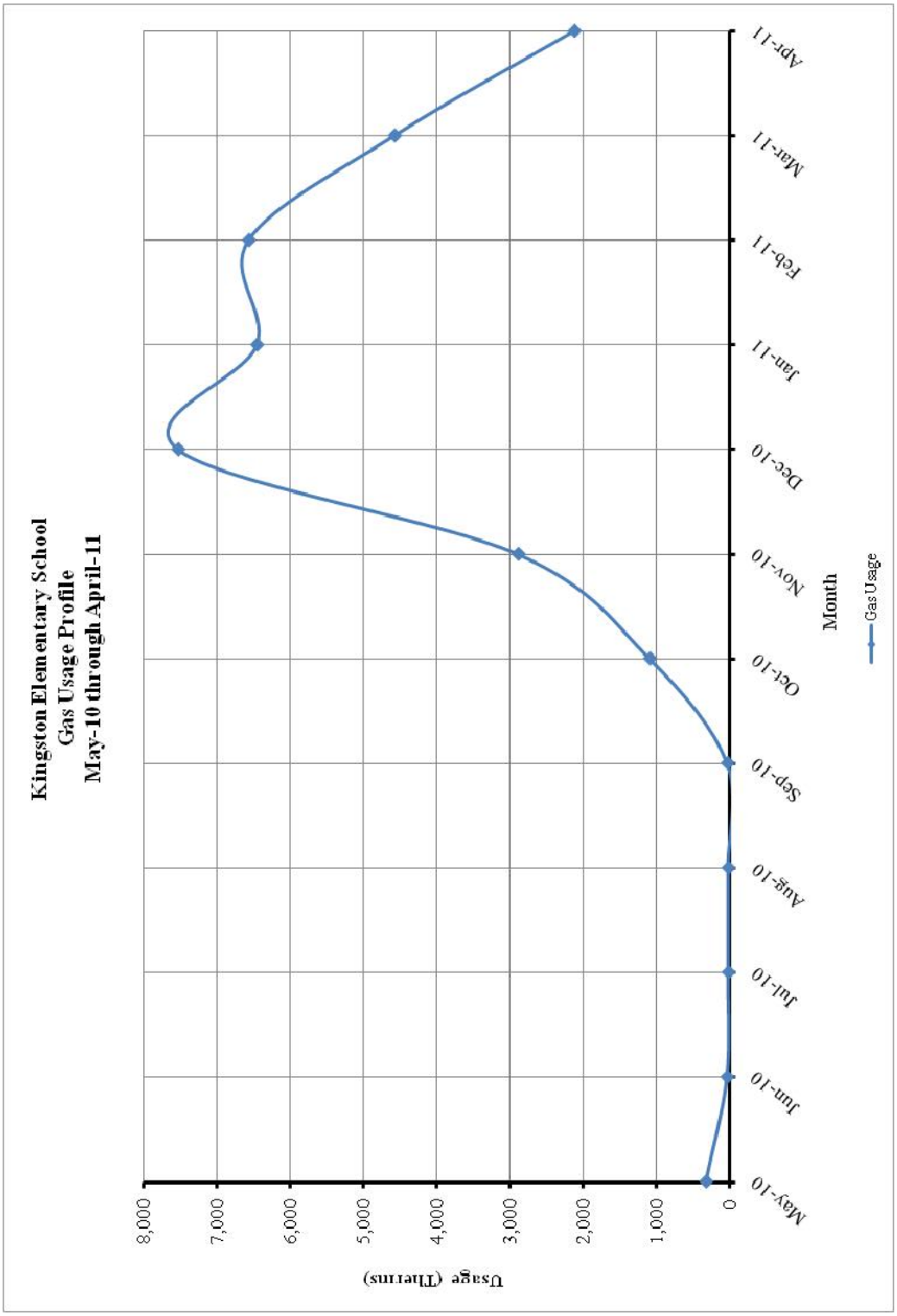


Table 4
Natural Gas Billing Data

NATURAL GAS USAGE SUMMARY		
Utility Provider: 6961040918		
Rate: LVG		
Meter No: 2599893		
Point of Delivery ID: PG000010776355998376		
Third Party Utility Provider: Hess		
TPS Meter No: 367900		
MONTH OF USE	**CONSUMPTION (THERMS)**	**TOTAL BILL**
May-10	320.81	$419.86
Jun-10	31.60	$117.17
Jul-10	15.33	$107.79
Aug-10	16.42	$109.98
Sep-10	27.40	$115.76
Oct-10	1,086.11	$906.70
Nov-10	2,883.35	$3,273.37
Dec-10	7,522.09	$6,967.03
Jan-11	6,446.49	$6,465.26
Feb-11	6,558.48	$6,402.50
Mar-11	4,567.86	$4,756.62
Apr-11	2,116.32	$1,676.56
TOTALS	**31,592.26**	**$31,318.60**
AVERAGE RATE:	**$0.99**	**$/THERM**

Figure 2
Natural Gas Usage Profile



II. FACILITY DESCRIPTION

Kingston Elementary School is located on 320 Kingston Road, in Cherry Hill, NJ 08034. The original building constructed in 1955 was 21,587 SF. Two additions were added in 1958 an 8,916 SF addition, and in 1962 a 13,470 SF addition. The 44,000 SF building is a single story facility utilized to educate students in grades one through five consisting of classrooms, multi-purpose room, serving kitchen, boiler room, and administration offices.

Occupancy Profile

The typical hours of operation for Kingston Elementary School are Monday through Friday between 7:00 am and 3:00 pm. The student enrollment at the Kingston Elementary School is approximately 368.

Building Envelope

The exterior walls of the original building construction are a brick and block type with minimal insulation that would be typical for a building constructed in the 1950's. It is estimated that due to the age, the building envelope is not as tightly insulated as new construction would provide.

Windows have been replaced from the original construction with double pane ¼" thermal panels with aluminum frames. The weather stripping and caulking on the outside of the windows is in good to fair condition. Blinds are utilized in the building for occupant comfort, and provide a minimal amount of solar heat gain in the summer months.

The original building contains a built-up gravel roofing system. Roof insulation could not be determined based on a visual inspection, but it is assumed to be minimal. The balance of the roof over the newer sections of the building consists mainly of a modified Bitumen roofing with 1½ " rigid insulation.

HVAC Systems

Heating for the building is provided through by two (2) H. B. Smith cast iron sectional boilers with a rated input of 2,843 MBH and a rated output of 2,200 MBH for a rated efficiency equal to 77%. Based on the age and condition of these boilers, the existing efficiency is estimated at 70%. Hot water is delivered to all the heating coils and fin-tube radiators via two (2) base-mounted Bell & Gossett pumps rated at 170 GPM at 60 feet of total dynamic heat and equipped with 5 HP motors.

Original (1972) Nesbitt unit ventilators are located throughout the classrooms, library and administration areas of the building. These are fed by the boiler hot water system described above and provide individual heating to each room. These systems are controlled via wall-mounted thermostat for occupant comfort. Cabinet unit heaters with fin-tube radiators heat the corridors, restrooms, and perimeter storage rooms. The all-purpose room is heated by fin-tube radiators that are mounted underneath the perimeter windows 32 feet above the floor.

Cooling for the building is provided by various makes and models of window air conditioning units that are mounted above the windows in the insulated panels.

Exhaust System

Air is exhausted from the toilet rooms and general areas through the roof exhausters. The classrooms are exhausted to the corridors and then to the roof via larger exhaust fans.

HVAC System Controls

A portion of the building is controlled by a Honeywell DDC controller that converts the existing pneumatic room systems to DDC using P/E switches. The original equipment from 1972 has all pneumatic controls that control room or zone thermostats.

Domestic Hot Water

Domestic hot water for the restrooms, kitchen sinks, and locker room showers is provided by a gas-fired Bradford White hot water heater rated at 199,000 BTU per hour with a recovery rate of 181.9 gallons per hour. This unit is a model D100T19993N with a rated efficiency of 82% and is three years old.

Lighting and Electronics

Kingston Elementary School contains a mixture of newer LCD based computer monitors and CRT monitors. Based on the building survey approximately half of the monitors in use are of CRT type. The CRT monitors use additional power and lack the energy saving features of newer model LCD monitors. In addition the majority of classrooms contain a CRT television for displaying content to students. A number of CRT televisions are also used on pushcarts to display content to students in other areas of the school.

Refer to the **Investment Grade Lighting Audit Appendix** for a detailed list of the lighting throughout the facility and estimated operating hours per space.

III. MAJOR EQUIPMENT LIST

The equipment list contains major energy consuming equipment that through implementation of energy conservation measures could yield substantial energy savings. The list shows the major equipment in the facility and all pertinent information utilized in energy savings calculations. An approximate age was assigned to the equipment in some cases if a manufactures date was not shown on the equipment's nameplate. The ASHRAE service life for the equipment along with the remaining useful life is also shown in the Appendix.

Refer to the **Major Equipment List Appendix** for this facility.

IV. ENERGY CONSERVATION MEASURES

Energy Conservation Measures are developed specifically for this facility. The energy savings and calculations are highly dependent on the information received from the site survey and interviews with operations personnel. The assumptions and calculations should be reviewed by the owner to ensure accurate representation of this facility. The following ECMs were analyzed:

Table 1
ECM Financial Summary

ENERGY CONSERVATION MEASURES (ECM's)					
ECM NO.	**DESCRIPTION**	**NET INSTALLATION COST[A]**	**ANNUAL SAVINGS[B]**	**SIMPLE PAYBACK (Yrs)**	**SIMPLE LIFETIME ROI**
ECM #1	Lighting Upgrade	$13,308	$4,111	3.2	363.4%
ECM #2	Lighting Controls Upgrade	$12,396	$2,999	4.1	262.9%
ECM #3	Computer Monitor Replacement	$2,300	$466	4.9	203.9%
ECM #4	Condensing Boiler Replacement	$221,260	$7,808	28.3	-11.8%
ECM #5	VFD on Hot Water Pumps	$19,962	$2,036	9.8	53.0%
ECM #6	Split System AC Upgrade	$489,711	$1,484	330.0	-95.5%
RENEWABLE ENERGY MEASURES (REM's)					
ECM NO.	**DESCRIPTION**	**NET INSTALLATION COST**	**ANNUAL SAVINGS**	**SIMPLE PAYBACK (Yrs)**	**SIMPLE LIFETIME ROI**
REM #1	Solar Photovoltaic System	$592,433	$65,443	9.1	65.7%
Notes:	A. Cost takes into consideration applicable NJ Smart StartTM incentives.				
	B. Savings takes into consideration applicable maintenance savings.				

Table 2
ECM Energy Summary

ENERGY CONSERVATION MEASURES (ECM's)				
ECM NO.	DESCRIPTION	ANNUAL UTILITY REDUCTION		
		ELECTRIC DEMAND (KW)	ELECTRIC CONSUMPTION (KWH)	NATURAL GAS (THERMS)
ECM #1	Lighting Upgrade	9.30	24328.00	0.00
ECM #2	Lighting Controls Upgrade	5.21	13601.00	0.00
ECM #3	Computer Monitor Replacement	0.00	2760.00	0.00
ECM #4	Condensing Boiler Replacement	0.00	0.00	7887.00
ECM #5	VFD on Hot Water Pumps	0.00	12048.00	0.00
ECM #6	Split System AC Upgrade	0.00	8782.00	0.00
RENEWABLE ENERGY MEASURES (REM's)				
ECM NO.	DESCRIPTION	ANNUAL UTILITY REDUCTION		
		ELECTRIC DEMAND (KW)	ELECTRIC CONSUMPTION (KWH)	NATURAL GAS (THERMS)
REM #1	Solar Photovoltaic System	96.6	118,000	0

Table 3
Facility Project Summary

ENERGY SAVINGS IMPROVEMENT PROGRAM - POTENTIAL PROJECT					
ENERGY CONSERVATION MEASURES	**ANNUAL ENERGY SAVINGS ($)**	**PROJECT COST ($)**	**SMART START INCENTIVES**	**CUSTOMER COST**	**SIMPLE PAYBACK**
Lighting Upgrade	$4,111	$13,998	$690	$13,308	3.2
Lighting Controls Upgrade	$2,999	$13,551	$1,155	$12,396	4.1
Computer Monitor Replacement	$466	$2,300	$0	$2,300	4.9
Condensing Boiler Replacement	$7,808	$226,885	$5,625	$221,260	28.3
VFD on Hot Water Pumps	$2,036	$20,070	$108	$19,962	9.8
Split System AC Upgrade	$1,484	$496,151	$6,440	$489,711	330.0
Design / Construction Extras (15%)		*$41,521*		*$41,521*	
Total Project	**$17,420**	**$318,325**	**$7,578**	**$310,747**	**17.8**

Highlighted ECMs are not included in total

Design / Construction Extras is shown as an additional cost for the facility project summary. This cost is included to estimate the costs associated with construction management fees for a larger combined project.

ECM #1: Lighting Upgrade

Description:

There are still some T-12 fixtures throughout the Kingston Elementary School. Improved fluorescent lamps and ballasts are available as direct replacements for the existing lamps and ballasts. A simple retrofit of the existing fixture can provide substantial savings. For example, a conventional drop-ceiling lay in fixture with four, 4-foot lamps (34 Watt lamps with magnetic ballast) has a total wattage of 144 Watts per fixture. By using T-8 lamps and electronic ballasts, the total wattage would be reduced to 86 Watts. The light levels would increase by about 15% and the light quality would increase by 35%.

Some of the remaining interior lighting at the Kingston Elementary School is provided with fluorescent fixtures with older generation, 700 series 32W T8 lamps and electronic ballasts. Although 700 series T8 lamps are considered fairly efficient, further energy savings can be achieved by replacing the existing T8 lamps with new generation, 800 series 28W T8 lamps without compromising light output. CEG recommends, re-lamping all of the fixtures with 28W T8 lamps.

This ECM includes retrofitting each of the existing T-12 fluorescent lamp and magnetic ballast fixtures with T-8 lamps and high-power electronic ballasts. High efficiency electronic ballasts reduce overall wattage while maintaining the existing lumen levels of the various rooms. This ECM also includes re-lamping of the existing fluorescent fixtures with 800 series, 28W T8 lamps. Additionally, the retrofit of all older fluorescent fixtures with T8 or T5 fluorescent fixtures with electronic ballasts in the building would prove to be more energy efficient. The new, energy efficient T8 fixtures will provide adequate lighting and will save on electrical costs due to better performance of the lamp and ballasts. This ECM also includes maintenance savings through the reduced number of lamps replaced per year. The expected lamp life of a T8 lamp is approximately 30,000 burn-hours, in comparison to the existing T12 lamps which is approximately 20,000 burn-hours. The facility will need approximately 33% less lamps replaced per year for each one for one fixture replaced.

The ECM also includes replacement of any incandescent lamps with compact fluorescent lamps. Compact fluorescent lamps (CFL's) were designed to be direct replacements for the standard incandescent lamps which are common to table lamps, spot lights, hi-hats, bathroom vanity lighting, etc. The light output of the CFL has been designed to resemble the incandescent lamp. The color rendering index (CRI) of the CFL is much higher than standard fluorescent lighting, and therefore provides a much "truer" light. The CFL is available in a myriad of shapes and sizes depending on the specific application. Typical replacements are: a 13-Watt CFL for a 60-Watt incandescent lamp, an 18-Watt CFL for a 75-Watt incandescent lamp, and a 26-Watt CFL for a 100-Watt incandescent lamp. The CFL is also available for a number of "brightness colors" that is indicated by the Kelvin rating. A 2700K CFL is the "warmest" color available and is closest in color to the incandescent lamp. CFL's are also available in 3000K, 3500K, and 4100K. The 4100K would be the "brightest" or "coolest" output. A CFL can be chosen to screw right into your existing fixtures, or hardwired into your existing fixtures. Where the existing fixture is controlled by a dimmer switch, the CFL bulb must be compatible with a dimmer switch. In some

locations the bulb replacement will need to be tested to make sure the larger base of the CFL will fit into the existing fixture. The energy usage of an incandescent compared to a compact fluorescent approximately 3 to 4 times greater. In addition to the energy savings, compact fluorescent fixtures burn-hours are 8 to 15 times longer than incandescent fixtures ranging from 6,000 to 15,000 burn-hours compared to incandescent fixtures ranging from 750 to 1000 burn-hours. However, the maintenance savings due to reduced lamp replacement is offset by the higher cost of the CFL's compared to the incandescent lamps.

Energy Savings Calculations:

The **Investment Grade Lighting Audit Appendix** outlines the hours of operation, proposed retrofits, costs, savings, and payback periods for each set of fixtures in the each building.

Rebates and Incentives:

From the **NJ Smart Start Incentive Appendix**, the retrofit of a T-12 fixture to a T-5 or T-8 fixture or the retrofit of existing 32 watt T-8 system to reduced wattage (28w/25w 4') warrants the following incentive: $10 per fixture.

Energy Savings Summary:

ECM #1 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$13,998
NJ Smart Start Equipment Incentive ($):	$690
Net Installation Cost ($):	$13,308
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$4,111
Total Yearly Savings ($/Yr):	$4,111
Estimated ECM Lifetime (Yr):	15
Simple Payback	3.2
Simple Lifetime ROI	363.4%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$61,665
Internal Rate of Return (IRR)	30%
Net Present Value (NPV)	$35,768.85

ECM #2: Lighting Controls Upgrade – Occupancy Sensors

Description:

Some of the lights in the Kingston Elementary School are left on unnecessarily. In many cases the lights are left on because of the inconvenience to manually switch lights off when a room is left or on when a room is first occupied. This is common in rooms that are occupied for only short periods and only a few times per day. In some instances lights are left on due to the misconception that it is better to keep the lights on rather than to continuously switch lights on and off. Although increased switching reduces lamp life, the energy savings outweigh the lamp replacement costs. The payback timeframe for when to turn the lights off is approximately two minutes. If the lights are expected to be off for at least a two minute interval, then it pays to shut them off.

Lighting controls come in many forms. Sometimes an additional switch is adequate to provide reduced lighting levels when full light output is not needed. Occupancy sensors detect motion and will switch the lights on when the room is occupied. Occupancy sensors can either be mounted in place of a current wall switch, or on the ceiling to cover large areas.

The U.S. Department of Energy sponsored a study to analyze energy savings achieved through various types of building system controls. The referenced savings is based on the "Advanced Sensors and Controls for Building Applications: Market Assessment and Potential R&D Pathways," document posted for public use April 2005. The study has found that commercial buildings have the potential to achieve significant energy savings through the use of building controls. The average energy savings are as follows based on the report:

- Occupancy Sensors for Lighting Control 20% - 28% energy savings.

Savings resulting from the implementation of this ECM for energy management controls are estimated to be 20% of the total light energy controlled by occupancy sensors and daylight sensors (The majority of the savings is expected to be after school hours when rooms are left with lights on)

This ECM includes installation of ceiling or switch mount sensors for individual offices, classrooms, large bathrooms, and libraries. Sensors shall be manufactured by Sensorswitch, Watt Stopper or equivalent. The **Investment Grade Lighting Audit Appendix** of this report includes the summary of lighting controls implemented in this ECM and outlines the proposed controls, costs, savings, and payback periods. The calculations adjust the lighting power usage by the applicable percent savings for each area that includes lighting controls.

Energy Savings Calculations:

$$\text{Energy Savings} = \left(\%\ \text{Savings} \times \text{Controlled Light Energy}\ \left(\text{kWh/Yr}\right)\right)$$

$$\text{Savings.} = \text{Energy Savings}\,(\text{kWh}) \times \text{Ave Elec Cost}\left(\frac{\$}{\text{kWh}}\right)$$

Cost and Incentives:

Installation cost per dual-technology sensors (Basis: Sensor switch or equivalent) are as follows:

Dual Tech. Occupancy Sensor w/ (1) 2 Pole Power packs - Remote Mnt.	$400 per installation
Dual Technology Occupancy Sensor - Switch Mnt.	$300 per installation
Dual Technology Occupancy Sensor - Remote Mnt.	$300 per installation

Cost includes material and labor.

From the **NJ Smart Start® Program Incentives Appendix**, the installation of a lighting control device warrants the following incentive:

Occupancy Sensor Fixture Mounted (existing facility only) = $20 per sensor
Occupancy Sensor Remote Mounted (existing facility only) = $35 per sensor

Energy Savings Summary:

ECM #2 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$13,551
NJ Smart Start Equipment Incentive ($):	$1,155
Net Installation Cost ($):	$12,396
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$2,999
Total Yearly Savings ($/Yr):	$2,999
Estimated ECM Lifetime (Yr):	15
Simple Payback	4.1
Simple Lifetime ROI	262.9%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$44,985
Internal Rate of Return (IRR)	23%
Net Present Value (NPV)	$23,405.87

ECM #3: Computer Monitor Replacement

Description:

The computers throughout Kingston Elementary School utilize a mixture of CRT computer monitors and LCD computer monitors. Computers are located in the offices, computer labs, media centers, and classrooms. The CRT computer monitors are outdated and have several disadvantages such as; significantly increased higher energy consumption, uses large amount of desk space, poor picture quality, distortions and flickering image, secular glare problems, and high weight, and electromagnetic emissions. Many of these drawbacks are difficult to quantify except for the energy use. CRT monitors use considerably more energy than an alternative flat panel LCD monitor. Replacement of the existing CRT monitors with LCD monitors saves considerable energy as well as provides other ergonomic benefits.

Based on the site survey it was noted that in some conditions the computers were left on and allowed to run 24 / 7, while in other rooms the computers were shut down. Some of the monitors were left in screen saver mode, which is deceiving since this mode only saves the computer screen from image burn in, however it does not save on energy consumption. The average operating hours for all computers and monitors is estimated based on the site survey observations. Energy consumption of computer monitors is based on manufacture's specifications.

This ECM includes replacement of all existing CRT monitors with LCD flat panel monitors throughout the school. Installation costs were neglected for this ECM with the intention that this ECM would be replaced by the school employees. The calculations are based on the following operating assumptions:

Energy Savings Calculations:

No. of CRT Monitors:	21
Weeks per Yr:	40
Hrs per Week:	60 (12 hrs per day. 5 days per week)

$$Electric\,Usage = \frac{\#\,of\ \ Computers \times Monitor\ \ Power\,(W) \times Operation\,(Hrs)}{1000\left(\frac{W}{KW}\right)}$$

$$Energy\ Cost = Electric\ Usage(kWh) \times Ave\ Elec\ Cost\left(\frac{\$}{kWh}\right)$$

COMPUTER MONITOR CALCULATIONS			
ECM INPUTS	**EXISTING**	**PROPOSED**	**SAVINGS**
ECM INPUTS	CRT Monitors	LCD Monitor	
# of Computers	23	23	
Monitor Power Cons. (W)	75	25	
Operating Hrs per Week	60	60	
Operating Weeks per Yr	40	40	
Elec Cost ($/kWh)	0.169	0.169	
ENERGY SAVINGS CALCULATIONS			
ECM RESULTS	**EXISTING**	**PROPOSED**	**SAVINGS**
Electric Usage (kWh)	4,140	1,380	2,760
Energy Cost ($)	$700	$233	$466
COMMENTS:	CRT Monitor consumption based on Dell CRT monitor M/N: CRT-E771MM. Operating hours based on estimated average.		

Installation cost of new monitors is estimated based on current pricing for a 17" LCD monitor on the market today. No labor costs were included for replacing the existing monitors with the new monitors. No incentives are available for installation of computer monitors. Net cost per monitor was estimated to be $100.

Installation Costs: # Monitors X Cost per Monitor
23 Monitors X $100 per Monitor
$2,300

Energy Savings Summary:

ECM #3 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$2,300
NJ Smart Start Equipment Incentive ($):	$0
Net Installation Cost ($):	$2,300
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$466
Total Yearly Savings ($/Yr):	$466
Estimated ECM Lifetime (Yr):	15
Simple Payback	4.9
Simple Lifetime ROI	203.9%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$6,990
Internal Rate of Return (IRR)	19%
Net Present Value (NPV)	$3,263.08

ECM #4: Condensing Boiler Installation

Description:

The central heating system consists of two H.B. Smith sectional gas-fired boilers that serve the building's heating hot water loop. These boilers were installed as part of the original construction of the building in 1955 and are 20 years beyond their useful service life as defined by ASHRAE. With the increased efficiency of the condensing boilers, the savings can be substantial.

New condensing boilers could substantially improve the operating efficiency of the heating system of the building. Condensing boiler's peak efficiency tops out at 99% depending on return water temperature. Due to the operating conditions of the building, the annual average operating efficiency of the proposed condensing boiler is expected to be 88%. The existing boiler's efficiency is approximately 60%, which makes the condensing boiler a 28% increase in efficiency. This ECM is based on variable supply water temperature adjusted based on outdoor temperature.

This ECM includes installation of two condensing gas fired boilers to replace the existing sectional boilers located in the original boiler room. The basis for this ECM is Aerco, Benchmark BMK-1.5LN-1 and BMK-3.0LN-1 condensing boilers or equivalent. The boiler installation is based on a one for one replacement based on capacity of the existing boiler.

Energy Savings Calculations:

Savings Calculations were calculated with energy modeling software, Trane Trace 700 version 6.2.6.5, to compare the existing conditions to the alternative energy conservation measure. The model was built using existing information collected and provided by Bret Harte Elementary School regarding lighting power density, occupancy profiles, HVAC information, and available floor plans.

ENERGY USAGE SAVINGS	
Electric Demand (kW)	0.00
Electric Consumption (kWh)	0
Natural Gas Consumption (therms)	7,887
ENERGY COST SAVINGS	
Electric Cost	$0
Natural Gas Cost	$7,808
Total Energy Cost	$7,808

Energy Savings Summary:

ECM #4 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$226,885
NJ Smart Start Equipment Incentive ($):	$5,625
Net Installation Cost ($):	$221,260
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$7,808
Total Yearly Savings ($/Yr):	$7,808
Estimated ECM Lifetime (Yr):	25
Simple Payback	28.3
Simple Lifetime ROI	-11.8%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$195,200
Internal Rate of Return (IRR)	-1%
Net Present Value (NPV)	($85,298.14)

ECM #5: Pump Motor & VFD Retrofit

Description:

The unit ventilators are utilizing a constant volume pumping design. The unit ventilators have pneumatic 2-way control valves which only allow flow through the unit ventilators when heating or cooling is necessary.

This ECM includes the installation of Variable Frequency Drives on the two (2) existing 5 horsepower pumps. The VFD's would be controlled by a differential pressure sensor in the water loop to measure demand for water. This ECM also includes replacement of the existing pump motors with inverter duty motors that meet NEMA Premium Efficiency Standard, which also helps to reduce energy consumption.

Energy Savings Calculations:

Savings Calculations were calculated with energy modeling software, Trane Trace 700 version 6.2.6.5, to compare the existing conditions to the alternative energy conservation measure. The model was built using existing information collected and provided by Clara Barton Elementary School regarding lighting power density, occupancy profiles, HVAC information, and available floor plans.

ENERGY USAGE SAVINGS	
Electric Demand (kW)	0.00
Electric Consumption (kWh)	12,048
Natural Gas Consumption (therms)	0
ENERGY COST SAVINGS	
Electric Cost	$2,036
Natural Gas Cost	$0
Total Energy Cost	$2,036

There are no incentives available for installation of variable frequency drives for boiler water systems.

From the **NJ Smart Start Incentive Appendix**, the replacement of the existing standard efficiency motors with NEMA premium efficiency motors warrants the following incentive: 5 HP motor = $54 per motor

Energy Savings Summary:

ECM #5 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$20,070
NJ Smart Start Equipment Incentive ($):	$108
Net Installation Cost ($):	$19,962
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$2,036
Total Yearly Savings ($/Yr):	$2,036
Estimated ECM Lifetime (Yr):	15
Simple Payback	9.8
Simple Lifetime ROI	53.0%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$30,540
Internal Rate of Return (IRR)	6%
Net Present Value (NPV)	$4,343.64

ECM #6: Window AC Upgrade

Description:

The primary source of cooling for the classrooms and offices throughout the school are window air conditioners. These units vary in size, capacity and efficiency. The units have been replaced on an "as needed" basis throughout the school district. Some window AC units are old and inefficient. Approximately 50% of the window AC units are estimated to be 10 years old or older.

While some of the units are new, many of the units are significantly older and inefficient. It is recommended to utilize the energy star ratings as a minimum standard for replacing any window unit that is in need of replacement. Existing units that are old, however still working should be considered for replacement if the efficiency is below 8.0 to 8.5 EER. Window AC units that are over 10 years old are very likely to fall in this efficiency range.

Energy Savings Calculations:

Savings Calculations were calculated with energy modeling software, Trane Trace 700 version 6.2.6.5, to compare the existing conditions to the alternative energy conservation measure. The model was built using existing information collected and provided by Kingston Elementary School regarding lighting power density, occupancy profiles, HVAC information, and available floor plans.

ENERGY USAGE SAVINGS	
Electric Demand (kW)	0.00
Electric Consumption (kWh)	8,782
Natural Gas Consumption (therms)	0
ENERGY COST SAVINGS	
Electric Cost	$1,484
Natural Gas Cost	$0
Total Energy Cost	$1,484

Energy Savings Summary:

ECM #6 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$496,151
NJ Smart Start Equipment Incentive ($):	$6,440
Net Installation Cost ($):	$489,711
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$1,484
Total Yearly Savings ($/Yr):	$1,484
Estimated ECM Lifetime (Yr):	15
Simple Payback	330.0
Simple Lifetime ROI	-95.5%
Simple Lifetime Maintenance Savings	0
Simple Lifetime Savings	$22,260
Internal Rate of Return (IRR)	-
Net Present Value (NPV)	($471,995.10)

REM #1: 96.59 kW Solar System

Description:

The Kingston Elementary School has available roof space that could accommodate a significant amount of solar generation. Based on the available area a 96.59 kilowatt solar array could be installed, assuming the existing roof structure is capable of supporting an array. The array will produce approximately 118,000 kilowatt-hours annually that will reduce the overall electric usage of the facility by 55.54%.

Energy Savings Calculations:

See **Renewable / Distributed Energy Measures Calculations Appendix** for detailed financial summary and proposed solar layout areas. Financial results in table below are based on 100% financing of the system over a fifteen year period.

Energy Savings Summary:

REM #1 - ENERGY SAVINGS SUMMARY	
System Size (KW_{DC}):	96.59
Electric Generation (KWH/Yr):	118,000
Installation Cost ($):	$592,433
SREC Revenue ($/Yr):	$45,501
Energy Savings ($/Yr):	$19,942
Total Yearly Savings ($/Yr):	$65,443
ECM Analysis Period (Yr):	15
Simple Payback (Yrs):	9.1
Analysis Period Electric Savings ($):	$370,900
Analysis Period SREC Revenue ($):	$659,143
Net Present Value (NPV)	$102,644.26

V. ADDITIONAL RECOMMENDATIONS

The following recommendations include no cost/low cost measures, Operation & Maintenance (O&M) items, and water conservation measures with attractive paybacks. These measures are not eligible for the Smart Start Buildings incentives from the office of Clean Energy but save energy none the less.

A. Chemically clean the condenser and evaporator coils periodically to optimize efficiency. Poorly maintained heat transfer surfaces can reduce efficiency 5-10%.

B. Maintain all weather stripping on windows and doors.

C. Clean all light fixtures to maximize light output.

D. Provide more frequent air filter changes to decrease overall system power usage and maintain better IAQ.

E. Turn off computers when not in use. Ensure computers are not running in screen saver mode which saves the monitor screen not energy.

F. Ensure outside air dampers are functioning properly and only open during occupied mode.

G. Educate staff and students on awareness of wasteful energy practices such as leaving lights on unnecessarily, leaving on of non-essential computer and/or equipment at the end of the day, leaving of outside doors/windows open as a means to control room temperature, etc.

ECM COST & SAVINGS BREAKDOWN

CONCORD ENGINEERING GROUP

Cherry Hill Public Schools – Kingston Elementary School

ECM ENERGY AND FINANCIAL COSTS AND SAVINGS SUMMARY															
ECM NO.	DESCRIPTION	INSTALLATION COST				YEARLY SAVINGS			ECM LIFETIME	LIFETIME ENERGY SAVINGS	LIFETIME MAINTENANCE SAVINGS	LIFETIME ROI	SIMPLE PAYBACK	INTERNAL RATE OF RETURN (IRR)	NET PRESENT VALUE (NPV)
		MATERIAL	LABOR	REBATES, INCENTIVES	NET INSTALLATION COST	ENERGY	MAINT. / SREC	TOTAL		(Yearly Saving * ECM Lifetime)	(Yearly Maint Svaing * ECM Lifetime)	(Lifetime Savings - Net Cost) / (Net Cost)	(Net cost / Yearly Savings)	$\sum_{n=0}^{N} \frac{C_n}{(1+IRR)^n}$	$\sum_{n=0}^{N} \frac{C_n}{(1+DR)^n}$
		($)	($)	($)	($)	($/Yr)	($/Yr)	($/Yr)	(Yr)	($)	($)	(%)	(Yr)	($)	($)
ECM #1	Lighting Upgrade	$11,198	$2,800	$690	$13,308	$4,111	$0	$4,111	15	$61,665	$0	363.4%	3.2	30.31%	$35,768.85
ECM #2	Lighting Controls Upgrade	$10,841	$2,710	$1,155	$12,396	$2,999	$0	$2,999	15	$44,985	$0	262.9%	4.1	23.13%	$23,405.87
ECM #3	Computer Monitor Replacement	$2,300	$0	$0	$2,300	$466	$0	$466	15	$6,990	$0	203.9%	4.9	18.72%	$3,263.08
ECM #4	Condensing Boiler Replacement	$109,733	$117,152	$5,625	$221,260	$7,808	$0	$7,808	25	$195,200	$0	-11.8%	28.3	-0.94%	($85,298.14)
ECM #5	VFD on Hot Water Pumps	$5,908	$14,162	$108	$19,962	$2,036	$0	$2,036	15	$30,540	$0	53.0%	9.8	5.86%	$4,343.64
ECM #6	Split System AC Upgrade	$193,645	$302,506	$6,440	$489,711	$1,484	$0	$1,484	15	$22,260	$0	-95.5%	330.0	-	($471,995.10)
REM RENEWABLE ENERGY AND FINANCIAL COSTS AND SAVINGS SUMMARY															
REM #1	Solar Photovoltaic System	$592,433	$0	$0	$592,433	$19,942	$45,501	$65,443	15	$981,645	$682,515	65.7%	9.1	7.10%	$188,821.29

Notes: 1) The variable Cn in the formulas for Internal Rate of Return and Net Present Value stands for the cash flow during each period.
2) The variable DR in the NPV equation stands for Discount Rate
3) For NPV and IRR calculations: From n=0 to N periods where N is the *lifetime of ECM* and Cn is the *cash flow during each period* .

Concord Engineering Group, Inc.

520 BURNT MILL ROAD
VOORHEES, NEW JERSEY 08043
PHONE: (856) 427-0200
FAX: (856) 427-6508

SmartStart Building Incentives

The NJ SmartStart Buildings Program offers financial incentives on a wide variety of building system equipment. The incentives were developed to help offset the initial cost of energy-efficient equipment. The following tables show the current available incentives as of February, 2010:

Electric Chillers

Water-Cooled Chillers	$12 - $170 per ton
Air-Cooled Chillers	$8 - $52 per ton

Energy Efficiency must comply with ASHRAE 90.1-2004

Gas Cooling

Gas Absorption Chillers	$185 - $400 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 - $93 per ton
Air-to-Air Heat Pumps	$73 - $92 per ton
Water-Source Heat Pumps	$81 per ton
Packaged Terminal AC & HP	$65 per ton
Central DX AC Systems	$40- $72 per ton
Dual Enthalpy Economizer Controls	$250
Occupancy Controlled Thermostat (Hospitality & Institutional Facility)	$75 per thermostat

Energy Efficiency must comply with ASHRAE 90.1-2004

Ground Source Heat Pumps

Closed Loop & Open Loop	$450 per ton, EER ≥ 16 $600 per ton, EER ≥ 18 $750 per ton, EER ≥ 20

Energy Efficiency must comply with ASHRAE 90.1-2004

Gas Heating

Gas Fired Boilers < 300 MBH	$300 per unit
Gas Fired Boilers ≥ 300 - 1500 MBH	$1.75 per MBH
Gas Fired Boilers ≥1500 - ≤ 4000 MBH	$1.00 per MBH
Gas Fired Boilers > 4000 MBH	(Calculated through Custom Measure Path)
Gas Furnaces	$300 - $400 per unit, AFUE ≥ 92%

Variable Frequency Drives

Variable Air Volume	$65 - $155 per hp
Chilled-Water Pumps	$60 per hp
Compressors	$5,250 to $12,500 per drive

Natural Gas Water Heating

Gas Water Heaters ≤ 50 gallons	$50 per unit
Gas-Fired Water Heaters > 50 gallons	$1.00 - $2.00 per MBH
Gas-Fired Booster Water Heaters	$17 - $35 per MBH
Gas Fired Tankless Water Heaters	$300 per unit

Prescriptive Lighting

Retro fit of T12 to T-5 or T-8 Lamps w/Electronic Ballast in Existing Facilities	$10 per fixture (1-4 lamps)
Replacement of T12 with new T-5 or T-8 Lamps w/Electronic Ballast in Existing Facilities	$25 per fixture (1-2 lamps) $30 per fixture (3-4 lamps)
Replacement of incandescent with screw-in PAR 38 or PAR 30 (CFL) bulb	$7 per bulb
T-8 reduced Wattage (28w/25w 4', 1-4 lamps) Lamp & ballast replacement	$10 per fixture
Hard-Wired Compact Fluorescent	$25 - $30 per fixture
Metal Halide w/Pulse Start	$25 per fixture
LED Exit Signs	$10 - $20 per fixture
T-5 and T-8 High Bay Fixtures	$16 - $284 per fixture
HID ≥ 100w Retrofit with induction lamp, power coupler and generator (must be 30% less watts/fixture than HID system)	$50 per fixture
HID ≥ 100w Replacement with new HID ≥ 100w	$70 per fixture
LED Refrigerator/Freezer case lighting replacement of fluorescent in medium and low temperature display case	$42 per 5 foot $65 per 6 foot

Lighting Controls – Occupancy Sensors

Wall Mounted	$20 per control
Remote Mounted	$35 per control
Daylight Dimmers	$25 per fixture
Occupancy Controlled hi-low Fluorescent Controls	$25 per fixture controlled

Lighting Controls – HID or Fluorescent Hi-Bay Controls

Occupancy hi-low	$75 per fixture controlled
Daylight Dimming	$75 per fixture controlled
Daylight Dimming - office	$50 per fixture controlled

Premium Motors

Three-Phase Motors	$45 - $700 per motor
Fractional HP Motors Electronic Communicated Motors (replacing shaded pole motors in refrigerator/freezer cases)	$40 per electronic communicated motor

Other Equipment Incentives

Performance Lighting	$1.00 per watt per SF below program incentive threshold, currently 5% more energy efficient than ASHRAE 90.1-2004 for New Construction and Complete Renovation
Custom Electric and Gas Equipment Incentives	not prescriptive
Custom Measures	$0.16 KWh and $1.60/Therm of 1st year savings, or a buy down to a 1 year payback on estimated savings. Minimum required savings of 75,000 KWh or 1,500 Therms and a IRR of at least 10%.
Multi Measures Bonus	15%

OMB No. 2060-0347

STATEMENT OF ENERGY PERFORMANCE
Cherry Hill BOE - Kingston School

Building ID: 2787774
For 12-month Period Ending: April 30, 2011[1]
Date SEP becomes ineligible: N/A

Date SEP Generated: August 02, 2011

Facility
Cherry Hill BOE - Kingston School
320 Kingston Road
Cherry Hill, NJ 08034

Facility Owner
Cherry Hill Public Schools
45 Ranoldo Terrace
Cherry Hill, NJ 08034

Primary Contact for this Facility
James Devereaux
45 Ranoldo Terrace
Cherry Hill, NJ 08034

Year Built: 1955
Gross Floor Area (ft²): 43,973

Energy Performance Rating[2] (1-100) 54

Site Energy Use Summary[3]

Electricity - Grid Purchase(kBtu)	724,914
Natural Gas (kBtu)[4]	3,159,226
Total Energy (kBtu)	3,884,140

Energy Intensity[5]

Site (kBtu/ft²/yr)	88
Source (kBtu/ft²/yr)	130

Emissions (based on site energy use)

Greenhouse Gas Emissions ($MtCO_2e$/year)	271

Electric Distribution Utility
Public Service Electric & Gas Co

National Average Comparison

National Average Site EUI	92
National Average Source EUI	135
% Difference from National Average Source EUI	-4%
Building Type	K-12 School

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

Meets Industry Standards[6] **for Indoor Environmental Conditions:**

Ventilation for Acceptable Indoor Air Quality	**N/A**
Acceptable Thermal Environmental Conditions	**N/A**
Adequate Illumination	**N/A**

Certifying Professional
Michael Fischette
520 South Burnt Mill Road
Voorhees, NJ 08043

Notes:
1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Values represent energy intensity, annualized to a 12-month period.
5. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

ENERGY STAR® Data Checklist for Commercial Buildings

In order for a building to qualify for the ENERGY STAR, a Professional Engineer (PE) or a Registered Architect (RA) must validate the accuracy of the data underlying the building's energy performance rating. This checklist is designed to provide an at-a-glance summary of a property's physical and operating characteristics, as well as its total energy consumption, to assist the PE or RA in double-checking the information that the building owner or operator has entered into Portfolio Manager.

Please complete and sign this checklist and include it with the stamped, signed Statement of Energy Performance.
NOTE: You must check each box to indicate that each value is correct, OR include a note.

CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	☑
Building Name	Cherry Hill BOE - Kingston School	Is this the official building name to be displayed in the ENERGY STAR Registry of Labeled Buildings?		☐
Type	K-12 School	Is this an accurate description of the space in question?		☐
Location	320 Kingston Road, Cherry Hill, NJ 08034	Is this address accurate and complete? Correct weather normalization requires an accurate zip code.		☐
Single Structure	Single Facility	Does this SEP represent a single structure? SEPs cannot be submitted for multiple-building campuses (with the exception of acute care or children's hospitals) nor can they be submitted as representing only a portion of a building		☐
Cherry Hill BOE - Kingston School (K-12 School)				
CRITERION	**VALUE AS ENTERED IN PORTFOLIO MANAGER**	**VERIFICATION QUESTIONS**	**NOTES**	☑
Gross Floor Area	43,973 Sq. Ft.	Does this square footage include all supporting functions such as kitchens and break rooms used by staff, storage areas, administrative areas, elevators, stairwells, atria, vent shafts, etc. Also note that existing atriums should only include the base floor area that it occupies. Interstitial (plenum) space between floors should not be included in the total. Finally gross floor area is not the same as leasable space. Leasable space is a subset of gross floor area.		☐
Open Weekends?	No	Is this building normally open at all on the weekends? This includes activities beyond the work conducted by maintenance, cleaning, and security personnel. Weekend activity could include any time when the space is used for classes, performances or other school or community activities. If the building is open on the weekend as part of the standard schedule during one or more seasons, the building should select ?yes? for open weekends. The ?yes? response should apply whether the building is open for one or both of the weekend days.		☐
Number of PCs	70	Is this the number of personal computers in the K12 School?		☐
Number of walk-in refrigeration/freezer units	0	Is this the total number of commercial walk-in type freezers and coolers? These units are typically found in storage and receiving areas.		☐
Presence of cooking facilities	Yes	Does this school have a dedicated space in which food is prepared and served to students? If the school has space in which food for students is only kept warm and/or served to students, or has only a galley that is used by teachers and staff then the answer is "no".		☐
Percent Cooled	70 %	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		☐
Percent Heated	90 %	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		☐
Months	10(Optional)	Is this school in operation for at least 8 months of the year?		☐

High School?	No	Is this building a high school (teaching grades 10, 11, and/or 12)? If the building teaches to high school students at all, the user should check 'yes' to 'high school'. For example, if the school teaches to grades K-12 (elementary/middle and high school), the user should check 'yes' to 'high school'.		☐

ENERGY STAR® Data Checklist for Commercial Buildings

Energy Consumption

Power Generation Plant or Distribution Utility: Public Service Electric & Gas Co

Fuel Type: Electricity

Meter: Electric (kWh (thousand Watt-hours))
Space(s): Entire Facility
Generation Method: Grid Purchase

Start Date	End Date	Energy Use (kWh (thousand Watt-hours))
04/01/2011	04/30/2011	16,920.00
03/01/2011	03/31/2011	19,440.00
02/01/2011	02/28/2011	22,080.00
01/01/2011	01/31/2011	18,420.00
12/01/2010	12/31/2010	23,880.00
11/01/2010	11/30/2010	21,480.00
10/01/2010	10/31/2010	19,440.00
09/01/2010	09/30/2010	17,160.00
08/01/2010	08/31/2010	6,720.00
07/01/2010	07/31/2010	7,800.00
06/01/2010	06/30/2010	19,560.00
05/01/2010	05/31/2010	19,560.00
Electric Consumption (kWh (thousand Watt-hours))		**212,460.00**
Electric Consumption (kBtu (thousand Btu))		**724,913.52**
Total Electricity (Grid Purchase) Consumption (kBtu (thousand Btu))		**724,913.52**
Is this the total Electricity (Grid Purchase) consumption at this building including all Electricity meters?		☐

Fuel Type: Natural Gas

Meter: Gas (therms)
Space(s): Entire Facility

Start Date	End Date	Energy Use (therms)
04/01/2011	04/30/2011	2,116.32
03/01/2011	03/31/2011	4,567.86
02/01/2011	02/28/2011	6,558.48
01/01/2011	01/31/2011	6,446.49
12/01/2010	12/31/2010	7,522.09
11/01/2010	11/30/2010	2,883.35
10/01/2010	10/31/2010	1,086.11
09/01/2010	09/30/2010	27.40
08/01/2010	08/31/2010	16.42
07/01/2010	07/31/2010	15.33

06/01/2010	06/30/2010	31.60
05/01/2010	05/31/2010	320.81
Gas Consumption (therms)		**31,592.26**
Gas Consumption (kBtu (thousand Btu))		**3,159,226.00**
Total Natural Gas Consumption (kBtu (thousand Btu))		**3,159,226.00**
Is this the total Natural Gas consumption at this building including all Natural Gas meters?		☐

Additional Fuels	
Do the fuel consumption totals shown above represent the total energy use of this building? Please confirm there are no additional fuels (district energy, generator fuel oil) used in this facility.	☐

On-Site Solar and Wind Energy	
Do the fuel consumption totals shown above include all on-site solar and/or wind power located at your facility? Please confirm that no on-site solar or wind installations have been omitted from this list. All on-site systems must be reported.	☐

Certifying Professional

(When applying for the ENERGY STAR, the Certifying Professional must be the same PE or RA that signed and stamped the SEP.)

Name: _____ Date: _____

Signature: _____

Signature is required when applying for the ENERGY STAR.

FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

Facility
Cherry Hill BOE - Kingston School
320 Kingston Road
Cherry Hill, NJ 08034

Facility Owner
Cherry Hill Public Schools
45 Ranoldo Terrace
Cherry Hill, NJ 08034

Primary Contact for this Facility
James Devereaux
45 Ranoldo Terrace
Cherry Hill, NJ 08034

General Information

Cherry Hill BOE - Kingston School	
Gross Floor Area Excluding Parking: (ft^2)	43,973
Year Built	1955
For 12-month Evaluation Period Ending Date:	April 30, 2011

Facility Space Use Summary

Cherry Hill BOE - Kingston School	
Space Type	K-12 School
Gross Floor Area(ft^2)	43,973
Open Weekends?	No
Number of PCs	70
Number of walk-in refrigeration/freezer units	0
Presence of cooking facilities	Yes
Percent Cooled	70
Percent Heated	90
Months°	10
High School?	No
School District°	Cherry Hill

Energy Performance Comparison

	Evaluation Periods		Comparisons		
Performance Metrics	**Current** (Ending Date 04/30/2011)	**Baseline** (Ending Date 04/30/2011)	**Rating of 75**	**Target**	**National Average**
Energy Performance Rating	54	54	75	N/A	50
Energy Intensity					
Site ($kBtu/ft^2$)	88	88	72	N/A	92
Source ($kBtu/ft^2$)	130	130	106	N/A	135
Energy Cost					
$/year	N/A	N/A	N/A	N/A	N/A
$/$ft^2$/year	N/A	N/A	N/A	N/A	N/A
Greenhouse Gas Emissions					
$MtCO_2e$/year	271	271	220	N/A	281
$kgCO_2e/ft^2$/year	6	6	5	N/A	6

More than 50% of your building is defined as K-12 School. Please note that your rating accounts for all of the spaces listed. The National Average column presents energy performance data your building would have if your building had an average rating of 50.

Notes:
o - This attribute is optional.
d - A default value has been supplied by Portfolio Manager.

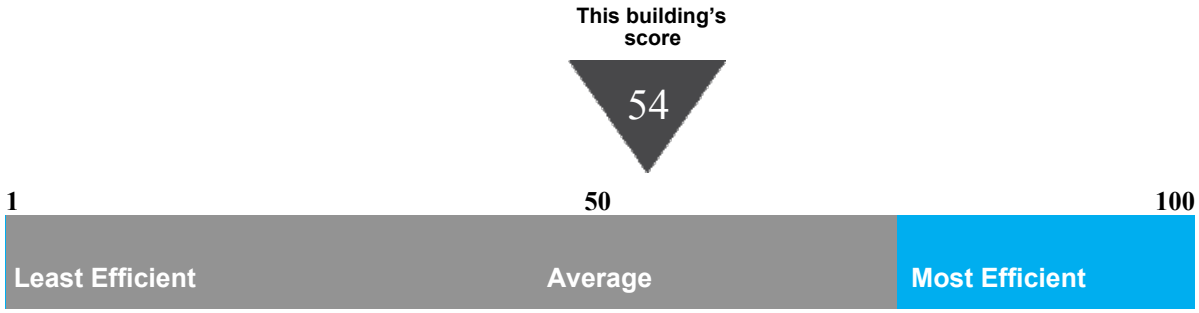
Statement of Energy Performance

2011

Cherry Hill BOE - Kingston School
320 Kingston Road
Cherry Hill, NJ 08034

Portfolio Manager Building ID: 2787774

The energy use of this building has been measured and compared to other similar buildings using the Environmental Protection Agency's (EPA's) Energy Performance Scale of 1–100, with 1 being the least energy efficient and 100 the most energy efficient. For more information, visit energystar.gov/benchmark.



This building uses 130 kBtu per square foot per year.*

*Based on source energy intensity for the 12 month period ending April 2011

Buildings with a score of 75 or higher may qualify for EPA's ENERGY STAR.

I certify that the information contained within this statement is accurate and in accordance with U.S. Environmental Protection Agency's measurement standards, found at energystar.gov

Date of certification

EPA United States Environmental Protection Agency

Date Generated: 08/02/2011

MAJOR EQUIPMENT LIST

Concord Engineering Group

Cherry Hill BOE - Kingston E. S.

AC Units

Tag		
Unit Type	Window A/C Unit	Window A/C Unit
Qty	12	16
Location	Various Classrooms/Offices	Various Classrooms/Offices
Area Served	Various Classrooms/Offices	Various Classrooms/Offices
Manufacturer	Various Mfg.	Frigidare
Model #	Info not Available	FAM186R2A
Serial #	Info not Available	Info not Available
Cooling Type	DX Coil	DX Coil
Cooling Capacity (Tons)	18,000 BTUH	18,500 BTUH
Cooling Efficiency (SEER/EER)	7.0 EER	10.7 EER
Heating Type	N/A	N/A
Heating Input (MBH)	N/A	N/A
Efficiency	N/A	N/A
Fuel	Electric	Electric
Approx Age	12	4
ASHRAE Service Life	15	15
Remaining Life	3	11
Comments		

Note:
"N/A" = Not Applicable.
"-" = Info Not Available

MAJOR EQUIPMENT LIST

Concord Engineering Group

Cherry Hill BOE - Kingston E. S.

Boilers

Tag	B-1	B-2
Unit Type	Cast Iron Sectional	Cast Iron Sectional
Qty	1	1
Location	Boiler Room	Boiler Room
Area Served	Entire Facility	Entire Facility
Manufacturer	H. B. Smith	H. B. Smith
Model #	450 Mills -11 Sections	450 Mills -11 Sections
Serial #	Info Not Available	Info Not Available
Input Capacity (Btu/Hr)	2,843 MBH	2,843 MBH
Rated Output Capacity (Btu/Hr)	2,200 MBH	2,200 MBH
Approx. Efficiency %	70% (Existing Condition)	70% (Existing Condition)
Fuel	Natural Gas	Natural Gas
Approx Age	55	55
ASHRAE Service Life	35	35
Remaining Life	(20)	(20)
Comments	Burner : Inject-Aire Thermopak	Burner : Inject-Aire Thermopak

Note:
"N/A" = Not Applicable.
"-" = Info Not Available

MAJOR EQUIPMENT LIST

Concord Engineering Group

Cherry Hill BOE - Kingston E. S.

Domestic Water Heaters

Tag		
Unit Type	Gas-Fired	
Qty	1	
Location	Boiler Room	
Area Served	Entire Facility	
Manufacturer	Bradford White	
Model #	D100T19993N	
Serial #	PA0808568	
Size (Gallons)	98	
Input Capacity (MBH/KW)	199,000 BTUH	
Recovery (Gal/Hr)	181.9	
Efficiency %	82%	
Fuel	Natural Gas	
Approx Age	3	
ASHRAE Service Life	12	
Remaining Life	9	
Comments		

Note:
"N/A" = Not Applicable.
"-" = Info Not Available

MAJOR EQUIPMENT LIST

Concord Engineering Group

Cherry Hill BOE - Kingston E. S.

Pumps

Tag	P-1	P-2
Unit Type	Base-Mounted Centrifugal	Base-Mounted Centrifugal
Qty	1	1
Location	Boiler Room	Boiler Room
Area Served	Zone 1	Zone 2
Manufacturer	Bell & Gossett	Bell & Gossett
Model #	U2B 8 BF	U2B 8 BF
Serial #	Info not Available	Info not Available
Horse Power	5 HP	5 HP
Flow	170 gpm @ 60 ft head	170 gpm @ 60 ft head
Motor Info	Baldor	Baldor
Frame	184 T	184 T
RPM	1750	1750
Motor Efficiency %	87.5%	87.5%
Approx Age	Info not Available	Info not Available
ASHRAE Service Life	20	20
Remaining Life	-	-
Comments		

Note:
"N/A" = Not Applicable.
"-" = Info Not Available

Investment Grade Lighting Audit

CEG Job #: 9C11001

Project: Kingston **Kingston** **KWH COST: $0.169**

Bldg. Sq. Ft.

ECM #1: Lighting Upgrade - General & Re-Lamping

EXISTING LIGHTING										PROPOSED LIGHTING									SAVINGS			
CEG Type	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly $ Cost	No. Fixts	No. Lamps	Retro-Unit Description	Watts Used	Total kW	kWh/Yr Fixtures	Yearly $ Cost	Unit Cost (INSTALLED)	Total Cost	kW Savings	kWh/Yr Savings	Yearly $ Savings	Yearly Simple Payback
122.21	Classroom 17	2600	3	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.23	608.4	$102.82	3	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.15	390	$65.91	$100.00	$300.00	0.08	218.4	$36.91	8.13
222.21		2600	12	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.74	1,934.4	$326.91	12	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.60	1560	$263.64	$14.00	$168.00	0.14	374.4	$63.27	2.66
122.21	Classroom 19	2600	6	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.47	1,216.8	$205.64	6	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.30	780	$131.82	$100.00	$600.00	0.17	436.8	$73.82	8.13
222.21		2600	9	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.56	1,450.8	$245.19	9	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.45	1170	$197.73	$14.00	$126.00	0.11	280.8	$47.46	2.66
122.21	Classroom 20	2600	2	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.16	405.6	$68.55	2	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.10	260	$43.94	$100.00	$200.00	0.06	145.6	$24.61	8.13
222.21		2600	13	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.81	2,095.6	$354.16	13	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.65	1690	$285.61	$14.00	$182.00	0.16	405.6	$68.55	2.66
222.21	Classroom 1	2600	15	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.93	2,418.0	$408.64	15	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.75	1950	$329.55	$14.00	$210.00	0.18	468	$79.09	2.66
222.21	Classroom 2	2600	15	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.93	2,418.0	$408.64	15	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.75	1950	$329.55	$14.00	$210.00	0.18	468	$79.09	2.66
222.21	Classroom 3	2600	12	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.74	1,934.4	$326.91	12	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.60	1560	$263.64	$14.00	$168.00	0.14	374.4	$63.27	2.66
222.21	Classroom 4	2600	15	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.93	2,418.0	$408.64	15	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.75	1950	$329.55	$14.00	$210.00	0.18	468	$79.09	2.66
222.21	Classroom 5	2600	15	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.93	2,418.0	$408.64	15	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.75	1950	$329.55	$14.00	$210.00	0.18	468	$79.09	2.66
222.21	Classroom 6	2600	15	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.93	2,418.0	$408.64	15	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.75	1950	$329.55	$14.00	$210.00	0.18	468	$79.09	2.66
122.21	Classroom 14	2600	1	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.08	202.8	$34.27	1	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.05	130	$21.97	$100.00	$100.00	0.03	72.8	$12.30	8.13
222.21		2600	20	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	1.24	3,224.0	$544.86	20	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	1.00	2600	$439.40	$14.00	$280.00	0.24	624	$105.46	2.66
3		2600	2	1	1x1 Receesed, 100w A19 Lamp	100	0.20	520.0	$87.88	2	1	26w CFL Lamps	26	0.05	135.2	$22.85	$20.00	$40.00	0.15	384.8	$65.03	0.62

Investment Grade Lighting Audit

ECM #1: Lighting Upgrade - General & Re-Lamping

EXISTING LIGHTING										PROPOSED LIGHTING									SAVINGS			
CEG Type	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly $ Cost	No. Fixts	No. Lamps	Retro-Unit Description	Watts Used	Total kW	kWh/Yr Fixtures	Yearly $ Cost	Unit Cost (INSTALLED)	Total Cost	kW Savings	kWh/Yr Savings	Yearly $ Savings	Yearly Simple Payback
613	Boiler Room Stairs	3000	1	1	Industrial Fixture, 100w A19 Lamp	100	0.10	300.0	$50.70	1	1	(1) 26w CFL Lamp	26	0.03	78	$13.18	$20.00	$20.00	0.07	222	$37.52	0.53
613	Boiler Room	3000	3	1	Industrial Fixture, 100w A19 Lamp	100	0.30	900.0	$152.10	3	1	(1) 26w CFL Lamp	26	0.08	234	$39.55	$20.00	$60.00	0.22	666	$112.55	0.53
211.11		3000	3	1	1x4, 1 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	33	0.10	297.0	$50.19	3	1	Relamp - Sylvania Lamp FO28/841/SS/ECO	25	0.08	225	$38.03	$7.00	$21.00	0.02	72	$12.17	1.73
211.11	Stage	2600	3	1	1x4, 1 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	33	0.10	257.4	$43.50	3	1	Relamp - Sylvania Lamp FO28/841/SS/ECO	25	0.08	195	$32.96	$7.00	$21.00	0.02	62.4	$10.55	1.99
247.11	Cafeteria	2600	12	4	2x2, 4 Lamp, 17w T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	68	0.82	2,121.6	$358.55	12	0	No Change	0	0.00	0	$0.00	$0.00	$0.00	0.00	0	$0.00	0.00
3520.1	Back Entrance - Kitchen	2600	1	2	Ceiling Mount White Globe, (2) 60w CFL Lamp	120	0.12	312.0	$52.73	1	2	13w CFL Lamps	26	0.03	67.6	$11.42	$20.00	$20.00	0.09	244.4	$41.30	0.48
612	Kitchen Office	2600	1	1	Pendant Mnt., 100w A19 Lamp	100	0.10	260.0	$43.94	1	1	(1) 26w CFL Lamp	26	0.03	67.6	$11.42	$20.00	$20.00	0.07	192.4	$32.52	0.62
211.11	Kitchen	2600	4	1	1x4, 1 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	33	0.13	343.2	$58.00	4	1	Relamp - Sylvania Lamp FO28/841/SS/ECO	25	0.10	260	$43.94	$7.00	$28.00	0.03	83.2	$14.06	1.99
211.11	PE Office	2600	1	1	1x4, 1 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	33	0.03	85.8	$14.50	1	1	Relamp - Sylvania Lamp FO28/841/SS/ECO	25	0.03	65	$10.99	$7.00	$7.00	0.01	20.8	$3.52	1.99
122.21	Classroom 7	2600	1	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.08	202.8	$34.27	1	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.05	130	$21.97	$100.00	$100.00	0.03	72.8	$12.30	8.13
222.21		2600	14	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.87	2,256.8	$381.40	14	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.70	1820	$307.58	$14.00	$196.00	0.17	436.8	$73.82	2.66
122.21	Classroom 9	2600	3	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.23	608.4	$102.82	3	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.15	390	$65.91	$100.00	$300.00	0.08	218.4	$36.91	8.13
222.21		3000	15	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.93	2,790.0	$471.51	15	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.75	2250	$380.25	$14.00	$210.00	0.18	540	$91.26	2.30
3		2600	1	1	1x1 Receesed, 100w A19 Lamp	100	0.10	260.0	$43.94	1	1	26w CFL Lamps	26	0.03	67.6	$11.42	$20.00	$20.00	0.07	192.4	$32.52	0.62
612	Closet - CR 9 & 11	1200	1	1	Pendant Mnt., 100w A19 Lamp	100	0.10	120.0	$20.28	1	1	(1) 26w CFL Lamp	26	0.03	31.2	$5.27	$20.00	$20.00	0.07	88.8	$15.01	1.33
122.21	Classroom 11	2600	2	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.16	405.6	$68.55	2	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.10	260	$43.94	$100.00	$200.00	0.06	145.6	$24.61	8.13
222.21		2600	16	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.99	2,579.2	$435.88	16	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.80	2080	$351.52	$14.00	$224.00	0.19	499.2	$84.36	2.66
3		2600	1	1	1x1 Receesed, 100w A19 Lamp	100	0.10	260.0	$43.94	1	1	26w CFL Lamps	26	0.03	67.6	$11.42	$20.00	$20.00	0.07	192.4	$32.52	0.62
242.15	Speech	2600	1	4	2x4, 4 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	107	0.11	278.2	$47.02	1	4	Relamp - Sylvania Lamp FO28/841/SS/ECO	98	0.10	254.8	$43.06	$28.00	$28.00	0.01	23.4	$3.95	7.08

Investment Grade Lighting Audit

ECM #1: Lighting Upgrade - General & Re-Lamping

EXISTING LIGHTING										PROPOSED LIGHTING									SAVINGS			
CEG Type	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly $ Cost	No. Fixts	No. Lamps	Retro-Unit Description	Watts Used	Total kW	kWh/Yr Fixtures	Yearly $ Cost	Unit Cost (INSTALLED)	Total Cost	kW Savings	kWh/Yr Savings	Yearly $ Savings	Yearly Simple Payback
211.11	Room 118	2600	4	1	1x4, 1 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	33	0.13	343.2	$58.00	4	1	Relamp - Sylvania Lamp FO28/841/SS/ECO	25	0.10	260	$43.94	$7.00	$28.00	0.03	83.2	$14.06	1.99
122.21	Classroom 13	2600	3	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.23	608.4	$102.82	3	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.15	390	$65.91	$100.00	$300.00	0.08	218.4	$36.91	8.13
222.21		2600	12	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.74	1,934.4	$326.91	12	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.60	1560	$263.64	$14.00	$168.00	0.14	374.4	$63.27	2.66
122.21	Classroom 15	2600	3	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.23	608.4	$102.82	3	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.15	390	$65.91	$100.00	$300.00	0.08	218.4	$36.91	8.13
222.21		2600	12	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.74	1,934.4	$326.91	12	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.60	1560	$263.64	$14.00	$168.00	0.14	374.4	$63.27	2.66
122.21	Classroom 18	2600	1	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.08	202.8	$34.27	1	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.05	130	$21.97	$100.00	$100.00	0.03	72.8	$12.30	8.13
222.21		2600	14	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.87	2,256.8	$381.40	14	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.70	1820	$307.58	$14.00	$196.00	0.17	436.8	$73.82	2.66
122.21	Classroom 16	2600	4	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.31	811.2	$137.09	4	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.20	520	$87.88	$100.00	$400.00	0.11	291.2	$49.21	8.13
222.21		2600	14	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.87	2,256.8	$381.40	14	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.70	1820	$307.58	$14.00	$196.00	0.17	436.8	$73.82	2.66
3		2600	1	1	1x1 Receesed, 100w A19 Lamp	100	0.10	260.0	$43.94	1	1	26w CFL Lamps	26	0.03	67.6	$11.42	$20.00	$20.00	0.07	192.4	$32.52	0.62
3	Closet - CR 14 & 16	2600	1	1	1x1 Receesed, 100w A19 Lamp	100	0.10	260.0	$43.94	1	1	26w CFL Lamps	26	0.03	67.6	$11.42	$20.00	$20.00	0.07	192.4	$32.52	0.62
122.21	Classroom 12	2600	4	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.31	811.2	$137.09	4	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.20	520	$87.88	$100.00	$400.00	0.11	291.2	$49.21	8.13
222.21		2600	14	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.87	2,256.8	$381.40	14	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.70	1820	$307.58	$14.00	$196.00	0.17	436.8	$73.82	2.66
122.21	Classroom 10	2600	4	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.31	811.2	$137.09	4	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.20	520	$87.88	$100.00	$400.00	0.11	291.2	$49.21	8.13
222.21		2600	14	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.87	2,256.8	$381.40	14	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.70	1820	$307.58	$14.00	$196.00	0.17	436.8	$73.82	2.66
612	Closet - CR 12 & 10	2600	1	1	Pendant Mnt., 100w A19 Lamp	100	0.10	260.0	$43.94	1	1	(1) 26w CFL Lamp	26	0.03	67.6	$11.42	$20.00	$20.00	0.07	192.4	$32.52	0.62
122.21	Classroom 8	2600	5	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.39	1,014.0	$171.37	5	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.25	650	$109.85	$100.00	$500.00	0.14	364	$61.52	8.13
222.21		2600	10	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.62	1,612.0	$272.43	10	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.50	1300	$219.70	$14.00	$140.00	0.12	312	$52.73	2.66

Investment Grade Lighting Audit

ECM #1: Lighting Upgrade - General & Re-Lamping

EXISTING LIGHTING										PROPOSED LIGHTING										SAVINGS			
CEG Type	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly $ Cost	No. Fixts	No. Lamps	Retro-Unit Description	Watts Used	Total kW	kWh/Yr Fixtures	Yearly $ Cost	Unit Cost (INSTALLED)	Total Cost	kW Savings	kWh/Yr Savings	Yearly $ Savings	Yearly Simple Payback
222.21	Girl's Restroom	2600	2	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.12	322.4	$54.49	2	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.10	260	$43.94	$14.00	$28.00	0.02	62.4	$10.55	2.66
222.21	Boy's Restroom	2600	2	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.12	322.4	$54.49	2	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.10	260	$43.94	$14.00	$28.00	0.02	62.4	$10.55	2.66
222.21	Book Room	2600	1	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.06	161.2	$27.24	1	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.05	130	$21.97	$14.00	$14.00	0.01	31.2	$5.27	2.66
2	Corridors	3000	47	1	2x2 2 Lamp 40w Biax Lamp	44	2.07	6,204.0	$1,048.48	47	0	No Change	0	0.00	0	$0.00	$0.00	$0.00	0.00	0	$0.00	0.00
211.22		3000	14	1	1x4, 1 Lamp, 32w T8, Elect. Ballast, cove lighting	30	0.42	1,260.0	$212.94	14	0	No Change	0	0.00	0	$0.00	$0.00	$0.00	0.00	0	$0.00	0.00
222.21	Classroom 110	2600	10	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.62	1,612.0	$272.43	10	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.50	1300	$219.70	$14.00	$140.00	0.12	312	$52.73	2.66
222.21	Classroom 108	2600	1	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.06	161.2	$27.24	1	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.05	130	$21.97	$14.00	$14.00	0.01	31.2	$5.27	2.66
222.21		2600	14	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.87	2,256.8	$381.40	14	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.70	1820	$307.58	$14.00	$196.00	0.17	436.8	$73.82	2.66
222.21	Classroom 107	2600	2	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.12	322.4	$54.49	2	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.10	260	$43.94	$14.00	$28.00	0.02	62.4	$10.55	2.66
222.21		2600	13	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.81	2,095.6	$354.16	13	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.65	1690	$285.61	$14.00	$182.00	0.16	405.6	$68.55	2.66
222.21	SACC 101	2600	3	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.19	483.6	$81.73	3	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.15	390	$65.91	$14.00	$42.00	0.04	93.6	$15.82	2.66
222.21		2600	15	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.93	2,418.0	$408.64	15	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.75	1950	$329.55	$14.00	$210.00	0.18	468	$79.09	2.66
612	Faculty Restroom	2600	1	1	Pendant Mnt., 100w A19 Lamp	100	0.10	260.0	$43.94	1	1	(1) 26w CFL Lamp	26	0.03	67.6	$11.42	$20.00	$20.00	0.07	192.4	$32.52	0.62
222.21	Faculty Lounge	2600	12	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.74	1,934.4	$326.91	12	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.60	1560	$263.64	$14.00	$168.00	0.14	374.4	$63.27	2.66
221.11	Boy's Restroom	2600	3	2	1x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	62	0.19	483.6	$81.73	3	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.15	390	$65.91	$14.00	$42.00	0.04	93.6	$15.82	2.66
221.11	Girl's Restroom	2600	3	2	1x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	62	0.19	483.6	$81.73	3	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.15	390	$65.91	$14.00	$42.00	0.04	93.6	$15.82	2.66

Investment Grade Lighting Audit

ECM #1: Lighting Upgrade - General & Re-Lamping

EXISTING LIGHTING										PROPOSED LIGHTING										SAVINGS			
CEG Type	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly $ Cost	No. Fixts	No. Lamps	Retro-Unit Description	Watts Used	Total kW	kWh/Yr Fixtures	Yearly $ Cost	Unit Cost (INSTALLED)	Total Cost	kW Savings	kWh/Yr Savings	Yearly $ Savings	Yearly Simple Payback
222.21	Classroom 111	2600	15	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.93	2,418.0	$408.64	15	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.75	1950	$329.55	$14.00	$210.00	0.18	468	$79.09	2.66
122.21	Classroom 109	2600	5	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.39	1,014.0	$171.37	5	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.25	650	$109.85	$100.00	$500.00	0.14	364	$61.52	8.13
222.21		2600	10	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.62	1,612.0	$272.43	10	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.50	1300	$219.70	$14.00	$140.00	0.12	312	$52.73	2.66
122.21	Classroom 106	2600	1	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.08	202.8	$34.27	1	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.05	130	$21.97	$100.00	$100.00	0.03	72.8	$12.30	8.13
222.21		2600	14	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.87	2,256.8	$381.40	14	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.70	1820	$307.58	$14.00	$196.00	0.17	436.8	$73.82	2.66
122.21	Classroom 105	2600	5	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.39	1,014.0	$171.37	5	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.25	650	$109.85	$100.00	$500.00	0.14	364	$61.52	8.13
222.21		2600	10	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.62	1,612.0	$272.43	10	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.50	1300	$219.70	$14.00	$140.00	0.12	312	$52.73	2.66
122.21	Classroom 104	2600	3	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.23	608.4	$102.82	3	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.15	390	$65.91	$100.00	$300.00	0.08	218.4	$36.91	8.13
222.21		2600	12	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.74	1,934.4	$326.91	12	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.60	1560	$263.64	$14.00	$168.00	0.14	374.4	$63.27	2.66
122.21	Library	2600	5	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.39	1,014.0	$171.37	5	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.25	650	$109.85	$100.00	$500.00	0.14	364	$61.52	8.13
222.21		2600	28	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	1.74	4,513.6	$762.80	28	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	1.40	3640	$615.16	$14.00	$392.00	0.34	873.6	$147.64	2.66
222.21	Classroom 112	2600	15	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.93	2,418.0	$408.64	15	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.75	1950	$329.55	$14.00	$210.00	0.18	468	$79.09	2.66
121.11	Main Office	2600	2	2	1x4, 2-Lamp, 34w T12, Mag. Ballast, Surface Mnt., Prismatic Lens	78	0.16	405.6	$68.55	2	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.10	260	$43.94	$100.00	$200.00	0.06	145.6	$24.61	8.13
221.11		2600	2	2	1x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	62	0.12	322.4	$54.49	2	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.10	260	$43.94	$14.00	$28.00	0.02	62.4	$10.55	2.66
211.11	Nurse	2600	3	1	1x4, 1 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	33	0.10	257.4	$43.50	3	1	Relamp - Sylvania Lamp FO28/841/SS/ECO	25	0.08	195	$32.96	$7.00	$21.00	0.02	62.4	$10.55	1.99
122.21	Workroom	2600	3	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.23	608.4	$102.82	3	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.15	390	$65.91	$100.00	$300.00	0.08	218.4	$36.91	8.13
222.21		2600	1	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.06	161.2	$27.24	1	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.05	130	$21.97	$14.00	$14.00	0.01	31.2	$5.27	2.66

Investment Grade Lighting Audit

ECM #1: Lighting Upgrade - General & Re-Lamping

EXISTING LIGHTING										PROPOSED LIGHTING									SAVINGS			
CEG Type	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly $ Cost	No. Fixts	No. Lamps	Retro-Unit Description	Watts Used	Total kW	kWh/Yr Fixtures	Yearly $ Cost	Unit Cost (INSTALLED)	Total Cost	kW Savings	kWh/Yr Savings	Yearly $ Savings	Yearly Simple Payback
111.11		2600	1	1	1x4, 1-Lamp, 34w T12, Mag. Ballast, Surface Mnt., Prismatic Lens	48	0.05	124.8	$21.09	1	1	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	25	0.03	65	$10.99	$80.00	$80.00	0.02	59.8	$10.11	7.92
122.21		2600	2	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	78	0.16	405.6	$68.55	2	2	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.10	260	$43.94	$100.00	$200.00	0.06	145.6	$24.61	8.13
222.21	Principal's Office	2600	2	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	62	0.12	322.4	$54.49	2	2	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.10	260	$43.94	$14.00	$28.00	0.02	62.4	$10.55	2.66
612		2600	7	1	Pendant Mnt., 100w A19 Lamp	100	0.70	1,820.0	$307.58	7	1	(1) 26w CFL Lamp	26	0.18	473.2	$79.97	$20.00	$140.00	0.52	1346.8	$227.61	0.62
	Totals		649	161				106,646	$18,023	649	155			27.8	72,732	$12,292		$13,998	9.3	24,328	$4,111	3.40

NOTES: 1. Simple Payback noted in this spreadsheet does not include Maintenance Savings and NJ Smart Start Incentives.
2. Lamp totals only include T-12 tube replacement calculations

CEG Job #: 9C11001
Project: Kingston
Address:

Building SF:

Kingston

KWH COST: $0.169

Remote Mnt.

ECM #2: Lighting Controls

EXISTING LIGHTING													PROPOSED LIGHTING CONTROLS								SAVINGS			
CEG Type	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Existing Fixture **For Reference Only**	Retrofitted Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly $ Cost	No. Fixts	No. Cont.	Controls Description	Watts Used	Total kW	Reduction (%)	kWh/Yr Fixtures	Yearly $ Cost	Unit Cost (INSTALLED)	Total Cost	kW Savings	kWh/Yr Savings	Yearly $ Savings	Yearly Simple Payback
122.21	Classroom 17	2600	3	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.15	390	$65.91	3	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.12	20%	312	$52.73	$400.00	$400.00	0.03	78	$13.18	6.07
222.21		2600	12	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.6	1560	$263.64	12			50	0.48	20%	1248	$210.91			0.12	312	$52.73	
122.21	Classroom 19	2600	6	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.3	780	$131.82	6	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.24	20%	624	$105.46	$400.00	$400.00	0.06	156	$26.36	6.07
222.21		2600	9	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.45	1170	$197.73	9			50	0.36	20%	936	$158.18			0.09	234	$39.55	
122.21	Classroom 20	2600	2	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.1	260	$43.94	2	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.08	20%	208	$35.15	$400.00	$400.00	0.02	52	$8.79	6.07
222.21		2600	13	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.65	1690	$285.61	13			50	0.52	20%	1352	$228.49			0.13	338	$57.12	
222.21	Classroom 1	2600	15	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.75	1950	$329.55	15	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.60	20%	1560	$263.64	$400.00	$400.00	0.15	390	$65.91	6.07
222.21	Classroom 2	2600	15	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.75	1950	$329.55	15	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.60	20%	1560	$263.64	$400.00	$400.00	0.15	390	$65.91	6.07
222.21	Classroom 3	2600	12	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.6	1560	$263.64	12	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.48	20%	1248	$210.91	$400.00	$400.00	0.12	312	$52.73	7.59
222.21	Classroom 4	2600	15	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.75	1950	$329.55	15	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.60	20%	1560	$263.64	$400.00	$400.00	0.15	390	$65.91	6.07
222.21	Classroom 5	2600	15	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.75	1950	$329.55	15	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.60	20%	1560	$263.64	$400.00	$400.00	0.15	390	$65.91	6.07
222.21	Classroom 6	2600	15	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.75	1950	$329.55	15	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.60	20%	1560	$263.64	$400.00	$400.00	0.15	390	$65.91	6.07
122.21	Classroom 14	2600	1	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.05	130	$21.97	1	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.04	20%	104	$17.58	$400.00	$400.00	0.01	26	$4.39	4.33
222.21		2600	20	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	1	2600	$439.40	20			50	0.80	20%	2080	$351.52			0.20	520	$87.88	
3		2600	2	1	1x1 Receesed, 100w A19 Lamp	26w CFL Lamps	26	0.052	135.2	$22.85	2	0	No Change	26	0.05	0%	135.2	$22.85	$0.00	$0.00	0.00	0	$0.00	0.00
613	Boiler Room Stairs	3000	1	1	Industrial Fixture, 100w A19 Lamp	(1) 26w CFL Lamp	26	0.026	78	$13.18	1	0	No Change	26	0.03	0%	78	$13.18	$0.00	$0.00	0.00	0	$0.00	0.00

ECM #2: Lighting Controls

EXISTING LIGHTING													PROPOSED LIGHTING CONTROLS							SAVINGS			
CEG Type	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Existing Fixture **For Reference Only**	Retrofitted Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly $ Cost	No. Fixts	No. Cont.	Controls Description	Watts Used	Total kW	Reduction (%)	kWh/Yr Fixtures	Yearly $ Cost	Unit Cost (INSTALLED)	Total Cost	kW Savings	kWh/Yr Savings	Yearly $ Savings	Yearly Simple Payback
613	Boiler Room	3000	3	1	Industrial Fixture, 100w A19 Lamp	(1) 26w CFL Lamp	26	0.078	234	$39.55	3	0	No Change	26	0.08	0%	234	$39.55	$0.00	$0.00	0.00	0	$0.00	0.00
211.11		3000	3	1	1x4, 1 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	25	0.075	225	$38.03	3	0	No Change	25	0.08	0%	225	$38.03	$0.00	$0.00	0.00	0	$0.00	0.00
211.11	Stage	2600	3	1	1x4, 1 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	25	0.075	195	$32.96	3	0	No Change	25	0.08	0%	195	$32.96	$0.00	$0.00	0.00	0	$0.00	0.00
247.11	Cafeteria	2600	12	4	2x2, 4 Lamp, 17w T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	No Change	68	0.816	2121.6	$358.55	12	1	Dual Technology Occupancy Sensor - Remote Mnt.	68	0.65	20%	1697.28	$286.84	$300.00	$300.00	0.16	424.32	$71.71	4.18
3520.1	Back Entrance - Kitchen	2600	1	2	Ceiling Mount White Globe, (2) 60w CFL Lamp	13w CFL Lamps	26	0.026	67.6	$11.42	1	0	No Change	26	0.03	0%	67.6	$11.42	$0.00	$0.00	0.00	0	$0.00	0.00
612	Kitchen Office	2600	1	1	Pendant Mnt., 100w A19 Lamp	(1) 26w CFL Lamp	26	0.026	67.6	$11.42	1	0	No Change	26	0.03	0%	67.6	$11.42	$0.00	$0.00	0.00	0	$0.00	0.00
211.11	Kitchen	2600	4	1	1x4, 1 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	25	0.1	260	$43.94	4	1	Dual Technology Occupancy Sensor - Switch Mnt.	25	0.08	20%	208	$35.15	$300.00	$300.00	0.02	52	$8.79	34.14
211.11	PE Office	2600	1	1	1x4, 1 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	25	0.025	65	$10.99	1	0	No Change	25	0.03	0%	65	$10.99	$0.00	$0.00	0.00	0	$0.00	0.00
122.21	Classroom 7	2600	1	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.05	130	$21.97	1	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.04	20%	104	$17.58	$400.00	$400.00	0.01	26	$4.39	6.07
222.21		2600	14	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.7	1820	$307.58	14			50	0.56	20%	1456	$246.06			0.14	364	$61.52	
122.21	Classroom 9	2600	3	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.15	390	$65.91	3	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.12	20%	312	$52.73	$401.00	$401.00	0.03	78	$13.18	4.49
222.21		3000	15	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.75	2250	$380.25	15			50	0.60	20%	1800	$304.20			0.15	450	$76.05	
3		2600	1	1	1x1 Receesed, 100w A19 Lamp	26w CFL Lamps	26	0.026	67.6	$11.42	1	0	No Change	26	0.03	0%	67.6	$11.42	$0.00	$0.00	0.00	0	$0.00	0.00
612	Closet - CR 9 & 11	1200	1	1	Pendant Mnt., 100w A19 Lamp	(1) 26w CFL Lamp	26	0.026	31.2	$5.27	1	0	No Change	26	0.03	0%	31.2	$5.27	$0.00	$0.00	0.00	0	$0.00	0.00
122.21	Classroom 11	2600	2	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.1	260	$43.94	2	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.08	20%	208	$35.15	$400.00	$400.00	0.02	52	$8.79	5.06
222.21		2600	16	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.8	2080	$351.52	16			50	0.64	20%	1664	$281.22			0.16	416	$70.30	
3		2600	1	1	1x1 Receesed, 100w A19 Lamp	26w CFL Lamps	26	0.026	67.6	$11.42	1	0	No Change	26	0.03	0%	67.6	$11.42	$0.00	$0.00	0.00	0	$0.00	0.00

ECM #2: Lighting Controls

EXISTING LIGHTING													PROPOSED LIGHTING CONTROLS							SAVINGS			
CEG Type	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Existing Fixture **For Reference Only**	Retrofitted Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly $ Cost	No. Fixts	No. Cont.	Controls Description	Watts Used	Total kW	Reduction (%)	kWh/Yr Fixtures	Yearly $ Cost	Unit Cost (INSTALLED)	Total Cost	kW Savings	kWh/Yr Savings	Yearly $ Savings	Yearly Simple Payback
242.15	Speech	2600	1	4	2x4, 4 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	98	0.098	254.8	$43.06	1	0	No Change	98	0.10	0%	254.8	$43.06	$0.00	$0.00	0.00	0	$0.00	0.00
211.11	Room 118	2600	4	1	1x4, 1 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	25	0.1	260	$43.94	4	1	Dual Technology Occupancy Sensor - Switch Mnt.	25	0.08	20%	208	$35.15	$150.00	$150.00	0.02	52	$8.79	17.07
122.21	Classroom 13	2600	3	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.15	390	$65.91	3	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.12	20%	312	$52.73	$400.00	$400.00	0.03	78	$13.18	6.07
222.21		2600	12	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.6	1560	$263.64	12			50	0.48	20%	1248	$210.91			0.12	312	$52.73	
122.21	Classroom 15	2600	3	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.15	390	$65.91	3	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.12	20%	312	$52.73	$400.00	$400.00	0.03	78	$13.18	6.07
222.21		2600	12	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.6	1560	$263.64	12			50	0.48	20%	1248	$210.91			0.12	312	$52.73	
122.21	Classroom 18	2600	1	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.05	130	$21.97	1	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.04	20%	104	$17.58	$400.00	$400.00	0.01	26	$4.39	6.07
222.21		2600	14	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.7	1820	$307.58	14			50	0.56	20%	1456	$246.06			0.14	364	$61.52	
122.21	Classroom 16	2600	4	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.2	520	$87.88	4	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.16	20%	416	$70.30	$400.00	$400.00	0.04	104	$17.58	5.06
222.21		2600	14	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.7	1820	$307.58	14			50	0.56	20%	1456	$246.06			0.14	364	$61.52	
3		2600	1	1	1x1 Receesed, 100w A19 Lamp	26w CFL Lamps	26	0.026	67.6	$11.42	1	0	No Change	26	0.03	0%	67.6	$11.42	$0.00	$0.00	0.00	0	$0.00	0.00
3	Closet - CR 14 & 16	2600	1	1	1x1 Receesed, 100w A19 Lamp	26w CFL Lamps	26	0.026	67.6	$11.42	1	0	No Change	26	0.03	0%	67.6	$11.42	$0.00	$0.00	0.00	0	$0.00	0.00
122.21	Classroom 12	2600	4	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.2	520	$87.88	4	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.16	20%	416	$70.30	$400.00	$400.00	0.04	104	$17.58	5.06
222.21		2600	14	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.7	1820	$307.58	14			50	0.56	20%	1456	$246.06			0.14	364	$61.52	
122.21	Classroom 10	2600	4	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.2	520	$87.88	4	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.16	20%	416	$70.30	$400.00	$400.00	0.04	104	$17.58	5.06
222.21		2600	14	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.7	1820	$307.58	14			50	0.56	20%	1456	$246.06			0.14	364	$61.52	
612	Closet - CR 12 & 10	2600	1	1	Pendant Mnt., 100w A19 Lamp	(1) 26w CFL Lamp	26	0.026	67.6	$11.42	1	0	No Change	26	0.03	0%	67.6	$11.42	$0.00	$0.00	0.00	0	$0.00	0.00

ECM #2: Lighting Controls

EXISTING LIGHTING													PROPOSED LIGHTING CONTROLS							SAVINGS			
CEG Type	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Existing Fixture **For Reference Only**	Retrofitted Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly $ Cost	No. Fixts	No. Cont.	Controls Description	Watts Used	Total kW	Reduction (%)	kWh/Yr Fixtures	Yearly $ Cost	Unit Cost (INSTALLED)	Total Cost	kW Savings	kWh/Yr Savings	Yearly $ Savings	Yearly Simple Payback
122.21	Classroom 8	2600	5	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.25	650	$109.85	5	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.20	20%	520	$87.88	$400.00	$400.00	0.05	130	$21.97	6.07
222.21		2600	10	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.5	1300	$219.70	10			50	0.40	20%	1040	$175.76			0.10	260	$43.94	
222.21	Girl's Restroom	2600	2	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.1	260	$43.94	2	0	No Change	50	0.10	0%	260	$43.94	$0.00	$0.00	0.00	0	$0.00	0.00
222.21	Boy's Restroom	2600	2	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.1	260	$43.94	2	0	No Change	50	0.10	0%	260	$43.94	$0.00	$0.00	0.00	0	$0.00	0.00
222.21	Book Room	2600	1	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.05	130	$21.97	1	0	No Change	50	0.05	0%	130	$21.97	$0.00	$0.00	0.00	0	$0.00	0.00
2	Corridors	3000	47	1	2x2 2 Lamp 40w Biax Lamp	No Change	44	2.068	6204	$1,048.48	47	0	No Change	44	2.07	0%	6204	$1,048.48	$0.00	$0.00	0.00	0	$0.00	0.00
211.22		3000	14	1	1x4, 1 Lamp, 32w T8, Elect. Ballast, cove lighting	No Change	30	0.42	1260	$212.94	14	0	No Change	30	0.42	0%	1260	$212.94	$0.00	$0.00	0.00	0	$0.00	0.00
222.21	Classroom 110	2600	10	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.5	1300	$219.70	10	1	Dual Technology Occupancy Sensor - Remote Mnt.	50	0.40	20%	1040	$175.76	$300.00	$300.00	0.10	260	$43.94	6.83
222.21	Classroom 108	2600	1	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.05	130	$21.97	1	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.04	20%	104	$17.58	$400.00	$400.00	0.01	26	$4.39	6.07
222.21		2600	14	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.7	1820	$307.58	14			50	0.56	20%	1456	$246.06			0.14	364	$61.52	
222.21	Classroom 107	2600	2	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.1	260	$43.94	2	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.08	20%	208	$35.15	$400.00	$400.00	0.02	52	$8.79	6.07
222.21		2600	13	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.65	1690	$285.61	13			50	0.52	20%	1352	$228.49			0.13	338	$57.12	
222.21	SACC 101	2600	3	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.15	390	$65.91	3	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.12	20%	312	$52.73	$400.00	$400.00	0.03	78	$13.18	5.06
222.21		2600	15	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.75	1950	$329.55	15			50	0.60	20%	1560	$263.64			0.15	390	$65.91	
612	Faculty Restroom	2600	1	1	Pendant Mnt., 100w A19 Lamp	(1) 26w CFL Lamp	26	0.026	67.6	$11.42	1	0	No Change	26	0.03	0%	67.6	$11.42	$0.00	$0.00	0.00	0	$0.00	0.00
222.21	Faculty Lounge	2600	12	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.6	1560	$263.64	12	1	Dual Technology Occupancy Sensor - Remote Mnt.	50	0.48	20%	1248	$210.91	$300.00	$300.00	0.12	312	$52.73	5.69
221.11	Boy's Restroom	2600	3	2	1x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.15	390	$65.91	3	0	No Change	50	0.15	0%	390	$65.91	$0.00	$0.00	0.00	0	$0.00	0.00

ECM #2: Lighting Controls

EXISTING LIGHTING													PROPOSED LIGHTING CONTROLS							SAVINGS			
CEG Type	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Existing Fixture **For Reference Only**	Retrofitted Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly $ Cost	No. Fixts	No. Cont.	Controls Description	Watts Used	Total kW	Reduction (%)	kWh/Yr Fixtures	Yearly $ Cost	Unit Cost (INSTALLED)	Total Cost	kW Savings	kWh/Yr Savings	Yearly $ Savings	Yearly Simple Payback
221.11	Girl's Restroom	2600	3	2	1x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.15	390	$65.91	3	0	No Change	50	0.15	0%	390	$65.91	$0.00	$0.00	0.00	0	$0.00	0.00
222.21	Classroom 111	2600	15	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.75	1950	$329.55	15	0	No Change	50	0.75	0%	1950	$329.55	$0.00	$0.00	0.00	0	$0.00	0.00
122.21	Classroom 109	2600	5	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.25	650	$109.85	5	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.20	20%	520	$87.88	$400.00	$400.00	0.05	130	$21.97	6.07
222.21		2600	10	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.5	1300	$219.70	10			50	0.40	20%	1040	$175.76			0.10	260	$43.94	
122.21	Classroom 106	2600	1	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.05	130	$21.97	1	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.04	20%	104	$17.58	$400.00	$400.00	0.01	26	$4.39	6.07
222.21		2600	14	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.7	1820	$307.58	14			50	0.56	20%	1456	$246.06			0.14	364	$61.52	
122.21	Classroom 105	2600	5	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.25	650	$109.85	5	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.20	20%	520	$87.88	$400.00	$400.00	0.05	130	$21.97	6.07
222.21		2600	10	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.5	1300	$219.70	10			50	0.40	20%	1040	$175.76			0.10	260	$43.94	
122.21	Classroom 104	2600	3	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.15	390	$65.91	3	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.12	20%	312	$52.73	$400.00	$400.00	0.03	78	$13.18	6.07
222.21		2600	12	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.6	1560	$263.64	12			50	0.48	20%	1248	$210.91			0.12	312	$52.73	
122.21	Library	2600	5	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.25	650	$109.85	5	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.20	20%	520	$87.88	$400.00	$400.00	0.05	130	$21.97	2.76
222.21		2600	28	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	1.4	3640	$615.16	28			50	1.12	20%	2912	$492.13			0.28	728	$123.03	
222.21	Classroom 112	2600	15	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.75	1950	$329.55	15	1	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	50	0.60	20%	1560	$263.64	$400.00	$400.00	0.15	390	$65.91	6.07
121.11	Main Office	2600	2	2	1x4, 2-Lamp, 34w T12, Mag. Ballast, Surface Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.1	260	$43.94	2	0	No Change	50	0.10	0%	260	$43.94	$0.00	$0.00	0.00	0	$0.00	0.00
221.11		2600	2	2	1x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.1	260	$43.94	2	0	No Change	50	0.10	0%	260	$43.94	$0.00	$0.00	0.00	0	$0.00	0.00
211.11	Nurse	2600	3	1	1x4, 1 Lamp, 32w 700 Series T8, Elect. Ballast, Surface Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	25	0.075	195	$32.96	3	0	No Change	25	0.08	0%	195	$32.96	$0.00	$0.00	0.00	0	$0.00	0.00
122.21		2600	3	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.15	390	$65.91	3			50	0.12	20%	312	$52.73			0.03	78	$13.18	

ECM #2: Lighting Controls

EXISTING LIGHTING											PROPOSED LIGHTING CONTROLS										SAVINGS			
CEG Type	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Existing Fixture **For Reference Only**	Retrofitted Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly $ Cost	No. Fixts	No. Cont.	Controls Description	Watts Used	Total kW	Reduction (%)	kWh/Yr Fixtures	Yearly $ Cost	Unit Cost (INSTALLED)	Total Cost	kW Savings	kWh/Yr Savings	Yearly $ Savings	Yearly Simple Payback
222.21	Workroom	2600	1	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.05	130	$21.97	1	1	Dual Technology Occupancy Sensor - Remote Mnt.	50	0.04	20%	104	$17.58	$300.00	$300.00	0.01	26	$4.39	15.17
111.11		2600	1	1	1x4, 1-Lamp, 34w T12, Mag. Ballast, Surface Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	25	0.025	65	$10.99	1			25	0.02	20%	52	$8.79			0.01	13	$2.20	
122.21		2600	2	2	2x4, 2-Lamp, 34w T12, Mag. Ballast, Recessed Mnt., Prismatic Lens	Reballast & Relamp; Sylvania Lamp FO28/841/SS/ECO	50	0.1	260	$43.94	2	0	No Change	50	0.10	0%	260	$43.94	$0.00	$0.00	0.00	0	$0.00	0.00
222.21	Principal's Office	2600	2	2	2x4, 2 Lamp, 32w 700 Series T8, Elect. Ballast, Recessed Mnt., Prismatic Lens	Relamp - Sylvania Lamp FO28/841/SS/ECO	50	0.1	260	$43.94	2	1	No Change	50	0.10	0%	260	$43.94	$300.00	$300.00	0.00	0	$0.00	0.00
612		2600	7	1	Pendant Mnt., 100w A19 Lamp	(1) 26w CFL Lamp	26	0.182	473.2	$79.97	7	0	No Change	26	0.18	0%	473.2	$79.97	$0.00	$0.00	0.00	0	$0.00	0.00
	Totals		649	161				31.1	82,317.8	$13,912	649	36			25.9		68,716.5	$11,613.09		$13,551	5.21	13,601	$2,299	5.90

Location Description	Area (Sq FT)	Panel	Qty	Panel Sq Ft	Panel Total Sq Ft	Total KW_{DC}	Total Annual kWh	Total KW_{AC}	Panel Weight (41.9 lbs)	W/SQFT
Kingston Elementary School	10,085	SHARP NU-U235F2	411	17.5	7,209	96.59	118,000	78.2	17,221	13.40

.= Proposed PV Layout

Notes:

1. Estimated kWH based on the National Renewable Energy Laboratory PVWatts Version 1 Calculator Program.

PVWatts Program Data Output - Flat Roof Panels

PVWatts AC Energy & Cost Savings

(Type comments here to appear on printout: maximum 1 row of 80 characters.)

Station Identification	
City:	Atlantic_City
State:	New_Jersey
Latitude:	39.45° N
Longitude:	74.57° W
Elevation:	20 m
PV System Specifications	
DC Rating:	96.6 kW
DC to AC Derate Factor:	0.810
AC Rating:	78.2 kW
Array Type:	Fixed Tilt
Array Tilt:	10.0°
Array Azimuth:	180.0°
Energy Specifications	
Cost of Electricity:	0.2 ¢/kWh

Results			
Month	Solar Radiation (kWh/m²/day)	AC Energy (kWh)	Energy Value ($)
1	2.58	6274	10.60
2	3.33	7409	12.52
3	4.31	10347	17.49
4	5.20	11786	19.92
5	5.85	13461	22.75
6	6.14	13102	22.14
7	6.06	13236	22.37
8	5.54	12163	20.56
9	4.85	10458	17.67
10	3.76	8540	14.43
11	2.65	5983	10.11
12	2.23	5240	8.86
Year	4.38	118000	199.42

Project Name: **LGEA Solar PV Project - 9C11001**
Location: **Kingston Elementary School**
Description: **Photovoltaic System 100% Financing - 15 year**

Simple Payback Analysis

	Photovoltaic System 100% Financing - 15 year
Total Construction Cost	$592,433
Annual kWh Production	118,000
Annual Energy Cost Reduction	$19,942
Average Annual SREC Revenue	$45,501

Simple Payback: **9.05** Years

Life Cycle Cost Analysis

Analysis Period (years): 15
Discount Rate: 3%
Average Energy Cost ($/kWh) **$0.169**
Financing Rate: 6.00%
Financing %: 100%
Maintenance Escalation Rate: 3.0%
Energy Cost Escalation Rate: 3.0%
Average SREC Value ($/kWh) $0.386

Period	Additional Cash Outlay	Energy kWh Production	Energy Cost Savings	Additional Maint Costs	SREC Revenue	Interest Expense	Loan Principal	Net Cash Flow	Cumulative Cash Flow
0	$0	0	0	0	$0	0	0	0	0
1	$0	118,000	$19,942	$0	$64,900	$34,862	$25,129	$24,851	$24,851
2	$0	117,410	$20,540	$0	$64,576	$33,313	$26,679	$25,124	$49,975
3	$0	116,823	$21,156	$0	$58,411	$31,667	$28,324	$19,576	$69,551
4	$0	116,239	$21,791	$0	$52,307	$29,920	$30,071	$14,107	$83,658
5	$0	115,658	$22,445	$1,191	$52,046	$28,065	$31,926	$13,308	$96,967
6	$0	115,079	$23,118	$1,185	$51,786	$26,096	$33,895	$13,727	$110,694
7	$0	114,504	$23,812	$1,179	$45,802	$24,006	$35,986	$8,443	$119,136
8	$0	113,931	$24,526	$1,173	$45,573	$21,786	$38,205	$8,934	$128,070
9	$0	113,362	$25,262	$1,168	$39,677	$19,430	$40,562	$3,779	$131,849
10	$0	112,795	$26,020	$1,162	$39,478	$16,928	$43,064	$4,345	$136,194
11	$0	112,231	$26,800	$1,156	$33,669	$14,272	$45,720	($678)	$135,516
12	$0	111,670	$27,604	$1,150	$33,501	$11,452	$48,540	($36)	$135,480
13	$0	111,111	$28,433	$1,144	$27,778	$8,458	$51,533	($4,926)	$130,555
14	$0	110,556	$29,285	$1,139	$27,639	$5,280	$54,712	($4,206)	$126,349
15	$0	110,003	$30,164	$1,133	$22,001	$1,905	$58,086	($8,960)	$117,389
	Totals:	1,709,372	$370,900	$12,781	$659,143	$307,439	$592,433	$117,389	$1,596,234

Net Present Value (NPV) **$102,644**