

PINELANDS REGIONAL SCHOOL DISTRICT

ADMINISTRATION BUILDING

**520 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

Natural Gas Utility Provider: New Jersey Natural Gas
Utility Rate Structure: General Service – Small (GSS)
Third Party Supplier: None

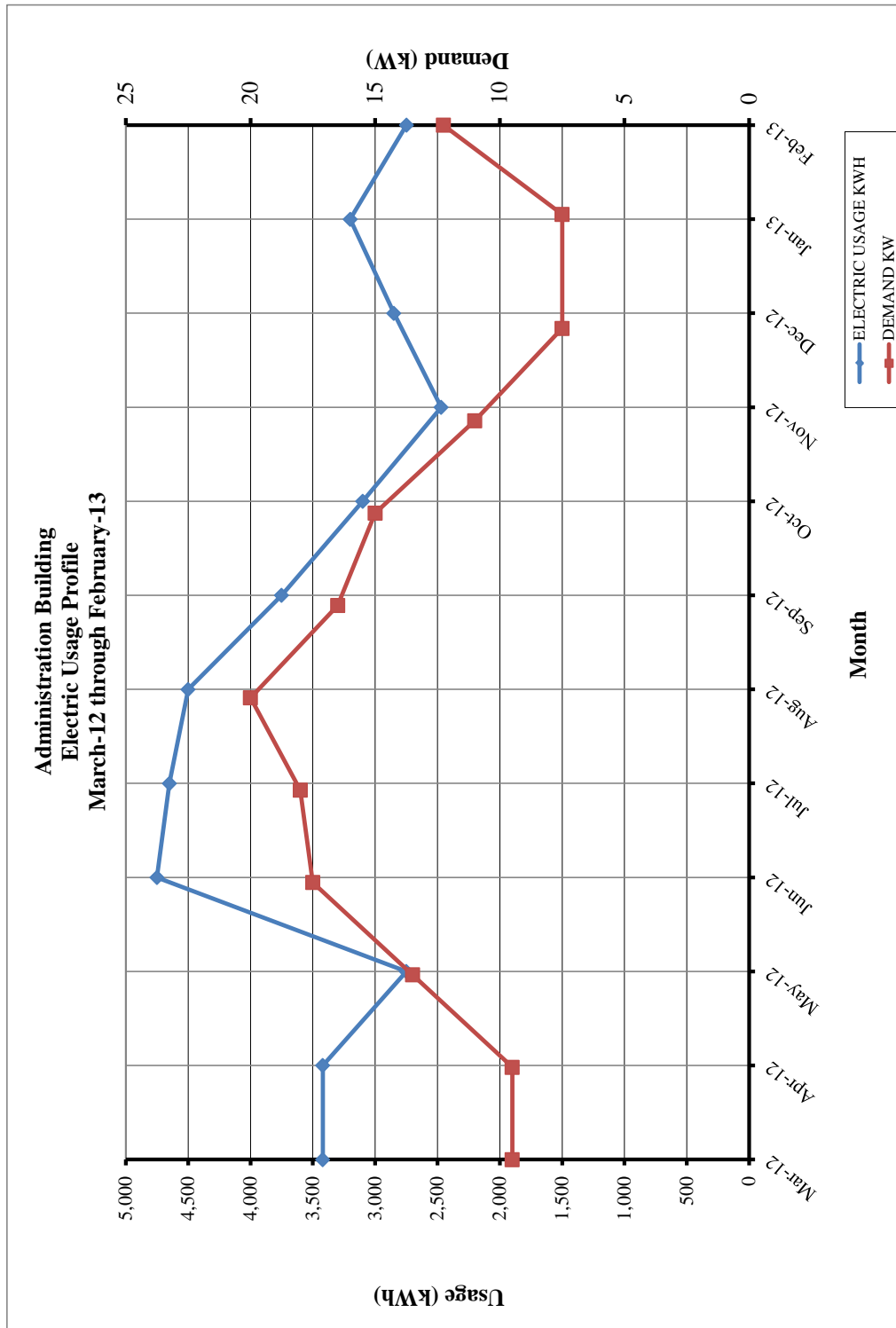
The electric usage profile represents the actual electrical usage for the facility. The electric utility measures consumption in kilowatt-hours (KWH) and maximum demand in kilowatts (KW). One KWH usage is equivalent to 1000 watts running for one hour. One KW of electric demand is equivalent to 1000 watts 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: Atlantic City Electric			
Rate: Monthly General Service (MGS)			
Meter No: 12456029			
Account No: 0966 8589 9997			
Third Party Utility Provider: Direct Energy			
TPS Meter / Acct No: -			
MONTH OF USE	CONSUMPTION KWH	DEMAND KW	TOTAL BILL
Jan-13	3,200	7.5	\$490
Feb-13	2,749	12.3	\$455
Mar-12	3,420	9.5	\$534
Apr-12	3,420	9.5	\$534
May-12	2,750	13.5	\$464
Jun-12	4,750	17.5	\$803
Jul-12	4,650	18.0	\$791
Aug-12	4,500	20.0	\$784
Sep-12	3,750	16.5	\$649
Oct-12	3,100	15.0	\$523
Nov-12	2,470	11.0	\$408
Dec-12	2,850	7.5	\$440
Totals	41,609	20.0 Max	\$6,876
AVERAGE DEMAND		13.1 KW average	
AVERAGE RATE		\$0.165 \$/kWh	

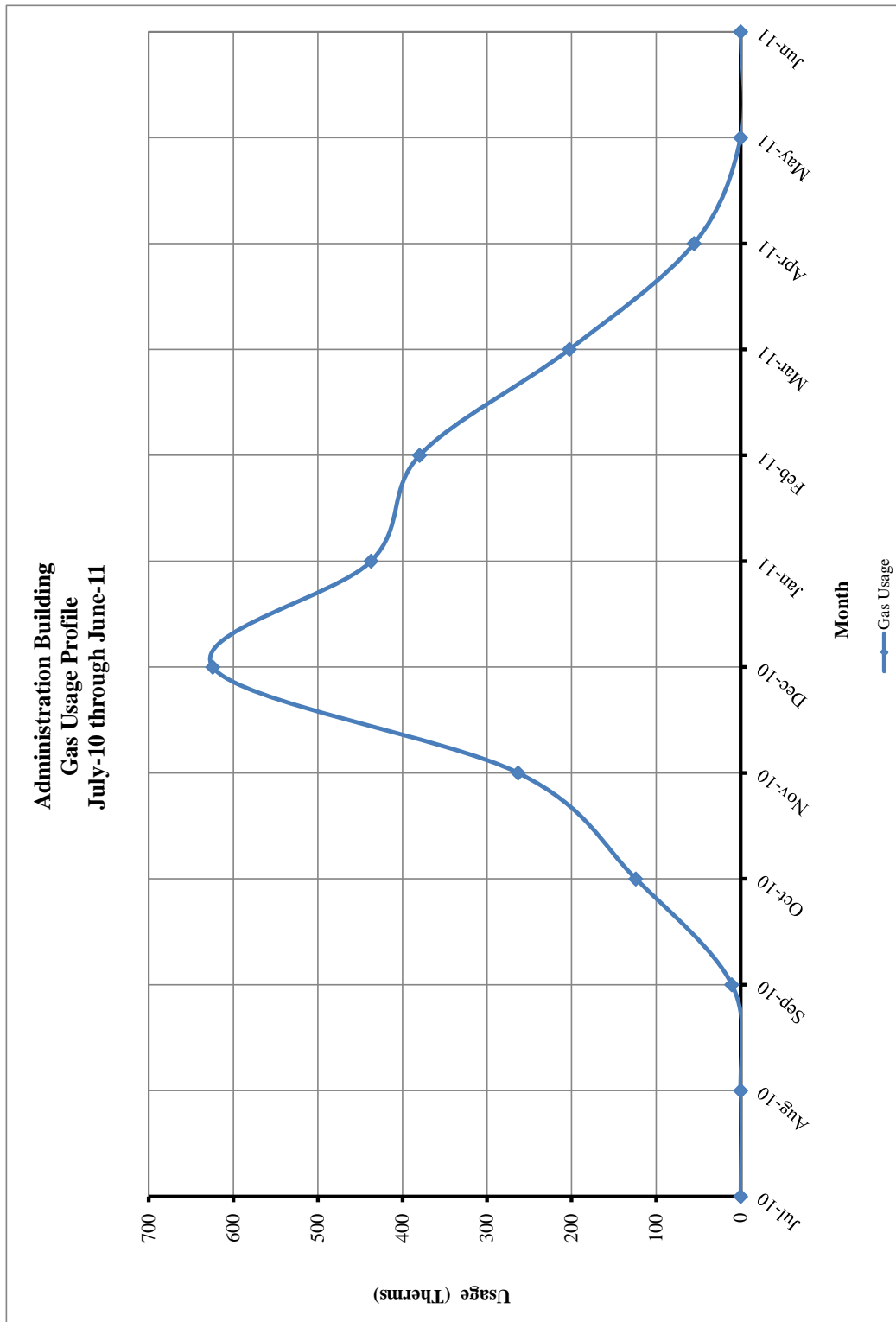
Figure 1
Electricity Usage Profile



**Table 2
Natural Gas Billing Data**

NATURAL GAS USAGE SUMMARY		
Utility Provider: New Jersey Natural Gas		
Rate: General Service - Small (GSS)		
Meter No: 509930		
Account No: 01-5091-0590-18		
Third Party Utility Provider: -		
TPS Meter No: -		
MONTH OF USE	CONSUMPTION (THERMS)	TOTAL BILL
Jul-10	0.00	\$25.00
Aug-10	0.00	\$25.00
Sep-10	10.42	\$37.92
Oct-10	124.00	\$179.06
Nov-10	263.04	\$351.85
Dec-10	624.28	\$800.70
Jan-11	437.06	\$800.70
Feb-11	379.65	\$501.72
Mar-11	202.56	\$276.68
Apr-11	55.15	\$93.52
May-11	0.00	\$25.00
Jun-11	0.00	\$25.00
TOTALS	2,096.16	\$3,142.15
AVERAGE RATE:	\$1.50	\$/THERM

Figure 2
Natural Gas Usage Profile



II. FACILITY DESCRIPTION

The Pinelands Regional Administration Building is located on 525 Nugentown Road in Little Egg Harbor, New Jersey. The 4,200 SF building was built in 1980 with no renovations. The building is a single story facility comprised of office space, conference rooms, storage rooms, restroom, and break room.

Occupancy Profile

The typical hours of operation for the Administration Building are Monday through Friday between 8:00 am and 5:00 pm. The Administration Building has approximately 10 employees in the building full time.

Building Envelope

Exterior walls for the Administration Building are framed walls with fiberglass insulation and vinyl siding on the exterior. The windows throughout are in good condition and are double pane, operable, 1/4" tinted glass with aluminum frames. The roof is a flat, built up rubber roof where the HVAC equipment resides. The amount of insulation below the roofing ranges from 2" to 5".

HVAC Systems

The building is conditioned by three packaged rooftop units with natural gas fired heating and direct expansion cooling. The three units each have a cooling capacity of 5 tons each, and a heating capacity of one at 125 MBH, and two at 100 MBH. One of the units has been recently replaced and is in excellent condition. The two remaining units appear to be original to the building and are in need of replacement.

Exterior corridors and restrooms are fitted with four foot electric baseboard heaters rated at 1000 watts each. Each baseboard unit has a dial controller.

Exhaust System

The toilet room each have a switch activated exhaust fan that is vented via exhaust hoods located on the roof.

HVAC System Controls

The rooftop units are controlled via individual Honeywell digital 7-Day programmable thermostats.

Domestic Hot Water

Domestic hot water is provided for the break room by a single Rheem electric hot water heater with 20 gallons of storage rated at 2000 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

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	\$10,840	\$1,216	8.9	12.2%
ECM #2	Lighting Controls	\$1,615	\$114	14.2	-29.4%
ECM #3	Refrigerator Replacement	\$650	\$121	5.4	86.2%
ECM #4	Rooftop Unit Replacement	\$49,080	\$1,030	47.7	-68.5%
ECM #5	Economizer Controls	\$5,550	\$824	6.7	122.7%
Notes:	A. Cost takes into consideration applicable NJ Smart Start TM 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	2.8	7,371	0
ECM #2	Lighting Controls	0	693	0
ECM #3	Refrigerator Replacement	0.0	736	0
ECM #4	Rooftop Unit Replacement	3.5	5,840	44
ECM #5	Economizer Controls	1.1	4,992	0

Table 3
ECM Emissions Summary

ENERGY CONSERVATION MEASURES (ECM's)				
ECM NO.	DESCRIPTION	GREENHOUSE GAS EMISSIONS REDUCTION		
		CO₂ EMISSIONS (LBS)	NO_x EMISSIONS (LBS)	SO₂ EMISSIONS (LBS)
ECM #1	Lighting Upgrade	11,204	21	48
ECM #2	Lighting Controls	1,054	2	5
ECM #3	Refrigerator Replacement	1,119	2	5
ECM #4	Rooftop Unit Replacement	9,392	17	38
ECM #5	Economizer Controls	7,588	14	32

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

**Table 4
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	\$1,216	\$11,000	\$160	\$10,840	8.9
Lighting Controls	\$114	\$1,750	\$135	\$1,615	14.2
Refrigerator Replacement	\$121	\$650	\$0	\$650	5.4
Rooftop Unit Replacement	\$1,030	\$50,000	\$920	\$49,080	47.7
Economizer Controls	\$824	\$6,300	\$750	\$5,550	6.7
<i>Design / Construction Extras (15%)</i>		<i>\$10,455</i>		<i>\$10,455</i>	
Total Project	\$3,305	\$80,155	\$1,965	\$78,190	23.7

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 Administration Building is a mixture of T8 32 watt fixtures with electronic ballasts and T12 34 watt fixtures with magnetic ballast both types having 4 Lamps in 2x4 foot recessed fixture housing with a prismatic lens. The facility also has many incandescent style exit signs, exterior wall lanterns with incandescent bulbs, and metal halide spot lights mounted to the building.

This ECM would remove all the existing recessed T8 and T12 fixtures and replace with new 3 and 2 lamp fixtures depending on the space with a recessed Lithonia fixtures with T8 lamps and electronic ballast. The incandescent lamps will be replaced equivalent Philips LED lamps, and the exit signed with be replaced with LED exit signs. 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 building.

Energy Savings Summary:

ECM #1 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$11,000
NJ Smart Start Equipment Incentive (\$):	\$160
Net Installation Cost (\$):	\$10,840
Maintenance Savings (\$/Yr):	\$0
Energy Savings (\$/Yr):	\$1,216
Total Yearly Savings (\$/Yr):	\$1,216
Estimated ECM Lifetime (Yr):	10
Simple Payback	8.9
Simple Lifetime ROI	12.2%
Simple Lifetime Maintenance Savings	\$0
Simple Lifetime Savings	\$12,160
Internal Rate of Return (IRR)	2%
Net Present Value (NPV)	(\$467.27)

ECM #2: Lighting Controls Upgrade – Occupancy Sensors

Description:

Some of the lights in the Administration Building 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 room, 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:

ECM #2 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$1,750
NJ Smart Start Equipment Incentive (\$):	\$135
Net Installation Cost (\$):	\$1,615
Maintenance Savings (\$/Yr):	\$0
Energy Savings (\$/Yr):	\$114
Total Yearly Savings (\$/Yr):	\$114
Estimated ECM Lifetime (Yr):	10
Simple Payback	14.2
Simple Lifetime ROI	-29.4%
Simple Lifetime Maintenance Savings	\$0
Simple Lifetime Savings	\$1,140
Internal Rate of Return (IRR)	-6%
Net Present Value (NPV)	(\$642.56)

ECM #3: Refrigerator Replacement

Description:

The Administration Building has residential style refrigerators in the break room. This unit is an older model that is not nearly as energy efficient as those manufactured today.

The proposed replacement is a one-for-one with a unit of similar size and dimensions that has the most up-to-date Energy Star Rating. The model selected is a 2013 model manufactured by Frigidaire one (1) model FFHT182. (Note: There are currently no NJ OCE incentives for commercial property refrigerator replacement.)

Energy Savings Calculations:

ENERGY STAR REFRIGERATOR CALCULATION			
ECM INPUTS	EXISTING	PROPOSED	SAVINGS
Quantity	1	1	
Manufacturer	Roper	Frigidaire	
Type	Top Freezer	Top Freezer	
Model	RT18DKXWL00	FFHT1826LW	
Size (Cu-Ft)	18	18	
Per Unit Electric Usage (kWh)	1,119	383	736
Electric Rate (\$/kWh)	\$0.165	\$0.165	
ENERGY SAVINGS CALCULATIONS			
Electric Usage (kWh)	1,119	383	736
Energy Cost (\$)	\$185	\$63	\$121
COMMENTS:	Calculations based Energy Star Website http://www.energystar.gov/index.cfm?fuseaction=refrig.calculator		

Energy Savings Summary:

ECM #3 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$650
NJ Smart Start Equipment Incentive (\$):	\$0
Net Installation Cost (\$):	\$650
Maintenance Savings (\$/Yr):	\$0
Energy Savings (\$/Yr):	\$121
Total Yearly Savings (\$/Yr):	\$121
Estimated ECM Lifetime (Yr):	10
Simple Payback	5.4
Simple Lifetime ROI	86.2%
Simple Lifetime Maintenance Savings	\$0
Simple Lifetime Savings	\$1,210
Internal Rate of Return (IRR)	13%
Net Present Value (NPV)	\$382.15

ECM #4: Replace Rooftop Units

Description:

The Administration Building has two Snyder General gas fired rooftop units that are well past their useful life expectancy. The units are approximately 5 ton in cooling capacity and have a 100 MBH gas-fired furnace.

The ECM would replace the units with new York ZJ series rooftop units with two stage gas fired heating. Each unit will be rated for 5 tons of cooling and 120 MBH of heating capacity. The new units will require a curb adapter to fit over the existing unit openings.

Energy Savings Calculations:

According to the New Jersey Clean Energy Program, Protocols to Measure Resource Savings, dated August 2012, the heat pump algorithms are as follows:

Heating Usage

$$\text{Usage (kBtu)} = \text{Capacity} \times 0.8 \times 10 \text{ hrs} \times \text{HDD} \times \frac{1}{(65 - 13)\text{F}}$$

$$\text{Fuel Usage} = \text{Usage (kBtu)} \times \frac{1}{\text{Sys \% Eff}} \times \text{Fuel Conversion Factor}$$

Cooling Usage

$$\text{Usage (kWh)} = \frac{\text{Capacity} \left(\frac{\text{Btu}}{\text{h}}\right)}{1000} \times \text{EFLH} \times \frac{1}{\text{EER}}$$

CONVERSION TO DX/GAS ROOFTOP UNIT			
ECM INPUTS	EXISTING	PROPOSED	SAVINGS
Quantity of Units	2	2	
Unit Cooling Capacity (Btu/h)	60,000	60,000	
Unit Electric Heating Capacity (kW)	0.0	0.0	
Unit Gas Heating Capacity (MBH)	100.0	120.0	
<i>HEATING SAVINGS CALCULATION</i>			
Unit Capacity (Btu/h)	100,000.0	120,000.0	
Heating System Efficiency	79%	81%	
Heating Degree Days (65 F)	3,743	3,743	
Electric Usage (kWh)	0	0	0
Natural Gas Usage (therm)	1,784	1,740	44
<i>COOLING SAVINGS CALCULATION</i>			
Cooling Efficiency (EER)	8	12.2	
Cooling Equivalent Full Load Hours	1,131	1,131	
Electric Usage (kWh)	16,965	11,125	5,840
Electric Cost (\$/kWh)	\$0.1650	\$0.1650	
Natural Gas Cost (\$/therm)	\$1.50	\$1.50	
ENERGY SAVINGS CALCULATIONS			
ECM RESULTS	EXISTING	PROPOSED	SAVINGS
Demand (kW)	10.1	6.6	3.5
Electric Usage (kWh)	16,965	11,125	5,840
Natural Gas Usage (therm)	1,784	1,740	44
Energy Cost (\$)	\$5,475	\$4,445	\$1,030
COMMENTS:	York Model ZJ061 Two Stage Heat		

Energy Savings Summary:

ECM #4 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$50,000
NJ Smart Start Equipment Incentive (\$):	\$920
Net Installation Cost (\$):	\$49,080
Maintenance Savings (\$/Yr):	\$0
Energy Savings (\$/Yr):	\$1,030
Total Yearly Savings (\$/Yr):	\$1,030
Estimated ECM Lifetime (Yr):	15
Simple Payback	47.7
Simple Lifetime ROI	-68.5%
Simple Lifetime Maintenance Savings	\$0
Simple Lifetime Savings	\$15,450
Internal Rate of Return (IRR)	-12%
Net Present Value (NPV)	(\$36,783.93)

ECM #5: Dual Enthalpy Economizer Controls

Description:

The Administration Building has three 5 ton packaged rooftop units with direct expansion cooling. The units currently are not fitted with economizer hoods that can provide free cooling. The economizer is activated when the outdoor enthalpy and dry bulb air temperature are within the target range to sufficiently provide cooling the space. When activated the outdoor air damper is modulated to full open distributed 100% outdoor air to the spaces and relieving return air.

This ECM would install the manufacturer's economizer hood option on the three rooftop units.

Energy Savings Calculations:

Energy Savings (kWh)

$$= \text{Operational Testing Factor} \times \text{Savings Factor} \times \text{Capacity (tons)} \times \frac{1}{\text{EER}}$$

$$\text{Demand Savings (kW)} = \frac{\text{Energy Savings}}{\text{Operating Hours}}$$

DUAL ENTHALPY ECONOMIZER	
ECM INPUTS	
Quantity of Units	3
Cooling Capacity per unit (ton)	5.0
Energy Efficiency Ratio (EER)	11.0
Economizer Operating Hours	4,438
Operational Testing Factor	0.8
Savings Factor	4,576
Electric Cost (\$/kWh)	\$0.165
ENERGY SAVINGS CALCULATIONS	
Demand Savings (kW)	1.1
Electric Savings (kWh)	4,992
Cost Savings (\$)	\$824

Energy Savings Summary:

ECM #5 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$6,300
NJ Smart Start Equipment Incentive (\$):	\$750
Net Installation Cost (\$):	\$5,550
Maintenance Savings (\$/Yr):	\$0
Energy Savings (\$/Yr):	\$824
Total Yearly Savings (\$/Yr):	\$824
Estimated ECM Lifetime (Yr):	15
Simple Payback	6.7
Simple Lifetime ROI	122.7%
Simple Lifetime Maintenance Savings	\$0
Simple Lifetime Savings	\$12,360
Internal Rate of Return (IRR)	12%
Net Present Value (NPV)	\$4,286.86

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.

APPENDIX A

ECM COST & SAVINGS BREAKDOWN
CONCORD ENGINEERING GROUP

Pinelands Regional School District – Administration Building

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	\$7,000	\$4,000	\$160	\$10,840	\$1,216	\$0	\$1,216	10	\$12,160	\$0	12.2%	8.9	2.15%	(\$467.27)
ECM #2	Lighting Controls	\$1,000	\$750	\$135	\$1,615	\$114	\$0	\$114	10	\$1,140	\$0	-29.4%	14.2	-5.88%	(\$642.56)
ECM #3	Refrigerator Replacement	\$650	\$0	\$0	\$650	\$121	\$0	\$121	10	\$1,210	\$0	86.2%	5.4	13.25%	\$382.15
ECM #4	Rooftop Unit Replacement	\$20,000	\$30,000	\$920	\$49,080	\$1,030	\$0	\$1,030	15	\$15,450	\$0	-68.5%	47.7	-11.87%	(\$36,783.93)
ECM #5	Economizer Controls	\$3,900	\$2,400	\$750	\$5,550	\$824	\$0	\$824	15	\$12,360	\$0	122.7%	6.7	12.21%	\$4,286.86

- Notes: 1) The variable C_n 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 C_n 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

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 - Administration Building

Building ID: 3509176
For 12-month Period Ending: June 30, 2011¹
Date SEP becomes ineligible: N/A

Date SEP Generated: May 17, 2013

Facility
 Pinelands Regional - Administration
 Building
 520 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: 1991
Gross Floor Area (ft²): 4,200

Energy Performance Rating² (1-100) N/A

Site Energy Use Summary³

Natural Gas (kBtu) ⁴	209,630
Electricity - (kBtu)	0
Total Energy (kBtu)	209,630

Energy Intensity⁴

Site (kBtu/ft ² /yr)	50
Source (kBtu/ft ² /yr)	52

Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO ₂ e/year)	11
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Electric Distribution Utility

Atlantic City Electric Co [Peppo Holdings Inc]

National Median Comparison

National Median Site EUI	68
National Median Source EUI	164
% Difference from National Median Source EUI	-68%
Building Type	Office

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 Standards⁵ for Indoor Environmental Conditions:

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

Certifying Professional

N/A

Notes:

- 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.
- 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.
- Values represent energy consumption, annualized to a 12-month period.
- Values represent energy intensity, annualized to a 12-month period.
- 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"/>
Building Name	Pinelands Regional - Administration Building	Is this the official building name to be displayed in the ENERGY STAR Registry of Labeled Buildings?		<input type="checkbox"/>
Type	Office	Is this an accurate description of the space in question?		<input type="checkbox"/>
Location	520 Nugentown Road, Little Egg Harbor, NJ 08087	Is this address accurate and complete? Correct weather normalization requires an accurate zip code.		<input type="checkbox"/>
Single Structure	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"/>
Administration Building (Office)				
CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	<input checked="" type="checkbox"/>
Gross Floor Area	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"/>
Weekly operating hours	40 Hours	Is this the total number of hours per week that the Office space is 75% occupied? This number should exclude hours when the facility is occupied only by maintenance, security, or other support personnel. For facilities with a schedule that varies during the year, "operating hours/week" refers to the total weekly hours for the schedule most often followed.		<input type="checkbox"/>
Workers on Main Shift	20	Is this the number of employees present during the main shift? Note this is not the total number of employees or visitors who are in a building during an entire 24 hour period. For example, if there are two daily 8 hour shifts of 100 workers each, the Workers on Main Shift value is 100. The normal worker density ranges between 0.3 and 5.3 workers per 1000 square feet (92.8 square meters)		<input type="checkbox"/>
Number of PCs	20	Is this the number of personal computers in the Office?		<input type="checkbox"/>
Percent Cooled	50% or more	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		<input type="checkbox"/>
Percent Heated	50% or more	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		<input type="checkbox"/>

ENERGY STAR® Data Checklist for Commercial Buildings

Energy Consumption

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

Fuel Type: Natural Gas		
Meter: Gas (therms) Space(s): Entire Facility		
Start Date	End Date	Energy Use (therms)
06/01/2011	06/30/2011	0.00
05/01/2011	05/31/2011	0.00
04/01/2011	04/30/2011	55.20
03/01/2011	03/31/2011	202.60
02/01/2011	02/28/2011	379.70
01/01/2011	01/31/2011	437.10
12/01/2010	12/31/2010	624.30
11/01/2010	11/30/2010	263.00
10/01/2010	10/31/2010	124.00
09/01/2010	09/30/2010	10.40
08/01/2010	08/31/2010	0.00
07/01/2010	07/31/2010	0.00
Gas Consumption (therms)		2,096.30
Gas Consumption (kBtu (thousand Btu))		209,630.00
Total Natural Gas Consumption (kBtu (thousand Btu))		209,630.00
Is this the total Natural Gas consumption at this building including all Natural Gas meters?		<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.

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

Pinelands Regional - Administration Building
520 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 - Administration Building	
Gross Floor Area Excluding Parking: (ft ²)	4,200
Year Built	1991
For 12-month Evaluation Period Ending Date:	June 30, 2011

Facility Space Use Summary

Administration Building	
Space Type	Office
Gross Floor Area (ft ²)	4,200
Weekly operating hours	40
Workers on Main Shift	20
Number of PCs	20
Percent Cooled	50% or more
Percent Heated	50% or more

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 ²)	50	50	127	N/A	68
Source (kBtu/ft ²)	52	52	133	N/A	164
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 ₂ e/year	11	11	28	N/A	15
kgCO ₂ e/ft ² /year	3	3	8	N/A	4

More than 50% of your building is defined as Office. This building is currently ineligible for a rating. Please note the National Median column represents the CBECS national median data for Office. This building uses 68% less energy per square foot than the CBECS national median for Office.

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 Administration Building

Rooftop Units

Tag	RTU-1	RTU-2	RTU-3
Unit Type	Gas Fired Rooftop	Gas Fired Rooftop	Gas Fired Rooftop
Qty	1	1	1
Location	Roof	Roof	Roof
Area Served	Offices	Offices	Offices
Manufacturer	York	Synder General	Synder General
Model #	ZS-05N13ATAAA2A	-	-
Serial #	NIC2659266	-	-
Cooling Type	DX	DX	DX
Cooling Capacity (Tons)	5	~5	~5
Cooling Efficiency (SEER/EER)	11 EER	8 EER	8 EER
Heating Type	Gas-Fired Furnace	Gas-Fired Furnace	Gas-Fired Furnace
Heating Input (MBH)	125	100	100
Efficiency	80%	79%	79%
Fuel	Natural Gas	Natural Gas	Natural Gas
Approx Age	-	15	15
ASHRAE Service Life	15	15	15
Remaining Life		0	0
Comments	208/230/3	208/230/3, 1/3 HP SF	208/230/3, 1/3 HP SF

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

MAJOR EQUIPMENT LIST

Concord Engineering Group

PR Administration Building

Electric Heaters

Tag	EBB-1	EBB-2	EBB-3
Unit Type	Electric Base Board	Electric Base Board	Electric Base Board
Qty	2	1	1
Location	Hallway	Main Entrance	Storage Room (Old Restroom)
Area Served	Hallway	Main Entrance	Storage Room (Old Restroom)
Manufacturer	TPI Corp	TPI Corp	TPI Corp
Model #	BC2D10	BC2D10	BC2D10
kW Rating	1 / 0.75	1 / 0.75	1 / 0.75
HEATING - Rated Output Capacity (Btu/Hr)	-	-	-
Rated CFM	-	-	-
Electrical	240/208 V	240/208 V	240/208 V
Approx Age	-	-	-
ASHRAE Service Life	-	-	-
Remaining Life	-	-	-
Comments	On Unit Control Dial	On Unit Control Dial	On Unit Control Dial

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

MAJOR EQUIPMENT LIST

Concord Engineering Group

PR Administration Building

Domestic Water Heaters

Tag	HWH-1		
Unit Type	Electric		
Qty	1		
Location	Breakroom		
Area Served	Breakroom		
Manufacturer	Rheem		
Model #	81VP20S		
Serial #	U790C04967		
Size (Gallons)	20		
Input Capacity (MBH/KW)	2 kW		
Recovery (Gal/Hr)	-		
Efficiency %	100%		
Fuel	Electric (120V 1P)		
Approx Age	15		
ASHRAE Service Life	15		
Remaining Life	0		
Comments			

Note:

"N/A" = Not Applicable.

"-" = Info Not Available

APPENDIX E

CEG Project #: IC13017
 Facility Name: PR Administration
 Address: 520 Nugentown Road
 City, State, Zip: Little Egg Harbor, NJ

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS						
			Description	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, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
1	Main Entrance	2200	2x4 4-Lamp T8 32 W Electronic Recessed Prismatic Lens	4	109	2	0.22	480	Remove and Replace	Lithonia 2AL8-3-32-MVOLT-1/3-GE10IS-LP841	3	82	2	0.16	361	0.05	119	\$20	0	No New Controls	0	0.0%	0	\$0
1.1	Hallway #1	2200	2x4 4-Lamp T8 32 W Electronic Recessed Prismatic Lens	4	109	2	0.22	480	Remove and Replace	Lithonia 2AL8-2-32-MVOLT-1/3-GE10IS-LP841	2	58	2	0.12	255	0.10	224	\$37	0	No New Controls	0	0.0%	0	\$0
1.1	Hallway #2	2200	2x4 4-Lamp T8 32 W Electronic Recessed Prismatic Lens	4	109	3	0.33	719	Remove and Replace	Lithonia 2AL8-2-32-MVOLT-1/3-GE10IS-LP841	2	58	3	0.17	383	0.15	337	\$56	0	No New Controls	0	0.0%	0	\$0
1.1	Hallway #3	2200	2x4 4-Lamp T8 32 W Electronic Recessed Prismatic Lens	4	109	2	0.22	480	Remove and Replace	Lithonia 2AL8-3-32-MVOLT-1/3-GE10IS-LP841	2	58	2	0.12	255	0.10	224	\$37	0	No New Controls	0	0.0%	0	\$0
1.1	Hallway #4	2200	2x4 4-Lamp T8 32 W Electronic Recessed Prismatic Lens	4	109	2	0.22	480	Remove and Replace	Lithonia 2AL8-2-32-MVOLT-1/3-GE10IS-LP841	2	58	2	0.12	255	0.10	224	\$37	0	No New Controls	0	0.0%	0	\$0
1.1	Hallway #1	8760	2x4 4-Lamp T8 32 W Electronic Recessed Prismatic Lens	4	109	2	0.22	1,910	Remove and Replace	Lithonia 2AL8-2-32-MVOLT-1/3-GE10IS-LP841	2	58	2	0.12	1,016	0.10	894	\$147	0	No New Controls	0	0.0%	0	\$0
4	Hallway #2	8760	LED Exit Sign	1	2	2	0.00	35	Existing to Remain	0	1	2	0	0.00	35	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
4	Hallway #3	8760	LED Exit Sign	1	2	1	0.00	18	Existing to Remain	0	1	2	0	0.00	18	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
3	Hallway #4	8760	2L Incandescent Exit Sign	2	40	1	0.04	350	Remove and Replace	Sure-Lite APX7R	1	2	1	0.00	18	0.04	333	\$55	0	No New Controls	0	0.0%	0	\$0
4	Hallway #4	8760	LED Exit Sign	1	2	1	0.00	18	Existing to Remain	0	1	2	0	0.00	18	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
1	Conference Room	2200	2x4 4-Lamp T8 32 W Electronic Recessed Prismatic Lens	4	109	4	0.44	959	Remove and Replace	Lithonia 2AL8-3-32-MVOLT-1/3-GE10IS-LP841	3	82	4	0.33	722	0.11	238	\$39	0	No New Controls	0	0.0%	0	\$0
2.1	Storage Room (Old Restroom)	880	2x4 4-Lamp T12 34 W Magnetic Recessed Prismatic Lens	4	160	1	0.16	141	Remove and Replace	Lithonia 2AL8-2-32-MVOLT-1/3-GE10IS-LP841	2	58	1	0.06	51	0.10	90	\$15	0	No New Controls	0	0.0%	0	\$0
1	Transportation Office	2200	2x4 4-Lamp T8 32 W Electronic Recessed Prismatic Lens	4	109	2	0.22	480	Remove and Replace	Lithonia 2AL8-3-32-MVOLT-1/3-GE10IS-LP841	3	82	2	0.16	361	0.05	119	\$20	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	72	\$12
1	Mail / File Room	2200	2x4 4-Lamp T8 32 W Electronic Recessed Prismatic Lens	4	109	2	0.22	480	Remove and Replace	Lithonia 2AL8-3-32-MVOLT-1/3-GE10IS-LP841	3	82	2	0.16	361	0.05	119	\$20	0	No New Controls	0	0.0%	0	\$0
1	Administrative Assistance	2200	2x4 4-Lamp T8 32 W Electronic Recessed Prismatic Lens	4	109	2	0.22	480	Remove and Replace	Lithonia 2AL8-3-32-MVOLT-1/3-GE10IS-LP841	3	82	2	0.16	361	0.05	119	\$20	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	72	\$12
1	Superintendent's Office	2200	2x4 4-Lamp T8 32 W Electronic Recessed Prismatic Lens	4	109	5	0.55	1,199	Remove and Replace	Lithonia 2AL8-3-32-MVOLT-1/3-GE10IS-LP841	3	82	5	0.41	902	0.14	297	\$49	5	Dual Technology Occupancy Sensor - Remote Mnt.	1	20.0%	180	\$30
2	Superintendent's Conference	2200	2x4 4-Lamp T12 34 W Magnetic Recessed Prismatic Lens	4	160	2	0.32	704	Remove and Replace	Lithonia 2AL8-3-32-MVOLT-1/3-GE10IS-LP841	3	82	2	0.16	361	0.16	343	\$57	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	72	\$12
2.1	Men's Restroom	880	2x4 4-Lamp T12 34 W Magnetic Recessed Prismatic Lens	4	160	1	0.16	141	Remove and Replace	Lithonia 2AL8-3-32-MVOLT-1/3-GE10IS-LP841	2	58	1	0.06	51	0.10	90	\$15	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	10.0%	5	\$1
2.1	Women's Restroom	880	2x4 4-Lamp T12 34 W Magnetic Recessed Prismatic Lens	4	160	1	0.16	141	Remove and Replace	Lithonia 2AL8-2-32-MVOLT-1/3-GE10IS-LP841	2	58	1	0.06	51	0.10	90	\$15	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	10.0%	5	\$1
1	Breakroom	1320	2x4 4-Lamp T8 32 W Electronic Recessed Prismatic Lens	4	109	1	0.11	144	Remove and Replace	Lithonia 2AL8-3-32-MVOLT-1/3-GE10IS-LP841	3	82	1	0.08	108	0.03	36	\$6	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	22	\$4

Fixture Reference #	Location	Average Burn Hours	EXISTING FIXTURES						PROPOSED FIXTURE RETROFIT						RETROFIT ENERGY SAVINGS			PROPOSED LIGHTING CONTROLS						
			Description	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, kWh	Energy Savings, \$	Control Ref #	Controls Description	Qty of Controls	Hour Reduction %	Energy Savings, kWh	Energy Savings, \$
2.1	Fax Room	2200	2x4 4-Lamp T12 34 W Magnetic Recessed Prismatic Lens	4	160	1	0.16	352	Remove and Replace	Lithonia 2AL8-2-32-MVOLT-1/3-GEB10IS-LP841	2	58	1	0.06	128	0.10	224	\$37	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	26	\$4
2.1	Storage Room (Next to BA)	880	2x4 4-Lamp T12 34 W Magnetic Recessed Prismatic Lens	4	160	1	0.16	141	Remove and Replace	Lithonia 2AL8-2-32-MVOLT-1/3-GEB10IS-LP841	2	58	1	0.06	51	0.10	90	\$15	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	10.0%	5	\$1
1	Business Administrator Office	2200	2x4 4-Lamp T8 32 W Electronic Recessed Prismatic Lens	4	109	2	0.22	480	Remove and Replace	Lithonia 2AL8-3-32-MVOLT-1/3-GEB10IS-LP841	3	82	2	0.16	361	0.05	119	\$20	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	72	\$12
1.1	Storage Room	880	2x4 4-Lamp T8 32 W Electronic Recessed Prismatic Lens	4	109	2	0.22	192	Remove and Replace	Lithonia 2AL8-2-32-MVOLT-1/3-GEB10IS-LP841	2	58	2	0.12	102	0.10	90	\$15	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	10.0%	10	\$2
1	Payroll Office	2200	2x4 4-Lamp T8 32 W Electronic Recessed Prismatic Lens	4	109	2	0.22	480	Remove and Replace	Lithonia 2AL8-3-32-MVOLT-1/3-GEB10IS-LP841	3	82	2	0.16	361	0.05	119	\$20	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	72	\$12
1	Accounts Payable	2200	2x4 4-Lamp T8 32 W Electronic Recessed Prismatic Lens	4	109	1	0.11	240	Remove and Replace	Lithonia 2AL8-3-32-MVOLT-1/3-GEB10IS-LP841	3	82	1	0.08	180	0.03	59	\$10	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	20.0%	36	\$6
2	Accounts Payable	2200	2x4 4-Lamp T12 34 W Magnetic Recessed Prismatic Lens	4	160	1	0.16	352	Remove and Replace	Lithonia 2AL8-3-32-MVOLT-1/3-GEB10IS-LP841	3	82	1	0.08	180	0.08	172	\$28	6	Dual Technology Occupancy Sensor - Switch Mnt.	0	20.0%	36	\$6
2	Handicap Bathroom	880	2x4 4-Lamp T12 34 W Magnetic Recessed Prismatic Lens	4	160	1	0.16	141	Remove and Replace	Lithonia 2AL8-3-32-MVOLT-1/3-GEB10IS-LP841	3	82	1	0.08	72	0.08	69	\$11	6	Dual Technology Occupancy Sensor - Switch Mnt.	1	10.0%	7	\$1
5	Exterior	4000	75 W Incandescent Exterior Lantern Wall Sconce	1	75	4	0.30	1,200	Re-Lamp	Philips LED A21 17W 17A21/END-2700-1100 DIM6/1	1	17	4	0.07	272	0.23	928	\$153	0	No New Controls	0	0.0%	0	\$0
6	Exterior	4000	70 W HID Metal Halide Spot Lights	1	94	7	0.66	2,632	Existing to Remain	0	1	94	0	0.66	2,632	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
6	Flag Pole	4000	70 W HID Metal Halide Spot Lights	1	94	2	0.19	752	Existing to Remain	0	1	94	0	0.19	752	0.00	0	\$0	0	No New Controls	0	0.0%	0	\$0
7	Flag Pole	4000	120 W PAR38 Flood Lamp Ground Spot	1	120	2	0.24	960	Re-Lamp	Philips EnduraLED 19PAR38/END/F25/3000	1	19.5	2	0.04	156	0.20	804	\$133	0	No New Controls	0	0.0%	0	\$0
7	Sign	4000	120 W PAR38 Flood Lamp Ground Spot	1	120	2	0.24	960	Re-Lamp	Philips EnduraLED 19PAR38/END/F25/3000	1	19.5	2	0.04	156	0.20	804	\$133	0	No New Controls	0	0.0%	0	\$0
TOTAL						67	7	18,716				54	4	11,344	3	7,371	\$1,216			14	3	693	\$114	