

# **PINELANDS REGIONAL SCHOOL DISTRICT**

## **ALTERNATIVE SCHOOL**

**585 NUGENTOWN ROAD  
LITTLE EGG HARBOR, NJ 08087**

## **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: Atlantic City Electric  
Electric Utility Rate Structure: Monthly General Service (MGS)  
Third Party Supplier: Direct Energy

No Natural Gas Service at this Facility.

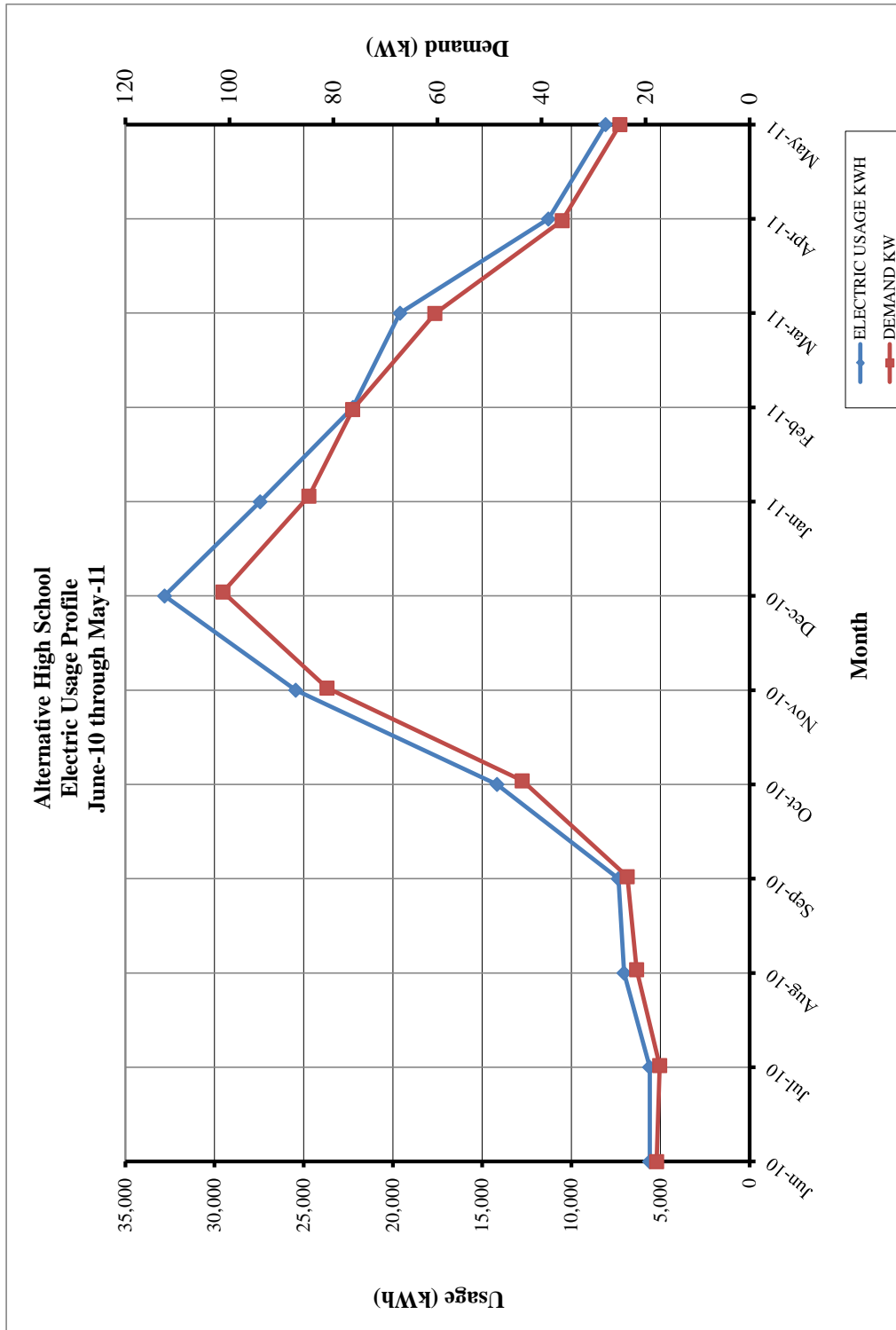
The electric usage profile represents the actual electrical usage for the facility. The electric utility measures consumption in kilowatt-hours (KWH) and maximum demand in kilowatts (KW). One KWH usage is equivalent to 1000 watts running for one hour. One KW of electric demand is equivalent to 1000 watts 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.

**Table 1  
Electricity Billing Data**

<b>ELECTRIC USAGE SUMMARY</b>			
Utility Provider: Atlantic City Electric			
Rate: Monthly General Service			
Meter No: 7854126			
Account No: 0966 8589 9955			
Third Party Utility Provider: Direct Energy			
TPS Meter / Acct No: -			
<b>MONTH OF USE</b>	<b>CONSUMPTION KWH</b>	<b>DEMAND KW</b>	<b>TOTAL BILL</b>
Jun-10	5,600	17.9	\$1,146
Jul-10	5,600	17.3	\$1,123
Aug-10	7,040	21.7	\$1,441
Sep-10	7,360	23.5	\$1,338
Oct-10	14,160	43.7	\$2,430
Nov-10	25,440	81.2	\$4,363
Dec-10	32,800	101.2	\$5,727
Jan-11	27,440	84.7	\$4,902
Feb-11	22,240	76.3	\$4,038
Mar-11	19,600	60.5	\$3,560
Apr-11	11,280	36.0	\$2,051
May-11	8,080	24.9	\$1,435
<b>Totals</b>	<b>186,640</b>	<b>101.2 Max</b>	<b>\$33,557</b>
<b>AVERAGE DEMAND</b>		<b>49.1 KW average</b>	
<b>AVERAGE RATE</b>		<b>\$0.180 \$/kWh</b>	

Demand Data was estimated based on a 45% Load Factor.

**Figure 1**  
**Electricity Usage Profile**



## II. FACILITY DESCRIPTION

The Alternative High School is located on 585 Nugentown Road in Little Egg Harbor, New Jersey. The 4,200 SF Public Library was built in 1989 with no renovations. The building is a single story facility comprised of library space for books, mechanical room and offices.

### Occupancy Profile

The typical hours of operation for the Alternative High School are Monday through Friday between 7:30 am and 3:30 pm, with intermittent afternoon/evening usage by the school athletic teams. The building has approximately four staff members and fifty students.

### Building Envelope

Exterior walls for the Alternative High School are brick faced with a concrete block construction. The amount of insulation within the walls is approximately ¾” foam insulation. The windows throughout are in good condition and are double pane, operable, ¼” tinted glass with aluminum frames. The roof is a pitched A-Frame roof with tar shingle over plywood sheathing with insulation underneath.

### HVAC Systems

The facility has two units which condition the building. The Trane Climate Changer air handler (AHU-1) serves the four classrooms, office, and corridor fitted with a direct expansion cooling coil and electric heating coils mounted in the supply duct to each space. The unit is rated for 1,400 CFM of outdoor air and 3,700 supply air with 10 tons of cooling capacity. The second unit is a Greeheck Energy Recovery wheel unit (ERU-1) that serves the boys’ and girls’ team rooms. The unit has not heating or cooling coils contained in it, however electric heating coils are mounted in the supply duct.

There are also two wall mounted 1 ½ ton split cooling only units located in the Control Room and Electrical room. These units provide cooling only to both spaces.

### Exhaust System

Air is exhaust from the building through a single inline duct mounted exhaust fan manufactured by Greenheck.

### HVAC System Controls

The two air handling units are controlled by digital programmable thermostats located in each space. The exhaust fan is interlocked with AHU-1 and operated only when that unit is in occupied mode.

Domestic Hot Water

Domestic hot water for the restrooms is provided by a 40 gallon A.O. Smith Preferred Series electric hot water heater, capacity of approximately 6,000 Watts.

Lighting

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**

<b>ENERGY CONSERVATION MEASURES (ECM's)</b>					
<b>ECM NO.</b>	<b>DESCRIPTION</b>	<b>NET INSTALLATION COST<sup>A</sup></b>	<b>ANNUAL SAVINGS<sup>B</sup></b>	<b>SIMPLE PAYBACK (Yrs)</b>	<b>SIMPLE LIFETIME ROI</b>
ECM #1	Lighting Upgrade	\$6,100	\$695	8.8	13.9%
ECM #2	Lighting Controls	\$4,980	\$249	20.0	-50.0%
ECM #3	Gas Duct Furnace	\$64,000	\$8,549	7.5	167.1%
<b>RENEWABLE ENERGY MEASURES (REM's)</b>					
<b>ECM NO.</b>	<b>DESCRIPTION</b>	<b>NET INSTALLATION COST</b>	<b>ANNUAL SAVINGS</b>	<b>SIMPLE PAYBACK (Yrs)</b>	<b>SIMPLE LIFETIME ROI</b>
REM #1	20 kW Solar Array	\$84,825	\$9,280	9.1	64.1%
<b>Notes:</b>	A. Cost takes into consideration applicable NJ Smart Start <sup>TM</sup> incentives.				
	B. Savings takes into consideration applicable maintenance savings.				

**Table 2**  
**ECM Energy Summary**

<b>ENERGY CONSERVATION MEASURES (ECM's)</b>				
<b>ECM NO.</b>	<b>DESCRIPTION</b>	<b>ANNUAL UTILITY REDUCTION</b>		
		<b>ELECTRIC DEMAND (KW)</b>	<b>ELECTRIC CONSUMPTION (KWH)</b>	<b>NATURAL GAS (THERMS)</b>
ECM #1	Lighting Upgrade	1.2	3,858	0
ECM #2	Lighting Controls	0.0	1,381	0
ECM #3	Gas Duct Furnace	20.0	72,877	-3,046
<b>RENEWABLE ENERGY MEASURES (REM's)</b>				
<b>ECM NO.</b>	<b>DESCRIPTION</b>	<b>ANNUAL UTILITY REDUCTION</b>		
		<b>ELECTRIC DEMAND (KW)</b>	<b>ELECTRIC CONSUMPTION (KWH)</b>	<b>NATURAL GAS (THERMS)</b>
REM #1	20 kW Solar Array	16.5	25,007	0

**Table 3**  
**ECM Emissions Summary**

<b>ENERGY CONSERVATION MEASURES (ECM's)</b>				
<b>ECM NO.</b>	<b>DESCRIPTION</b>	<b>GREENHOUSE GAS EMISSIONS REDUCTION</b>		
		<b>CO<sub>2</sub> EMISSIONS (LBS)</b>	<b>NO<sub>x</sub> EMISSIONS (LBS)</b>	<b>SO<sub>2</sub> EMISSIONS (LBS)</b>
ECM #1	Lighting Upgrade	5,865	11	25
ECM #2	Lighting Controls	2,099	4	9
ECM #3	Gas Duct Furnace	75,134	176	474

**Notes:** A. Emissions Reduction based on NJCEP published factors for electric & gas.

**Table 4  
Facility Project Summary**

<b>ENERGY SAVINGS IMPROVEMENT PROGRAM - POTENTIAL PROJECT</b>					
<b>ENERGY CONSERVATION MEASURES</b>	<b>ANNUAL ENERGY SAVINGS (\$)</b>	<b>PROJECT COST (\$)</b>	<b>SMART START INCENTIVES</b>	<b>CUSTOMER COST</b>	<b>SIMPLE PAYBACK</b>
Lighting Upgrade	\$695	\$7,000	\$900	\$6,100	8.8
Lighting Controls	\$249	\$5,000	\$20	\$4,980	20.0
Gas Duct Furnace	\$8,549	\$64,000	\$0	\$64,000	7.5
<i>Design / Construction Extras (15%)</i>		<i>\$11,400</i>		<i>\$11,400</i>	
<b>Total Project</b>	<b>\$9,493</b>	<b>\$76,000</b>	<b>\$920</b>	<b>\$75,080</b>	<b>7.9</b>

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 – General

### Description:

The lighting throughout the Alternative High School consists of T8 32 watt fixtures with electronic ballasts. Exterior lights consist of 175 watt HID metal halide wall pack units.

This ECM would re-lamp and re-ballast the existing 32 watt T8 fixtures with new Super T8 28 watt extended performance bulbs and low power ballasts. The exterior wall packs will be replaced in kind with a new LED 40 watt wall pack unit. Note the district may be able to self-perform the installation of these fixtures given the relatively small size of the facility.

### 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.

### Energy Savings Summary:

<b>ECM #1 - ENERGY SAVINGS SUMMARY</b>	
<b>Installation Cost (\$):</b>	\$7,000
<b>NJ Smart Start Equipment Incentive (\$):</b>	\$900
<b>Net Installation Cost (\$):</b>	\$6,100
<b>Maintenance Savings (\$/Yr):</b>	\$0
<b>Energy Savings (\$/Yr):</b>	\$695
<b>Total Yearly Savings (\$/Yr):</b>	\$695
<b>Estimated ECM Lifetime (Yr):</b>	10
<b>Simple Payback</b>	8.8
<b>Simple Lifetime ROI</b>	13.9%
<b>Simple Lifetime Maintenance Savings</b>	\$0
<b>Simple Lifetime Savings</b>	\$6,950
<b>Internal Rate of Return (IRR)</b>	2%
<b>Net Present Value (NPV)</b>	<b>(\$171.51)</b>

## ECM #2: Lighting Controls Upgrade – Occupancy Sensors

### Description:

Some of the lights in the Alternative High 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 (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, storage rooms, classrooms, and bathrooms. 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:

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

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

**Rebates and Incentives:**

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

Smart Start Incentive

$$= (\# \text{ Wall mount sensors} \times \$20 \text{ per sensor}) \\ + (\# \text{ Ceiling mount sensors} \times \$35 \text{ per sensor})$$

**Energy Savings Summary:**

<b>ECM #2 - ENERGY SAVINGS SUMMARY</b>	
<b>Installation Cost (\$):</b>	\$5,000
<b>NJ Smart Start Equipment Incentive (\$):</b>	\$20
<b>Net Installation Cost (\$):</b>	\$4,980
<b>Maintenance Savings (\$/Yr):</b>	\$0
<b>Energy Savings (\$/Yr):</b>	\$249
<b>Total Yearly Savings (\$/Yr):</b>	\$249
<b>Estimated ECM Lifetime (Yr):</b>	10
<b>Simple Payback</b>	20.0
<b>Simple Lifetime ROI</b>	-50.0%
<b>Simple Lifetime Maintenance Savings</b>	\$0
<b>Simple Lifetime Savings</b>	\$2,490
<b>Internal Rate of Return (IRR)</b>	-11%
<b>Net Present Value (NPV)</b>	<b>(\$2,855.98)</b>

### ECM #3: Gas Duct Heater Installation

#### Description:

The Alternative High School has electric duct heaters currently that heat the localized spaces downstream of the air handler units. Electric heating while efficient, costs significantly more per Btu of heat produced compared to fuel fired heating devices.

This ECM would install natural gas fired duct furnaces downstream of the air handler device on the supply air duct in the attic space prior to be distributed to the rooms. It is expected the units will require a 140 and 250 MBH duct furnace. The facility will also require a natural gas service to be installed from the street to the building. It should be noted the existing air handlers should be evaluated for adequate air moving capacity prior to installation. (Note alternative solution for the ERU would be to install the duct furnace on the incoming OA to preheat the outdoor air in the start-up/warm-up sequence to get the space to temperature.) (Note: There are currently no NJ OCE incentives for gas duct heater installations.)

#### Energy Savings Calculations:

$$\text{Building Heat Usage (mmBtu)} = \frac{0.8 \times \text{Heater Size} \frac{\text{Btu}}{\text{h}} \times \text{HDD} \times \frac{\text{Hr}}{\text{Day}}}{(\text{HDD Base Temp} - \text{Outdoor Design Temp}) \times 1,000,000} \frac{\text{Btu}}{\text{mmBtu}}$$

$$\text{Energy Usage (Fuel Units)} = \frac{\text{Building Heat Usage}}{\% \text{ Efficiency} * \text{Fuel Heat Value}}$$



<b>ELECTRIC TO GAS HEATER CALCULATIONS</b>			
<b>ECM INPUTS</b>	<b>EXISTING</b>	<b>PROPOSED</b>	<b>SAVINGS</b>
<b>ECM INPUTS</b>	Electric Duct Heater	Gas Duct Heater	
<b>Quantity</b>	7	1	
<b>Total Heater Size (Btu/h)</b>	203014		
<b>Heating Degree Days (65F)</b>	2091.1	2091.1	
<b>Building Heat Usage (MMBTUs)</b>	157	157	
<b>Electric Usage (kWh)</b>	46,877	0	
<b>Natural Gas Usage (Therms)</b>	0	1,959	
<b>Efficiency (%)</b>	98%	80%	-18%
<b>Fuel Heat Value (BTU/Fuel Unit)</b>	3,412	100,000	
<b>Electric Cost (\$/kWh)</b>	0.18	0.18	
<b>Natural Gas Cost (\$/Therm)</b>	1.50	1.50	
<b>ENERGY SAVINGS CALCULATIONS</b>			
<b>ECM RESULTS</b>	<b>EXISTING</b>	<b>PROPOSED</b>	<b>SAVINGS</b>
<b>Electric Usage (kWh)</b>	46,877	0	46,877
<b>Natural Gas Usage (Therms)</b>	0	1,959	-1,959
<b>Energy Cost (\$)</b>	\$8,438	\$2,939	\$5,499
<b>COMMENTS:</b>	AHU-1		

<b>ELECTRIC TO GAS HEATER CALCULATIONS</b>			
<b>ECM INPUTS</b>	<b>EXISTING</b>	<b>PROPOSED</b>	<b>SAVINGS</b>
<b>ECM INPUTS</b>	Electric Duct Heater	Gas Duct Heater	
<b>Quantity</b>	4	1	
<b>Total Heater Size (Btu/h)</b>	112596		
<b>Heating Degree Days (65F)</b>	2091.1	2091.1	
<b>Building Heat Usage (MMBTUs)</b>	87	87	
<b>Electric Usage (kWh)</b>	25,999	0	
<b>Natural Gas Usage (Therms)</b>	0	1,087	
<b>Efficiency (%)</b>	98%	80%	-18%
<b>Fuel Heat Value (BTU/Fuel Unit)</b>	3,412	100,000	
<b>Electric Cost (\$/kWh)</b>	0.18	0.18	
<b>Natural Gas Cost (\$/Therm)</b>	1.50	1.50	
<b>ENERGY SAVINGS CALCULATIONS</b>			
<b>ECM RESULTS</b>	<b>EXISTING</b>	<b>PROPOSED</b>	<b>SAVINGS</b>
<b>Electric Usage (kWh)</b>	25,999	0	25,999
<b>Natural Gas Usage (Therms)</b>	0	1,087	-1,087
<b>Energy Cost (\$)</b>	\$4,680	\$1,630	\$3,050
<b>COMMENTS:</b>	ERU-1		

**Energy Savings Summary:**

<b>ECM #3 - ENERGY SAVINGS SUMMARY</b>	
<b>Installation Cost (\$):</b>	\$64,000
<b>NJ Smart Start Equipment Incentive (\$):</b>	\$0
<b>Net Installation Cost (\$):</b>	\$64,000
<b>Maintenance Savings (\$/Yr):</b>	\$0
<b>Energy Savings (\$/Yr):</b>	\$8,549
<b>Total Yearly Savings (\$/Yr):</b>	\$8,549
<b>Estimated ECM Lifetime (Yr):</b>	20
<b>Simple Payback</b>	7.5
<b>Simple Lifetime ROI</b>	167.1%
<b>Simple Lifetime Maintenance Savings</b>	\$0
<b>Simple Lifetime Savings</b>	\$170,975
<b>Internal Rate of Return (IRR)</b>	12%
<b>Net Present Value (NPV)</b>	\$63,183.93

## REM #1: 20 kW Solar System

### Description:

The Pinelands Regional Alternative High School has available roof space that could accommodate a significant amount of solar generation. Based on the available areas a 20.4 kilowatt solar array could be installed. The array will produce approximately 25,007 kilowatt-hours annually that will reduce the overall electric usage of the facility by 13%.

### 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:

<b>REM #1 - ENERGY SAVINGS SUMMARY</b>	
<b>System Size (KW<sub>DC</sub>):</b>	20.40
<b>Electric Generation (KWH/Yr):</b>	25,007
<b>Installation Cost (\$):</b>	\$84,825
<b>SREC Revenue (\$/Yr):</b>	\$4,778
<b>Energy Savings (\$/Yr):</b>	\$4,501
<b>Total Yearly Savings (\$/Yr):</b>	\$9,280
<b>ECM Analysis Period (Yr):</b>	15
<b>Simple Payback (Yrs):</b>	9.1
<b>Analysis Period Electric Savings (\$):</b>	\$83,719
<b>Analysis Period SREC Revenue (\$):</b>	\$69,222
<b>Net Present Value (NPV)</b>	\$17,026.89

## 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. Verify regularly thermostats are in programmed operation mode and not overridden by occupants to ensure the most energy efficient mode of operation.

**APPENDIX A**

**ECM COST & SAVINGS BREAKDOWN**  
CONCORD ENGINEERING GROUP

Pinelands Regional School District – Alternative High School

ECM ENERGY AND FINANCIAL COSTS AND SAVINGS SUMMARY															
ECM NO.	DESCRIPTION	INSTALLATION COST				YEARLY SAVINGS			ECM LIFETIME (Yr)	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 Saving * 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)	(\$)	(\$)
ECM #1	Lighting Upgrade	\$4,000	\$3,000	\$900	\$6,100	\$695	\$0	\$695	10	\$6,950	\$0	13.9%	8.8	2.45%	(\$171.51)
ECM #2	Lighting Controls	\$4,000	\$1,000	\$20	\$4,980	\$249	\$0	\$249	10	\$2,490	\$0	-50.0%	20.0	-10.96%	(\$2,855.98)
ECM #3	Gas Duct Furnace	\$24,000	\$40,000	\$0	\$64,000	\$8,549	\$0	\$8,549	20	\$170,975	\$0	167.1%	7.5	11.96%	\$63,183.93
REM RENEWABLE ENERGY AND FINANCIAL COSTS AND SAVINGS SUMMARY															
REM #1	20 kW Solar Array	\$50,895	\$33,930	\$0	\$84,825	\$4,501	\$4,778	\$9,280	15	\$139,196	\$71,677	64.1%	9.1	6.94%	\$25,955.60

- 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.

**APPENDIX B**



# Concord Engineering Group, Inc.

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## 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 11, 2013:

### **Electric Chillers**

Water-Cooled Chillers	\$16 - \$170 per ton
Air-Cooled Chillers	\$8 - \$52 per ton

Energy Efficiency must comply with ASHRAE 90.1-2007

### **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
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### **Electric Unitary HVAC**

Unitary AC and Split Systems	\$73 - \$92 per ton
Air-to-Air Heat Pumps	\$73 - \$92 per ton
Water-Source Heat Pumps	\$81 per ton
Packaged Terminal AC & HP	\$65 per ton
Central DX AC Systems	\$40- \$72 per ton
Dual Enthalpy Economizer Controls	\$250
Occupancy Controlled Thermostat (Hospitality & Institutional Facility)	\$75 per thermostat
A/C Economizing Controls	≤ 5 tons \$85/unit; >5 tons \$170/unit

Energy Efficiency must comply with ASHRAE 90.1-2007

### **Gas Heating**

Gas Fired Boilers < 300 MBH	\$2.00 per MBH, but not less than \$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	\$400 per unit, AFUE ≥ 95%
Boiler Economizing Controls	\$1,200 - \$2,700
Low Intensity Infrared Heating	\$300 - \$500 per unit

### Ground Source Heat Pumps

Closed Loop	\$450 per ton, EER $\geq$ 16
	\$600 per ton, EER $\geq$ 18
	\$750 per ton, EER $\geq$ 20

Energy Efficiency must comply with ASHRAE 90.1-2007

### Variable Frequency Drives

Variable Air Volume	\$65 - \$155 per hp
Chilled-Water Pumps	\$60 per VFD rated hp
Compressors	\$5,250 to \$12,500 per drive
Cooling Towers $\geq$ 10 hp	\$60 per VFD rated hp
Boiler Fans $\geq$ 5 HP	\$65 to \$155 per hp
Boiler Feed Water Pumps $\geq$ 5 HP	\$60 to \$155 per hp
Commercial Kitchen Hood up to 50 HP	Retrofit \$55 – \$300 per hp New Hood \$55 - \$250 per hp

### Natural Gas Water Heating

Gas Water Heaters $\leq$ 50 gallons, 0.67 energy factor or better	\$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 (Expires 3/1/2013)	\$10 per fixture (1-4 lamps)
Replacement of T12 with new T-5 or T-8 Lamps w/Electronic Ballast in Existing Facilities (Expires 3/1/2013)	\$25 per fixture (1-4 lamps)
T-8 reduced Wattage (28w/25w 4', 1-4 lamps) Lamp & ballast replacement	\$10 per fixture
For retrofit of T-8 fixtures by permanent de-lamping & new reflectors (Electronic ballast replacement required)	\$15 per fixture
T-5 and T-8 High Bay Fixtures	\$16 - \$200 per fixture
Metal Halide w/Pulse Start Including Parking Lot	\$25 per fixture
HID $\geq$ 100w Retrofit with induction lamp, power coupler and generator (must be 30% less watts/fixture than HID system)	\$50 per fixture
HID $\geq$ 100w Replacement with new HID $\geq$ 100w	\$70 per fixture

### Prescriptive Lighting - LED

LED Display Case Lighting	\$30 per display case
LED Shelf-Mtd. Display & Task Lights	\$15 per linear foot
LED Portable Desk Lamp	\$20 per fixture
LED Wall-wash Lights	\$30 per fixture
LED Recessed Down Lights	\$35 per fixture
LED Outdoor Pole/Arm-Mounted Area and Roadway Luminaries	\$175 per fixture
LED Outdoor Pole/Arm-Mounted Decorative Luminaries	\$175 per fixture
LED Outdoor Wall-Mounted Area Luminaries	\$100 per fixture
LED Parking Garage Luminaries	\$100 per fixture
LED Track or Mono-Point Directional Lighting Fixtures	\$50 per fixture
LED High-Bay and Low-Bay Fixtures for Commercial & Industrial Bldgs.	\$150 per fixture
LED High-Bay-Aisle Lighting	\$150 per fixture
LED Bollard Fixtures	\$50 per fixture
LED Linear Panels (1x4, 2x2, 2x4 Troffers only)	\$100 per fixture
LED Fuel Pump Canopy	\$100 per fixture
LED Screw-based & Pin-based (PAR, MR, BR, R) Standards (A-Style) and Decorative Lamps	\$20 per lamp
LED Refrigerator/Freezer case lighting replacement of fluorescent in medium and low temperature display case	\$30 per 4 foot \$42 per 5 foot \$65 per 6 foot
LED Retrofit Kits	To be evaluated through the customer measure path

### Lighting Controls – Occupancy Sensors

Wall Mounted	\$20 per control
Remote Mounted	\$35 per control
Daylight Dimmers	\$25-\$50 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

### Premium Motors

Three-Phase Motors ( <i>Expires 3/1/2013</i> )	\$45 - \$700 per motor
Fractional HP Motors Electronic Commutated Motors (replacing shaded pole motors in refrigerator/freezer cases)	\$40 per electronic commutated motor

### Refrigeration Doors/Covers

Energy-Efficient Doors/Covers for Installation on Open Refrigerated Cases	\$100 per door
Aluminum Night Curtains for Installation on Open Refrigerated Cases	\$3.50 per linear foot

### Refrigeration Controls

Door Heater Controls	\$50 per control
Electric Defrost Controls	\$50 per control
Evaporator Fan Controls	\$75 per control
Novelty Cooler Shutoff	\$50 per control

### Other Equipment Incentives

Performance Lighting	\$1.00 per watt per SF below program incentive threshold, currently 5% more energy efficient than ASHRAE 90.1- 2007 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 an IRR of at least 10%.

**APPENDIX C**



# STATEMENT OF ENERGY PERFORMANCE

## Pinelands Regional - Alternative School

**Building ID:** 3509204  
**For 12-month Period Ending:** June 30, 2011<sup>1</sup>  
**Date SEP becomes ineligible:** N/A

**Date SEP Generated:** May 17, 2013

### Facility

Pinelands Regional - Alternative School  
 585 Nugentown Road  
 Little Egg Harbor, NJ 08087

### Facility Owner

Pinelands Regional School District  
 520 Nugentown Road PO Box 248  
 Little Egg Harbor, NJ 08087

### Primary Contact for this Facility

N/A

**Year Built:** 1979

**Gross Floor Area (ft<sup>2</sup>):** 4,200

**Energy Performance Rating<sup>2</sup> (1-100)** N/A

### Site Energy Use Summary<sup>3</sup>

Electricity - Grid Purchase(kBtu)	636,816
Natural Gas - (kBtu) <sup>4</sup>	0
Total Energy (kBtu)	636,816

### Energy Intensity<sup>4</sup>

Site (kBtu/ft <sup>2</sup> /yr)	152
Source (kBtu/ft <sup>2</sup> /yr)	506

### Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	90
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### Electric Distribution Utility

Atlantic City Electric Co [Peppco Holdings Inc]

### National Median Comparison

National Median Site EUI	57
National Median Source EUI	145
% Difference from National Median Source EUI	249%
Building Type	K-12 School

### Meets Industry Standards<sup>5</sup> for Indoor Environmental Conditions:

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

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.

### Certifying Professional

N/A

#### 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	<input checked="" type="checkbox"/>
<b>Building Name</b>	Pinelands Regional - Alternative School	Is this the official building name to be displayed in the ENERGY STAR Registry of Labeled Buildings?		<input type="checkbox"/>
<b>Type</b>	K-12 School	Is this an accurate description of the space in question?		<input type="checkbox"/>
<b>Location</b>	585 Nugentown Road, Little Egg Harbor, NJ 08087	Is this address accurate and complete? Correct weather normalization requires an accurate zip code.		<input type="checkbox"/>
<b>Single Structure</b>	Single Facility	Does this SEP represent a single structure? SEPs cannot be submitted for multiple-building campuses (with the exception of a hospital, k-12 school, hotel and senior care facility) nor can they be submitted as representing only a portion of a building.		<input type="checkbox"/>
Alternative School (K-12 School)				
CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	<input checked="" type="checkbox"/>
<b>Gross Floor Area</b>	4,200 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.		<input type="checkbox"/>
<b>Open Weekends?</b>	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.		<input type="checkbox"/>
<b>Number of PCs</b>	7 (Default)	Is this the number of personal computers in the K12 School?		<input type="checkbox"/>
<b>Number of walk-in refrigeration/freezer units</b>	0	Is this the total number of commercial walk-in type freezers and coolers? These units are typically found in storage and receiving areas.		<input type="checkbox"/>
<b>Presence of cooking facilities</b>	No	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".		<input type="checkbox"/>
<b>Percent Cooled</b>	100 %	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		<input type="checkbox"/>
<b>Percent Heated</b>	100 %	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		<input type="checkbox"/>
<b>Months</b>	10(Optional)	Is this school in operation for at least 8 months of the year?		<input type="checkbox"/>

<b>High School?</b>	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'.		<input type="checkbox"/>
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## ENERGY STAR® Data Checklist for Commercial Buildings

### Energy Consumption

**Power Generation Plant or Distribution Utility:** Atlantic City Electric Co [Pepco Holdings Inc]

Fuel Type: Electricity		
<b>Meter: Electric (kWh (thousand Watt-hours))</b> <b>Space(s): Entire Facility</b> <b>Generation Method: Grid Purchase</b>		
Start Date	End Date	Energy Use (kWh (thousand Watt-hours))
06/01/2011	06/30/2011	8,080.00
05/01/2011	05/31/2011	11,280.00
04/01/2011	04/30/2011	19,600.00
03/01/2011	03/31/2011	22,240.00
02/01/2011	02/28/2011	27,440.00
01/01/2011	01/31/2011	32,800.00
12/01/2010	12/31/2010	25,440.00
11/01/2010	11/30/2010	14,160.00
10/01/2010	10/31/2010	7,360.00
09/01/2010	09/30/2010	7,040.00
08/01/2010	08/31/2010	5,600.00
07/01/2010	07/31/2010	5,600.00
<b>Electric Consumption (kWh (thousand Watt-hours))</b>		<b>186,640.00</b>
<b>Electric Consumption (kBtu (thousand Btu))</b>		<b>636,815.68</b>
<b>Total Electricity (Grid Purchase) Consumption (kBtu (thousand Btu))</b>		<b>636,815.68</b>
<b>Is this the total Electricity (Grid Purchase) consumption at this building including all Electricity meters?</b>		<input type="checkbox"/>

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.	<input type="checkbox"/>

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.	<input type="checkbox"/>

### 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

Pinelands Regional - Alternative School  
585 Nugentown Road  
Little Egg Harbor, NJ 08087

## Facility Owner

Pinelands Regional School District  
520 Nugentown Road PO Box 248  
Little Egg Harbor, NJ 08087

## Primary Contact for this Facility

N/A

## General Information

Pinelands Regional - Alternative School	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	4,200
Year Built	1979
For 12-month Evaluation Period Ending Date:	June 30, 2011

## Facility Space Use Summary

Alternative School	
Space Type	K-12 School
Gross Floor Area (ft <sup>2</sup> )	4,200
Open Weekends?	No
Number of PCs <sup>d</sup>	7
Number of walk-in refrigeration/freezer units	0
Presence of cooking facilities	No
Percent Cooled	100
Percent Heated	100
Months <sup>o</sup>	10
High School?	No
School District <sup>o</sup>	Pinelands Regional

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 06/30/2011)	Baseline (Ending Date 06/30/2011)	Rating of 75	Target	National Median
Energy Performance Rating	N/A	N/A	75	N/A	N/A
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	152	152	42	N/A	57
Source (kBtu/ft <sup>2</sup> )	506	506	139	N/A	145
Energy Cost					
\$/year	N/A	N/A	N/A	N/A	N/A
\$/ft <sup>2</sup> /year	N/A	N/A	N/A	N/A	N/A
Greenhouse Gas Emissions					
MtCO <sub>2</sub> e/year	90	90	25	N/A	34
kgCO <sub>2</sub> e/ft <sup>2</sup> /year	21	21	6	N/A	8

More than 50% of your building is defined as K-12 School. This building is currently ineligible for a rating. Please note the National Median column represents the CBECs national median data for K-12 School. This building uses 249% more energy per square foot than the CBECs national median for K-12 School.

Notes:

o - This attribute is optional.

d - A default value has been supplied by Portfolio Manager.

**APPENDIX D**

## MAJOR EQUIPMENT LIST

### Concord Engineering Group

#### PR - Alternative High School

### AHUs

Tag	AHU-1	ERU-1	
Unit Type	Indoor Air Handler	Energy Recovery	
Qty	1	1	
Location	Attic	Attic	
Area Served	Classrooms	Team Rooms, Restrooms	
Manufacturer	Trane	Greenheck	
Model #	LPCAA08D4F0E50	ERV-361H-15-A-ES	
Serial #	T08H52004	11524412	
Cooling Type	DX	N/A	
Cooling Capacity (Tons)	10	N/A	
Cooling Efficiency (SEER/EER)		N/A	
Heating Type	Electric	N/A	
Heating Input (MBH)		N/A	
Efficiency	100%	N/A	
Fuel	Electric	N/A	
Approx Age	9	9	
ASHRAE Service Life	20	20	
Remaining Life	11	11	
Comments	3 HP SF	1.5 HP SF, 1.5 HP EF, 2000 CFM	

**Note:**

"N/A" = Not Applicable.

"-" = Info Not Available

## MAJOR EQUIPMENT LIST

Concord Engineering Group

PR - Alternative High School

### Electric Reheats

<b>Tag</b>	<b>EH-1</b>	<b>EH-2, 7</b>	<b>EH-3, 4</b>
<b>Unit Type</b>	Reheat Coil	Reheat Coil	Reheat Coil
<b>Qty</b>	1	2	2
<b>Location</b>	Duct Mounted	Duct Mounted	Duct Mounted
<b>Area Served</b>	Classroom A107	Corridor	Classroom A104,105
<b>Manufacturer</b>	-	-	-
<b>Model #</b>	-	-	-
<b>kW Rating</b>	15.5	2.5	13
<b>HEATING - Rated Output Capacity (Btu/Hr)</b>	52 MBH	8.5 MBH	44 MBH
<b>Rated CFM</b>	980	150	815
<b>Electrical</b>	208/3/60	208/3/60	208/3/60
<b>Approx Age</b>	5	5	5
<b>ASHRAE Service Life</b>	20	20	20
<b>Remaining Life</b>	15	15	15
<b>Comments</b>			

**Note:**

"N/A" = Not Applicable.

"-" = Info Not Available

<b>EH-5</b>	<b>EH-6</b>	<b>EH-8, 10</b>	<b>EH-9, 11</b>
Reheat Coil	Reheat Coil	Reheat Coil	Reheat Coil
1	1	1	1
Duct Mounted	Duct Mounted	Duct Mounted	Duct Mounted
Classroom A103	Office A102	Team Rooms	Restrooms
-	-	-	-
-	-	-	-
9.5	3.5	10	6.5
32 MBH	12 MBH	34 MBH	22 MBH
570	220	600	400
208/3/60	208/3/60	208/3/60	208/3/60
5	5	5	5
20	20	20	20
15	15	15	15

## MAJOR EQUIPMENT LIST

### Concord Engineering Group

#### PR - Alternative High School

### Condensing Units

<b>Tag</b>	<b>CU-1</b>	<b>CU-2, 3</b>	
<b>Unit Type</b>	Condensing Unit	Mini-Split Condensing Unit	
<b>Qty</b>	1	2	
<b>Location</b>	Outside - Ground Level	Outside - Ground Level	
<b>Area Served</b>	AHU-1	Control, Electric Rooms	
<b>Manufacturer</b>	Trane	Mitsubishi	
<b>Model #</b>	TTA120B300FA	PU-A18NHA	
<b>Serial #</b>	83346K6AD	08U01468	
<b>Refrigerant</b>	R-22	R410a	
<b>Cooling Capacity (Tons)</b>	10	1.5	
<b>Cooling Efficiency (KW/Ton)</b>			
<b>Volts / Phase / Hz</b>	208-230/3/60	208-230/1/60	
<b>Fuel</b>	Electric	Electric	
<b>Approx Age</b>	5	5	
<b>ASHRAE Service Life</b>	15	15	
<b>Remaining Life</b>	10	10	
<b>Comments</b>			

**Note:**

"N/A" = Not Applicable.

"-" = Info Not Available

# MAJOR EQUIPMENT LIST

## Concord Engineering Group

### PR - Alternative High School

#### Domestic Water Heaters

<b>Tag</b>	<b>HWH-1</b>		
<b>Unit Type</b>	Electric		
<b>Qty</b>	1		
<b>Location</b>	Closet		
<b>Area Served</b>	Restrooms		
<b>Manufacturer</b>	A.O. Smith		
<b>Model #</b>	-		
<b>Serial #</b>	-		
<b>Size (Gallons)</b>	40		
<b>Input Capacity (MBH/KW)</b>	6 KW		
<b>Recovery (Gal/Hr)</b>	-		
<b>Efficiency %</b>	100%		
<b>Fuel</b>	Electric		
<b>Approx Age</b>			
<b>ASHRAE Service Life</b>			
<b>Remaining Life</b>			
<b>Comments</b>			

**Note:**

"N/A" = Not Applicable.

"-" = Info Not Available



**APPENDIX E**

CEG Project #: IC13017  
 Facility Name: PR Alternative HS  
 Address: 585 Nugentown Road  
Little Egg Harbor, NJ  
 City, State, Zip 08087

Fixture Reference #	Location	Average Burn Hours	Description	EXISTING FIXTURES				PROPOSED FIXTURE RETROFIT				RETROFIT ENERGY SAVINGS				PROPOSED LIGHTING CONTROLS								
				Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Work Description	Equipment Description	Lamps per Fixture	Watts per Fixture	Qty of Fixtures	Total kW	Usage kWh/Yr	Energy Savings, kW	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$	
1	Office	2600	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	2	0.12	302	Re-ballast & Re-lamp	Sylvania Ballast QHE2x32T8/UNV ISL Sylvania Lamp FO28/841/SS/ECO	2	48	2	0.10	250	0.02	52	\$9	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	50	\$9
2	Office	2600	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	5	0.41	1,066	Re-ballast & Re-lamp	Sylvania Ballast QHE3x32T8/UNV ISL Sylvania Lamp FO28/841/SS/ECO	3	70	5	0.35	910	0.06	156	\$28	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	182	\$33
2	Classroom	2600	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	6	0.49	1,279	Re-ballast & Re-lamp	Sylvania Ballast QHE3x32T8/UNV ISL Sylvania Lamp FO28/841/SS/ECO	3	70	6	0.42	1,092	0.07	187	\$34	4	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	20.0%	218	\$39
2	Classroom	2600	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	6	0.49	1,279	Re-ballast & Re-lamp	Sylvania Ballast QHE3x32T8/UNV ISL Sylvania Lamp FO28/841/SS/ECO	3	70	6	0.42	1,092	0.07	187	\$34	4	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	20.0%	218	\$39
1	Concession	1200	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	7	0.41	487	Re-ballast & Re-lamp	Sylvania Ballast QHE2x32T8/UNV ISL Sylvania Lamp FO28/841/SS/ECO	2	48	7	0.34	403	0.07	84	\$15	4	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	20.0%	81	\$15
2	Bathroom	3000	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	1	0.08	246	Re-ballast & Re-lamp	Sylvania Ballast QHE3x32T8/UNV ISL Sylvania Lamp FO28/841/SS/ECO	3	70	1	0.07	210	0.01	36	\$6	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	42	\$8
1	Boy's RR	3000	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	4	0.23	696	Re-ballast & Re-lamp	Sylvania Ballast QHE2x32T8/UNV ISL Sylvania Lamp FO28/841/SS/ECO	2	48	4	0.19	576	0.04	120	\$22	4	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	20.0%	115	\$21
2	Boy's Locker Room	3000	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	4	0.33	984	Re-ballast & Re-lamp	Sylvania Ballast QHE3x32T8/UNV ISL Sylvania Lamp FO28/841/SS/ECO	3	70	4	0.28	840	0.05	144	\$26	4	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	20.0%	168	\$30
1	IT Closet	1200	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	70	Re-ballast & Re-lamp	Sylvania Ballast QHE2x32T8/UNV ISL Sylvania Lamp FO28/841/SS/ECO	2	48	1	0.05	58	0.01	12	\$2	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	12	\$2
3	Jc Closet	1200	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	70	Re-ballast & Re-lamp	Sylvania Ballast QHE2x32T8/UNV ISL Sylvania Lamp FO28/841/SS/ECO	2	48	1	0.05	58	0.01	12	\$2	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	12	\$2
1	Girl's RR	3000	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	4	0.23	696	Re-ballast & Re-lamp	Sylvania Ballast QHE2x32T8/UNV ISL Sylvania Lamp FO28/841/SS/ECO	2	48	4	0.19	576	0.04	120	\$22	4	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	20.0%	115	\$21
2	Girl's Locker Room	3000	2x4, 3 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	3	82	4	0.33	984	Re-ballast & Re-lamp	Sylvania Ballast QHE3x32T8/UNV ISL Sylvania Lamp FO28/841/SS/ECO	3	70	4	0.28	840	0.05	144	\$26	4	Dual Tech. Occupancy Sensor w/2 Pole Powerpack - Remote Mnt.	1	20.0%	168	\$30
1	Corridor	3000	2x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	6	0.35	1,044	Re-ballast & Re-lamp	Sylvania Ballast QHE2x32T8/UNV ISL Sylvania Lamp FO28/841/SS/ECO	2	48	6	0.29	864	0.06	180	\$32	0	No New Controls	0	0.0%	0	\$0
7	Mechanical Room	2000	1x4 2 Lamp T8 32w, Elect Ballast, Surface Mnt, Utility	1	58	8	0.46	928	Re-ballast & Re-lamp	Sylvania Ballast QHE2x32T8/UNV ISL Sylvania Lamp FO28/841/SS/ECO	2	48	8	0.38	768	0.08	160	\$29	0	No New Controls	0	0.0%	0	\$0
4	Exterior	4400	6", 2 Lamp, 13w CFL, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	30	16	0.48	2,112	Existing to Remain	-	2	30	0	0.48	2,112	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
3	Electrical Room	2000	1x4, 2 Lamp, T8 32w, Elect. Ballast, Recessed Mnt., Prismatic Lens	2	58	1	0.06	116	Re-ballast & Re-lamp	Sylvania Ballast QHE2x32T8/UNV ISL Sylvania Lamp FO28/841/SS/ECO	2	48	1	0.05	96	0.01	20	\$4	0	No New Controls	0	0.0%	0	\$0
5	Exterior WP	4400	175w HID Mfg. Ballast, Surface Mnt., Prismatic Lens	1	210	3	0.63	2,772	Remove & Replace	MaxLite LED Wall Pack MLLWP40LED50DS	1	40	3	0.12	528	0.51	2,244	\$404	0	No New Controls	0	0.0%	0	\$0
6	LED Exit Signs	8760	2w LED Exit Signs	1	2	6	0.01	105	Existing to Remain	-	1	2	0	0.01	105	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
<b>TOTAL</b>						<b>85</b>	<b>5</b>	<b>15,236</b>					<b>63</b>	<b>4</b>	<b>11,377</b>	<b>1</b>	<b>3,858</b>	<b>\$695</b>			<b>12</b>	<b>2</b>	<b>1,381</b>	<b>\$249</b>

**APPENDIX F**

Location Description	Area (Sq FT)	Panel	Qty	Panel Sq Ft	Panel Total Sq Ft	Total KW <sub>DC</sub>	Total Annual kWh	Total KW <sub>AC</sub>	Panel Weight (41.9 lbs)	W/SQFT
Alternative High School	2625	SHARP ND-240QCJ	85	17.5	1,491	20.40	25,007	16.5	3,562	13.68



= Proposed PV Roof Layout

Notes:

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

**Project Name: LGEA Solar PV Project - Alternative High School**  
**Location: Little Egg Harbor, NJ**  
**Description: Photovoltaic System 100% Financing - 15 year**

**Simple Payback Analysis**

	<b>Photovoltaic System 100% Financing - 15 year</b>
Total Construction Cost	\$84,825
Annual kWh Production	25,007
Annual Energy Cost Reduction	\$4,501
Average Annual SREC Revenue	\$4,778

Simple Payback: **9.14** Years

**Life Cycle Cost Analysis**

Analysis Period (years):	15	Financing %:	100%
Discount Rate:	3%	Maintenance Escalation Rate:	3.0%
Average Energy Cost (\$/kWh)	<b>\$0.180</b>	Energy Cost Escalation Rate:	3.0%
Financing Rate:	6.00%	Average SREC Value (\$/kWh)	\$0.191

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	25,007	\$4,501	\$0	\$6,252	\$4,992	\$3,598	\$2,163	\$2,163
2	\$0	24,882	\$4,636	\$0	\$6,220	\$4,770	\$3,820	\$2,267	\$4,431
3	\$0	24,758	\$4,775	\$0	\$6,189	\$4,534	\$4,056	\$2,375	\$6,806
4	\$0	24,634	\$4,919	\$0	\$6,158	\$4,284	\$4,306	\$2,487	\$9,293
5	\$0	24,511	\$5,066	\$252	\$6,128	\$4,018	\$4,571	\$2,352	\$11,645
6	\$0	24,388	\$5,218	\$251	\$4,878	\$3,736	\$4,853	\$1,255	\$12,900
7	\$0	24,266	\$5,375	\$250	\$4,853	\$3,437	\$5,152	\$1,388	\$14,288
8	\$0	24,145	\$5,536	\$249	\$4,829	\$3,119	\$5,470	\$1,527	\$15,815
9	\$0	24,024	\$5,702	\$247	\$4,805	\$2,782	\$5,808	\$1,670	\$17,485
10	\$0	23,904	\$5,873	\$246	\$3,586	\$2,424	\$6,166	\$623	\$18,108
11	\$0	23,784	\$6,049	\$245	\$3,568	\$2,043	\$6,546	\$782	\$18,890
12	\$0	23,665	\$6,231	\$244	\$3,550	\$1,640	\$6,950	\$947	\$19,837
13	\$0	23,547	\$6,418	\$243	\$3,532	\$1,211	\$7,379	\$1,118	\$20,955
14	\$0	23,429	\$6,610	\$241	\$2,343	\$756	\$7,834	\$122	\$21,077
15	\$0	23,312	\$6,809	\$240	\$2,331	\$273	\$8,317	\$310	\$21,387
<b>Totals:</b>		362,257	\$83,719	\$2,709	\$69,222	\$44,019	\$84,825	\$21,387	\$215,078
<b>Net Present Value (NPV)</b>							<b>\$17,027</b>		