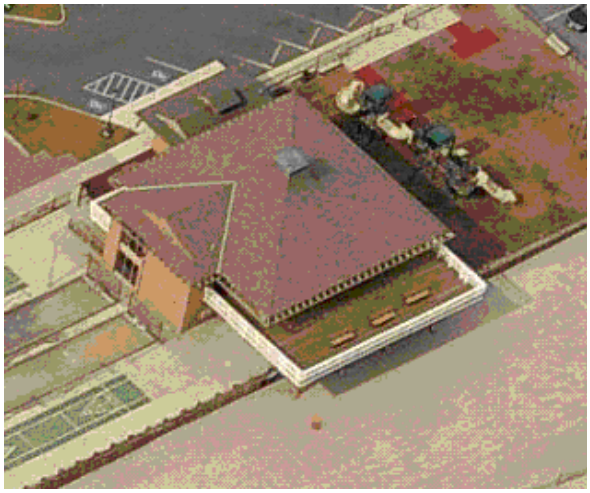

ENERGY AUDIT – FINAL REPORT

MARGATE CITY – MARTIN BLOOM PAVILION

GRANVILLE AVE, & BEACH
MARGATE, NJ 08402
ATTN: MR. THOMAS D. HILTNER
City Clerk

CEG PROJECT NO. 9C09047

CONCORD ENGINEERING GROUP

520 SOUTH BURNT MILL ROAD
VOORHEES, NJ 08043
TELEPHONE: (856) 427-0200
FACSIMILE: (856) 427-6529
WWW.CEG-INC.NET

CONTACTS:
RAYMOND JOHNSON
Cell: (609) 760-4057
rjohnson@ceg-inc.net

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I. EXECUTIVE SUMMARY

This report presents the findings of an energy audit conducted for:

Martin Bloom Pavilion
Granville Avenue & Beach
Margate City, NJ 08402

Municipal Contact Person: Mr. Thomas D. Hiltner, City Clerk
Facility Contact Person: Mr. Fred Verna, Director of Facilities

This audit was performed in connection with the New Jersey Clean Energy Local Government Energy Audit Program. These energy audits are conducted to promote the office of Clean Energy's mission, which is to use innovation and technology to solve energy and environmental problems in a way that improves the State's economy. This can be achieved through the wiser and more efficient use of energy.

The annual energy costs at this facility are as follows:

Electricity	$ 12,302
Natural Gas	$ 0
Total	$ 12,302

The Martin Bloom Pavilion is an all electric building and does not include natural gas service.

The potential annual energy cost savings are shown below in Table 1. Be aware that the measures are not additive because of the interrelation of several of the measures. The cost of each measure for this level of auditing is ± 20% until detailed engineering, specifications, and hard proposals are obtained.

Table 1
Energy Conservation Measures (ECM's)

ECM NO.	DESCRIPTION	COST	ANNUAL SAVINGS	SIMPLE PAYBACK (YEARS)	SIMPLE RETURN ON INVESTMENT
1	Upgrade the Lighting	$890	$1071	2.33	17.75 %
2	Install Lighting Controls	$880	$59	14.9	6.7 %
3	Condensing Unit Upgrade	$11,680	$3,725	3.1	33.7 %

The estimated demand and energy savings are shown below in Table 2. The information in this table corresponds to the ECM's in Table 1.

Table 2
Estimated Energy Savings

ECM NO.	DESCRIPTION	ANNUAL UTILITY REDUCTION		
		ELECT DEMAND (KW)	ELECT CONSUMPTION (KWH)	NAT GAS (THERMS)
1	Upgrade the Lighting	1.85	3,553	-
2	Install Lighting Controls	-	3,443	-
3	Condensing Unit Upgrade	-	16,128	-

Recommendations:

Concord Engineering Group recommends the implementation of all ECM's that provide a calculated simple payback at or under ten (10) years. The potential energy and cost savings from these ECM's are economically justifiable. The following Energy Conservation Measures are recommended for the Martin Bloom Pavilion:

- **ECM #1:** Upgrade the Lighting
- **ECM #3:** Condensing Unit Upgrade

II. INTRODUCTION

This comprehensive energy audit covers the Martin Bloom Pavilion. The building is a 2-story structure located adjacent to the beach, 3,997 sq. ft. total. The building is used as a community center and consists of two general purpose areas, a lobby/office area, a private office and men's / women's restrooms. The building is slab on grade and wood frame construction.

The first task was to collect and review one year's worth of utility energy data for electricity and natural gas. This information was used to analyze operational characteristics, calculate energy benchmarks for comparison to industry averages, estimate savings potential, and establish a baseline to monitor the effectiveness of implemented measures. A computer spreadsheet was used to enter, sum, and calculate benchmarks and to graph utility information (see Appendix A).

The Energy Use Intensity (EUI) is expressed in British Thermal Units/square foot/year ($BTU/ft^2/yr$) and can be used to compare energy consumption to similar building types or to track consumption from year to year in the same building. The EUI is calculated by converting annual consumption of all fuels to BTU's then dividing by the area (gross square footage) of the building. EUI is a good indicator of the relative potential for energy savings. A comparatively low EUI indicates less potential for large energy savings. Blueprints (where available) were obtained from the municipality and were utilized to calculate/verify the gross area of the facility.

After gathering the utility data and calculating the EUI, the next step in the audit process is obtaining Architectural and Engineering drawings (where available). By reviewing the Architectural and Engineering drawings, questions regarding the building envelope, lighting systems/controls, HVAC equipment and controls are noted. These questions are then compared to the energy usage profiles developed during the utility data gathering step. Furthermore, through the review of the architectural and engineering drawings a building profile can be defined that documents building age, type, usage, major energy consuming equipment or systems, etc. After this information is gathered the next step in the process is the site visit.

The site visit was spent inspecting the actual systems and answering specific questions from the preliminary review. The building manager provided occupancy schedules, O & M practices, the building energy management program, and other information that has an impact on energy consumption.

The post-site work includes evaluation of the information gathered during the site visit, researching possible conservation opportunities, organizing the audit into a comprehensive report, and making recommendations on mechanical, lighting and building envelope improvements.

III. METHOD OF ANALYSIS

CEG completed the preliminary audit tasks noted in Section II preparing for the site survey. The site survey is a critical input in deciphering where energy opportunities exist within a facility. The auditor walks the entire site to inventory the building envelope (roof, windows, etc.), the heating, ventilation, and air conditioning equipment (HVAC), the lighting equipment, other facility-specific equipment, and to gain an understanding of how each facility is used.

The collected data is then processed using energy engineering calculations to calculate the anticipated energy usage for the proposed energy conservation measures (ECM's). The actual energy usage is entered directly from the utility bills provided by the Owner. The anticipated energy usage is compared to the actual usage to determine energy savings for the proposed ECM's.

It is pertinent to note, that the savings noted in this report are not duplicative. The savings for each recommendation may actually be higher if the individual recommendations were installed instead of the entire project. For example, the lighting module calculates the change in wattage and multiplies it by the new operating hours instead of the existing operating hours (if there was a change in the hours at all). The lighting controls module calculates the change in hours and multiplies it by the new system wattage instead of the existing wattage. Therefore, if you chose to install the recommended lighting system but not the lighting controls, the savings achieved with the new lighting system would actually be higher because there would have been no reduction in the hours of use.

The same principal follows for heating, cooling, and temperature recommendations – even with fuel switching. If there are recommendations to change the temperature settings to reduce fuel use, then the savings for the heating/cooling equipment recommendations are reduced, as well.

Our thermal module calculates the savings for temperature reductions utilizing automated engineering calculations within Microsoft Excel™ spreadsheets. The savings are calculated in "output" values – meaning energy, not fuel savings. To show fuel savings we multiply the energy values times the fuel conversion factor (these factors are different for electricity, natural gas, fuel oil, etc.) and also take into account the heating/cooling equipment efficiency. The temperature recommendation savings are lower when the heating/cooling equipment is more efficient or is using a cheaper fuel.

Thermal recommendations (insulation, windows, etc.) are evaluated by taking the difference in the thermal load due to reduced heat transfer. Again, the "thermal load" is the thermal load after the other recommendations have been accounted for.

Lastly, installation costs, refer to Appendix B, are then applied to each recommendation and simple paybacks are calculated. Costs are derived from Means Cost Data, other industry publications, and local contractors and suppliers. The NJ SmartStart Building® program incentives (refer to Appendix C) are calculated for the appropriate ECM's and subtracted from the installed cost prior to calculation of the simple payback. In addition, where applicable, maintenance cost savings are estimated and applied to the net savings. Simple return on

investment is calculated using the standard formula of the difference of gains minus investments, divided by the investments. Included within the gains are the annual energy savings, utility incentives and maintenance savings as a total sum. The calculation is completed assuming the project is 100% direct purchased by the Owner with an energy cost escalation of 2.4% for natural gas and 2.2% for electricity.

IV. HISTORIC ENERGY CONSUMPTION/COST

A. Energy Usage / Tariffs

Electric

The following tables and figures represent the electrical usage for this facility from April-08 to March-09. Atlantic City Electric Utility provides electricity to the facility. The electric rate has a component for consumption that is measured in kilowatt-hours (kWh). It is calculated by multiplying the wattage of the equipment times the hours that it operates. For example, a 1,000 Watt lamp operating for 5 hours would measure 5,000 Watt-hours. Since one kilowatt is equal to 1,000 Watts, the measured consumption would be 5 kWh. 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 most current rate structure available.

Natural Gas

This facility does not have natural gas service.

Below is the average unit cost for the utilities at this facility.

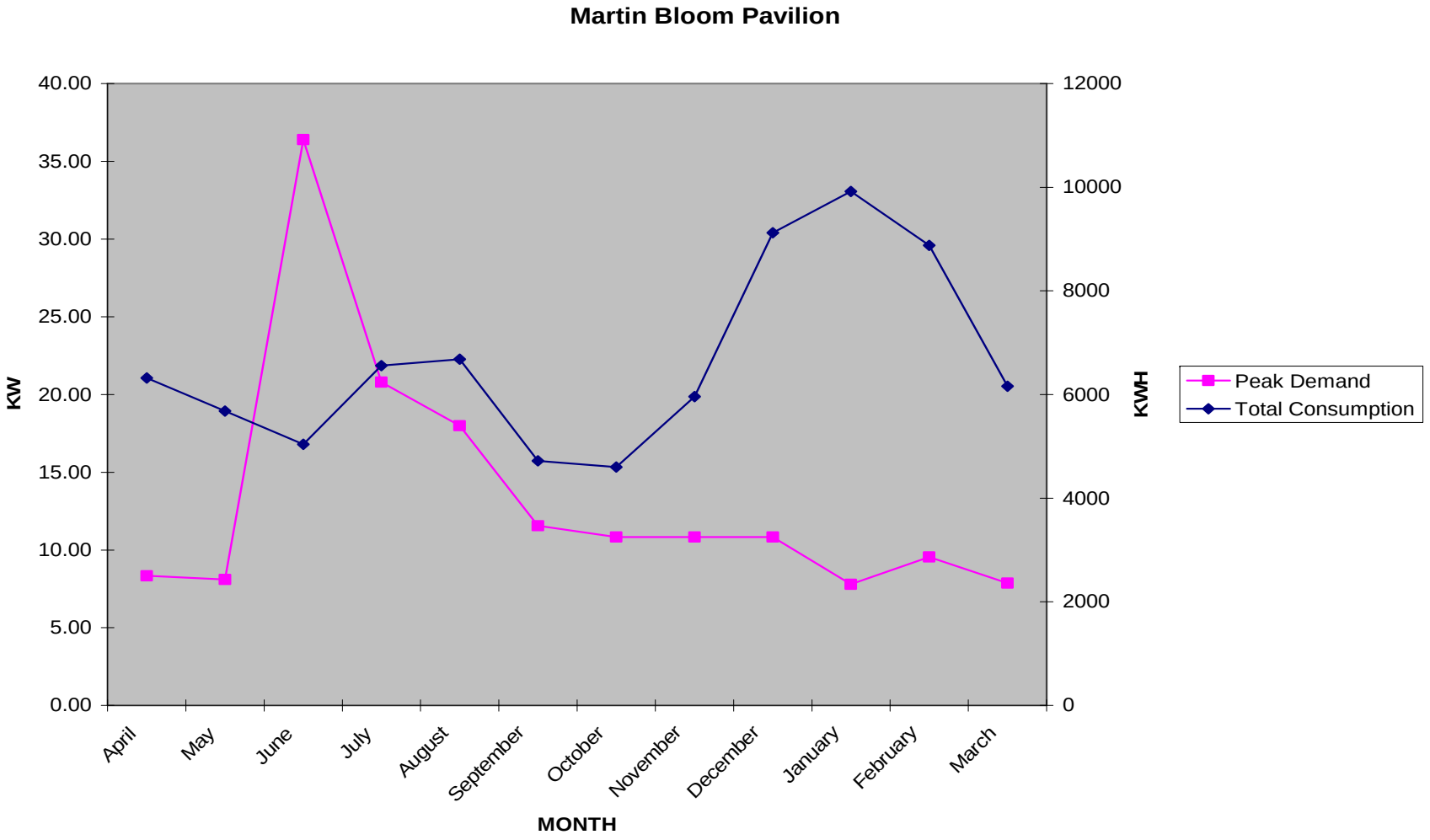
Description	Average
Electricity	$0.154 / kWh (4.5¢ / kBtu)

Table 3
Electricity Billing Data

Martin Bloom Pavilion

Provider	Month	Start Date	End Date	Account	Utility Type	Billing Days	Peak Demand	Units	Load Factor (%)	Total Consumption	Units	Delivery Charge	Supply Charge	Total $
Atlantic City Electric	April	4/9/2008	5/8/2008	0118 9439 9994	Electric	29	8.34	kw	108.87	6320	kwh	$ 309.50	$ 570.49	$ 879.99
Atlantic City Electric	May	5/8/2008	6/9/2008	0118 9439 9994	Electric	32	8.10	kw	108.87	5680	kwh	$ 311.53	$ 740.25	$ 1,051.78
Atlantic City Electric	June	6/9/2008	7/9/2008	0118 9439 9994	Electric	30	36.40	kw	19.23	5040	kwh	$ 276.43	$ 656.84	$ 933.27
Atlantic City Electric	July	7/9/2008	8/7/2008	0118 9439 9994	Electric	29	20.80	kw	45.31	6560	kwh	$ 287.25	$ 915.34	$ 1,202.59
Atlantic City Electric	August	8/7/2008	9/8/2008	0118 9439 9994	Electric	32	18.00	kw	48.32	6680	kwh	$ 286.65	$ 926.74	$ 1,213.39
Atlantic City Electric	September	9/8/2008	10/8/2008	0118 9439 9994	Electric	30	11.55	kw	56.75	4720	kwh	$ 188.10	$ 610.66	$ 798.76
Atlantic City Electric	October	10/8/2008	11/6/2008	0118 9439 9994	Electric	29	10.83	kw	61.02	4600	kwh	$ 166.82	$ 499.62	$ 666.44
Atlantic City Electric	November	11/6/2008	12/8/2008	0118 9439 9994	Electric	32	10.83	kw	71.65	5960	kwh	$ 210.60	$ 642.79	$ 853.39
Atlantic City Electric	December	12/8/2008	1/9/2009	0118 9439 9994	Electric	32	10.83	kw	109.64	9120	kwh	$ 298.38	$ 970.62	$ 1,269.00
Atlantic City Electric	January	1/9/2009	2/6/2009	0118 9439 9994	Electric	28	7.80	kw	189.25	9920	kwh	$ 304.38	$ 1,043.25	$ 1,347.63
Atlantic City Electric	February	2/6/2009	3/10/2009	0118 9439 9994	Electric	32	9.55	kw	121.07	8880	kwh	$ 286.85	$ 943.72	$ 1,230.57
Atlantic City Electric	March	3/10/2009	4/8/2009	0118 9439 9994	Electric	29	7.86	kw	112.60	6160	kwh	$ 201.28	$ 654.17	$ 855.45
						Max Peak:	36.4	kw	**Total:**	79,640	kwh		**Total:**	$ 12,302.26
* Electric Tariff (MGS) Monthly General Service			* May - Estimted										**Avg. Cost per kwh:**	$ 0.154
													Avg. Cost per kBtu:	$ 0.045

Figure 1
Electrical Usage Profile



B. Energy Use Intensity (EUI)

The Oak Ridge National Laboratory (ORNL) Buildings Technology Center under a contract with the U.S. Department of Energy maintains a Benchmarking Building Energy Performance Program. Their website allows the user to determine how well the client's building Energy Use Intensity compares with similar facilities throughout the U.S. and in your specific region or state.

Energy Use Intensity (EUI) is a measure of a building's energy utilization per square foot of building. This calculation is completed by converting all utility usage (electricity, gas, oil) consumed by a building over a specified time period, typically one year, to British Thermal Units (BTU) and dividing this number by the building square footage. The EUI for this facility is calculated as follows:

$$\text{Building EUI} = \frac{\text{(Electric Usage in kBtu + Gas Usage in kBtu)}}{\text{Building Square Footage}}$$

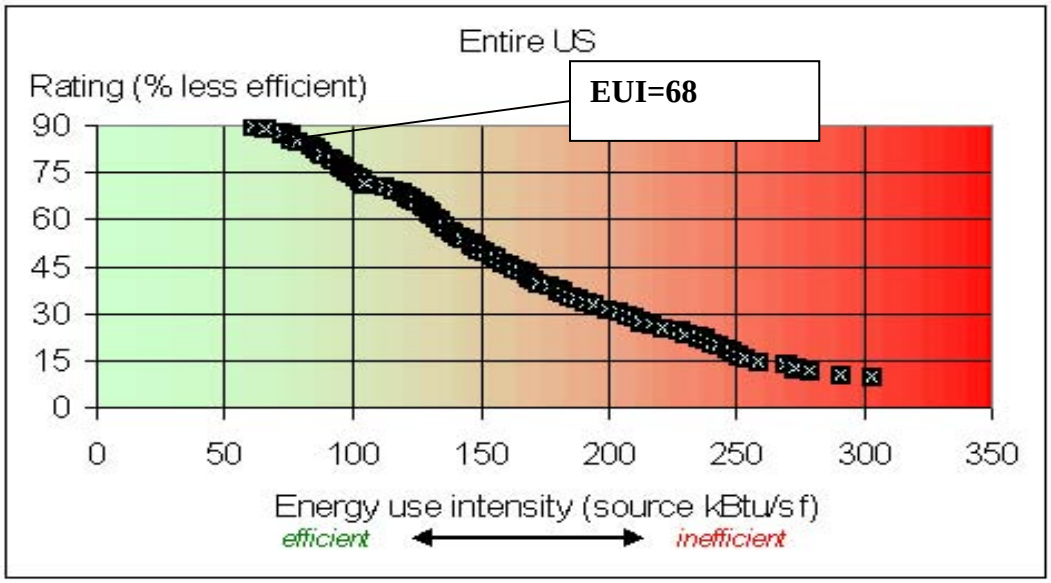
Electric = ((79,640 kWh) * (1000 W/kW) * (3.414 Btu/h / 1 W))/ (1000 Btu / 1 kBtu)
= 271,890.96 kBtu

Gas = ((0 therms) * (100,000 Btu/h / 1 Therm)) / (1000 Btu / 1 kBtu) = 0 kBtu

$$\text{Building EUI} = \frac{\text{(271,890.96 kBtu + 0 kBtu)}}{\text{3,997 SF}} = \frac{\text{271,890.96 kBtu}}{\text{3,997 SF}} = 68.02 \text{ kBtu/SF}$$

Martin Bloom Pavilion EUI = 68.02 kBtu/SF

Figure 2
Energy Use Intensity Distributions – Offices



C. EPA Energy Benchmarking System

The United States Environmental Protection Agency (EPA) in an effort to promote energy management has created a system for benchmarking energy use amongst various end users. The benchmarking tool utilized for this analysis is entitled Portfolio Manager. The Portfolio Manager tool allows you to track and assess energy consumption via the template forms located on the ENERGY STAR website (www.energystar.gov). The importance of benchmarking for local government municipalities is becoming more important as utility costs continue to increase and more emphasis is being placed throughout multiple arenas on carbon reduction, greenhouse gas emissions and other environmental impacts.

Based on information gathered from the ENERGY STAR website, Government agencies spend more than $10 billion a year on energy to provide public services and meet constituent needs. Furthermore, energy use in commercial buildings and industrial facilities is responsible for more than 50 percent of U.S. carbon dioxide emissions. Therefore, it is vital that local government municipalities assess their energy usage, benchmark this usage utilizing Portfolio Manager, set priorities and goals to lessen their energy usage and move forward with these priorites and goals. Saving energy will in-turn save the environment.

In accordance with the Local Government Energy Audit Program, CEG has created an Energy Star account for the municipality in order to allow access to monitor their yearly energy usage as it compares to facilities of similar type. The login page for the account can be accessed at the following web address; the username and password are also listed below:

https://www.energystar.gov/istar/pmpam/index.cfm?fuseaction=login.login

User Name:	margatecity
Password:	lgeaceg09008

Utilizing the utility bills and other information gathered during the energy audit process, CEG entered the respective data into Portfolio Manager and the following is a summary of the results:

Table 5
ENERGY STAR Performance Rating

FACILITY DESCRIPTION	ENERGY PERFORMANCE RATING	NATIONAL AVERAGE
Martin Bloom Pavilion	N/A	50

* N/A Due to building category, see below.

Specific building types are detailed on the ENERGY STAR website. Non-typical buildings are covered by an "Other" category. The "Other" category is used if your building type or a section of the building is not represented by one of the specific categories. An Energy Star Performance Rating cannot be calculated if more then 10% of a building is classified as "Other", or if the building is an office with less than 5,000 square feet of floor space.

The Martin Bloom Pavilion is less than 5,000 square feet of floor space so an Energy Star Performance Rating could not calculated. Despite this, the Portfolio Manager also calculates the building Energy Use Intensity (EUI).

The EUI is also an important tool that can be used to track the energy efficiency of the building. Baselines for improvement can be set that the municipality can strive to meet. CEG recommends that the City of Margate keep their Portfolio Manager account up to date to monitor the performance of the building.

The EUI calculated in the previous section and in the Energy Star Portfolio Manager is a good indicator of the energy performance of the Martin Bloom Pavilion in the absence of the Energy Star Performance Rating.

The EUI distribution, Figure 2, is specific for Office Buildings. The Pavilion has an EUI of 68 rating for this type of facility. The lower the EUI the less energy the facility uses per square foot. A low EUI indicates a more efficient building. There maybe some opportunity for improvement making the facility more energy efficient and saving more on the utility costs.

V. FACILITY DESCRIPTION

The building is a 2-story structure located adjacent to the beach, 3,997 sq. ft. total. The building is used as a community center and consists of two general purpose areas, a lobby/office area, a private office and men's / women's restrooms. The second floor space is primarily used for senior citizen activities. The building is slab on grade and wood frame construction. Windows are clear, double-pane, insulating replacement type. The 2nd floor space has six (6) sliding patio type doors leading to an outdoor deck overlooking the beach. Walls are assumed to be insulated with 3 ½" fiber glass batt insulation.

Heating & Cooling System

The primary heating & cooling system for the building consists of two (2) 5 ton capacity split system heat pumps serving the 1st and 2nd floors, respectively. Each system includes an outdoor condensing unit and an indoor vertical air handler with DX coil, supplemental 20 Kw electric resistance heating coil., distribution ductwork, and programmable thermostats. The split systems are about half way through their 15 year expected lifetime. In addition, four (4) ceiling mounted, cabinet Nesbitt unit heaters provide additional heat for the 2nd floor.

A small electric baseboard heater exists in each restroom.

The elevator machine room is equipped with a through-wall packaged terminal air conditioner, 10,500 Btuh capacity.

Domestic Hot Water

Domestic hot water is provided by an electric HWH, Bradford White model M140SSD12, with (2) 4,500 watt elements, located in the closet on the 1st floor .

Lighting System

The first floor main recreation area is lit using 4-foot fixtures containing T12 lamps and magnetic ballasts. Standard switching is utilized and there are no other types of lighting controls present.

The first floor main lobby, vestibule and bathrooms are lit with 2-foot surface fixtures containing T8 lamps and electronic ballasts. Standard switching is utilized and there are no other types of lighting controls present.

The stairwell and second floor closet are lit with surface fixtures containing incandescent lamps. Standard switching is utilized and there are no other types of lighting controls present.

The second floor main recreational area is lit with 4-foot fixtures containing T8 lamps and electronic ballasts. Standard switching is utilized and there are no other types of lighting controls present.

The second floor main recreational space is lit with track lighting containing par incandescent lamps. Standard switching is utilized and there are no other types of lighting controls present.

The second floor bathroom is lit with 4-foot vanity fixture containing T8 lamp and electronic ballasts. Standard switching is utilized and there are no other types of lighting controls present.

The remaining second floor spaces are lit with 2-foot surface fixtures containing T8 lamps and electronic ballasts. Standard switching is utilized and there are no other types of lighting controls present.

The exterior lighting is mounted on the building and includes an assortment of wall packs, metal halide, and incandescent fixtures.

The separate bathroom building is lit with recessed down lights containing compact fluorescent lamps and electronic ballasts. The lighting in both bathrooms are controlled by ceiling mounted motion sensors located just inside the entrance.

Refer to Appendix E for a detailed Investment Grade Lighting Audit.

VI. MAJOR EQUIPMENT LIST

Following the completion of the field survey a detailed equipment list was created. The equipment within this list is considered major energy consuming equipment whose replacement could yield substantial savings. In addition, 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 if a manufacturers 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.

Equipment denoted by an asterisk indicates an estimate of the equipment ratings due to equipment inaccessibility, worn nameplates, lack of nameplates, etc.

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

VII. ENERGY CONSERVATION MEASURES (ECM)

ECM #1: Upgrade the Lighting

Description:

Upgrade the Fluorescent Lighting

Improved fluorescent lamps and ballasts are available as direct replacements for the existing lamps and ballasts. A simple retrofit of the existing fixture can provide substantial savings. A conventional drop-ceiling lay in fixture with four, 4-foot lamps has a total wattage of 154 Watts per fixture. By using the improved lamps and ballasts, the total wattage would be reduced to 96 Watts. The light levels would increase by about 15% and the light quality would increase by 35%.

CEG recommends replacement of the existing T8 and T12 lamps and ballasts with the latest technology T8 lamps and high efficiency electronic ballasts. The new energy efficient, T8 lamps will provide adequate lighting and will save the Owner on electrical costs due to the better performance of the electronic ballasts. In addition to functional cost savings, the fixture replacement will also provide operational cost savings. The operational cost savings will be realized through the lesser number of lamps that will be required to be replaced per year. The expected lamp life of the latest high efficiency T8 lamps is approximately 30,000 burn-hours, requiring fewer lamps to replace per year. Based on the operating hours of this portion of the facility, approximately 1500-2200 hours per year, the Owner will be changing approximately 33% less lamps per year.

In addition, a single electronic ballast can operate one, two, three, or four lamps in a fixture. The existing magnetic ballasts can only operate up to two lamps. The electronic ballasts could reduce the amount of ballasts in the facility by half. This can be taken advantage of with "tandem wiring" of ballasts. Instead of using one electronic ballast for every one fixture it is sometimes feasible to use one electronic ballast for every two or more fixtures. The electrician wires a single ballast to operate the lamps in adjacent light fixtures which further reduces the amount of ballasts needed.

Energy Savings Calculations:

A detailed Investment Grade Lighting Audit can be found in Appendix E that outlines the proposed retrofits, costs, savings, and payback periods.

Maintenance Savings are calculated as follows:

Maintenance Savings = (# *of lamps* x % *reduction* x $ *per lamp*) + *Installation Labor*

Maintenance Savings = (58 x 33% *reduction* x $2.00) + ($20 x 19) = $418

Install Compact Fluorescent Lighting

Compact fluorescent lamps (CFL's) were created to be direct replacements for the standard incandescent lamps which are common to table lamps, spot lights, hi-hats, bathroom vanity lighting, etc. The light output of the CFL has been designed to resemble the incandescent lamp. The color rendering index (CRI) of the CFL is much higher than standard fluorescent lighting, and therefore provides a much "truer" light.

The CFL is available in a myriad of shapes and sizes depending on the specific application. Typical replacements are: a 13-Watt CFL for a 60-Watt incandescent lamp, an 18-Watt CFL for a 75-Watt incandescent lamp, and a 25-Watt CFL for a 100-Watt incandescent lamp.

The CFL is also available for a number of "brightness colors" that is indicated by the Kelvin rating. A 2700K CFL is the "warmest" color available and is closest in color to the incandescent lamp. CFL's are also available in 3000K, 3500K, and 4100K. The 4100K would be the "brightest" or "coolest" output.

A CFL can be chosen to screw right into existing fixtures, or hardwired into existing fixtures.

Energy Savings Calculations:

A detailed Investment Grade Lighting Audit can be found in Appendix E that outlines the proposed retrofits, costs, savings, and payback periods.

Maintenance Savings are calculated as follows:

Maintenance Savings = (*# of lamps* x % *reduction* x $ *per lamp*) + *Installation Labor*

Maintenance Savings = (8 x 75% *reduction* x $5) + ($15 x 6) = $120

Simple Payback (yrs.) = (Cost – Incentive) / (Annual Energy Savings + Annual Maintenance Savings)

Simple Return on Investment (%) = (((Annual Energy Savings + Annual Maintenance Savings) x (ECM Lifetime)) – (Cost – Incentive)) / (Cost – Incentive)

Energy Savings Summary:

ECM #1 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	**$1,578**
NJ Smart Start Equipment Incentive ($):	**($150)**
Net Installation Cost ($):	**$1,428**
Maintenance Savings ($ / yr):	**$538**
Energy Savings ($ / yr):	**$533**
Net Savings ($ / yr):	**$1,071**
Simple Payback (yrs):	**2.33**
Simple Return On Investment (%):	**42.9 %**
Simple Lifetime ROI (%):	**17.75 %**
Estimated ECM Lifetime (yr):	**25**
Simple Lifetime Savings ($):	**$25,347**

- ECM#1 Calculations DO NOT include lighting control changes implemented in ECM#2.
- If ECM#1 and #2 are implemented together the savings will be relatively lower than shown above.

ECM #2: Install Lighting Controls

Description:

Install Lighting Controls to Reduce the Lighting Use

In some areas the lighting is left on unnecessarily. There has been a belief that it is better to keep the lights on rather than to continuously switch them on and off. The on/off dilemma was studied and it was determined that the best option is to turn the lights off whenever possible. Although this practice reduces the lamp life, the energy savings far outweigh the lamp replacement costs.

Lighting controls are available in many forms. Lighting controls can be as simplistic as an additional switch. Time-clocks are often used which allows the user to set an on/off schedule. Time-clocks range from a dial clock with on/off indicators to a small box the size of a thermostat with user programs for on/off schedule in a digital format. Occupancy sensors detect motion and will switch the lights on when the room is occupied. They can either be mounted in place of the current wall switch, or they can be mounted on the ceiling to cover large areas. Lastly, photocells are a lighting control that sense light levels and will turn the lights off when there is adequate daylight. These are mostly used outside, but they are becoming much more popular in energy-efficient office designs as well.

To determine an estimated savings for lighting controls, we used ASHRAE 90.1-2004 (NJ Energy Code). Appendix G states that occupancy sensors have a 10% power adjustment factor for daytime occupancies for buildings over 5,000 SF. CEG recommends the installation of dual technology occupancy sensors in the Office and Storage Building office spaces, conference room, document storage room, time-clock area and entrance area. Occupancy sensors are recommended in the Water Treatment Building treatment room and garage area, and in the Water Meter Repair Shop in the garage, storage area and shop area.

CEG would recommend wall switches for individual rooms, ceiling mount sensors for large office areas, and fixture mount box sensors for some applications as manufactured by Sensorswitch, Watt Stopper, etc.

Energy Savings Calculations:

From Appendix E of this report, we calculated the annual kilowatt hours (kWh) savings for the areas where the proposed occupancy sensors will be located:

Savings = *Total Kilowatts* x *Annual Average Burn Hours*

= 3443 kWh/yr. x 10% x $0.17/kWh

Annual Savings = $59 / yr.

Installation cost per dual-technology sensor is $75/unit.

The SmartStart Buildings® incentive is $20 per control which equates to an installed cost of $55/unit. Total number of rooms to be retrofitted is 16.

Total cost to install sensors is $55 x 16 units = $880.

Total ECM Lifetime Energy Savings = 15 Years (Est.) x $59 / yr. = $885

Simple Payback (yrs.) = (Cost – Incentive) / (Annual Energy Savings + Annual Maintenance Savings)

Simple Return on Investment (%) = (((Annual Energy Savings + Annual Maintenance Savings) x (ECM Lifetime)) – (Cost – Incentive)) / (Cost – Incentive)

Energy Savings Summary:

ECM #2 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	**$1,200**
NJ Smart Start Equipment Incentive ($):	**($320)**
Net Installation Cost ($):	**$880**
Maintenance Savings ($ / yr):	**$0**
Energy Savings ($ / yr):	**$59**
Net Savings ($ / yr):	**$59**
Simple Payback (yrs):	**14.9**
Simple Return On Investment (%):	**6.7 %**
Simple Lifetime ROI (%):	**0.0057 %**
Estimated ECM Lifetime (yr):	**15**
Simple Lifetime Savings ($):	**$5.00**

ECM #3: Condensing Unit Upgrade

Description:

The two existing condensing units are inefficient with an approximated energy efficiency ratio (EER) of 9. The NJ State Energy Code (ASHRAE 90.1-2004) mandates a minimum energy efficiency of 12.0 SEER for units of this type. The existing units are 7 – 10 years old and are about half way through their service life as outlined in Chapter 36 of the 2007 ASHRAE Applications Handbook. The estimated service life for packaged air-conditioning units is 15 years.

This ECM would replace the exterior condensing units with more efficient units. The existing equipment will be replaced with equipment having heating and cooling capacities equal to the existing units. The average EER of the new cooling equipment will be 16 SEER / 12 EER. The energy efficiency of the new equipment is based on a Rheem 5 ton, 14 SEER with R-410A refrigerant.

Cooling Energy Savings Calculations:

$$EnergySavi\ \ ngs = \frac{[CoolingTon\ \ s \times 12,000\ Btu\ /\ ton \div 1000\ W\ /\ kW\ ]}{[(EER_{NEW} - EER_{OLD})]} \times Avg.\ Load\ \ Factor\ \times Hrs.\ of\ \ Cooling$$

Existing Air Conditioning Units
Rated Capacity = 5 Tons x 2 units
Unit Efficiency = 10 EER

Proposed High-Efficiency Air Conditioning Unit
Rated Capacity = 5 Tons x 2 units
New Unit Efficiency = 14 SEER
Cooling Season Hrs. of Operation = 1008 hrs/yr. (12 hrs/day, 7 days/wk, 12 weeks)
Average Cost of Electricity - $0.154/kWh

$$EnergySavings = \frac{[CoolingTons \times 12,000\,Btu\ /\ ton \div 1000 W\ /\ kW\ ]}{[(EER_{NEW} - EER_{OLD})]} \times Avg.LoadFactor \times Hrs.ofCooling$$

$$EnergySavings = \frac{[10\,CoolingTons \times 12,000\,Btu\ /\ ton \div 1000 W\ /\ kW\ ]}{[(14\,EER_{NEW} - 10\,EER_{OLD})]} \times 0.80 \times 1008$$

$$= 24{,}192\ kWh\ /\ yr.\ /\ Unit$$

Cost Savings = 16,128 kWh/Yr/ x $0.154/kWh = $3,725 / Yr.

Simple Payback (yrs.) = (Cost – Incentive) / (Annual Energy Savings + Annual Maintenance Savings)

Simple Return on Investment (%) = (((Annual Energy Savings + Annual Maintenance Savings) x (ECM Lifetime)) – (Cost – Incentive)) / (Cost – Incentive)

Energy Savings Summary:

ECM #3 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	**$12,600**
NJ Smart Start Equipment Incentive ($):	**($920)**
Net Installation Cost ($):	**$11,680**
Maintenance Savings ($ / yr):	**$0**
Energy Savings ($ / yr):	**$3,725**
Net Savings ($ / yr):	**$3,725**
Simple Payback (yrs):	**3.1**
Simple Return On Investment (%):	**33.7 %**
Simple Lifetime ROI (%):	**3.78 %**
Estimated ECM Lifetime (yr):	**15**
Simple Lifetime Savings ($):	**$44,195**

VIII. RENEWABLE/DISTRIBUTED ENERGY MEASURES

Globally, renewable energy has become a priority affecting international and domestic energy policy. The State of New Jersey has taken a proactive approach, and has recently adopted in its Energy Master Plan a goal of 30% renewable energy by 2020. To help reach this goal New Jersey created the Office of Clean Energy under the direction of the Board of Public Utilities and instituted a Renewable Energy Incentive Program to provide additional funding to private and public entities for installing qualified renewable technologies. A renewable energy source can greatly reduce a building's operating expenses while producing clean environmentally friendly energy. CEG has assessed the feasibility of installing renewable energy technologies for the Martin Bloom Pavilion, to evaluate if there is any potential for solar or wind energy generation.

Solar energy produces clean energy and reduces a building's carbon footprint. This is accomplished via photovoltaic panels which will be mounted on all south and southwestern facades of the building. Flat roof, as well as sloped areas can be utilized; flat areas will have the panels turned to an optimum solar absorbing angle. (A structural survey of the roof would be necessary before the installation of PV panels is considered). Parking lots can also be utilized for the installation of a solar array. A truss system can be installed that is high enough to park a vehicle under the array, this way no parking lot area is lost. The state of NJ has instituted a program in which one Solar Renewable Energy Certificate (SREC) is given to the Owner for every 1,000 kWh of generation. SREC's can be sold anytime on the market at their current market value. The value of the credit varies upon the current need of the power companies. The average value per credit is around $350, this value was used in our financial calculations. This equates to $0.35 per kWh generated.

CEG has reviewed the existing roof area of the building being audited for the purposes of determining a potential for a roof mounted photovoltaic system. Due to the building proximity to the ocean, it is our opinion that a roof mounted PV Solar Panel system is not feasible for the Martin Bloom Pavilion.

Refer to Appendix F for an aerial photo of the building.

Wind energy production is another option available through the Renewable Energy Incentive Program. Small wind turbines can be utilized to produce clean energy on a per building basis. Cash incentives are available per kWh of electric usage. CEG has reviewed the applicability of wind energy for Margate City and has determined it is not a viable option.

X. ENERGY PURCHASING AND PROCUREMENT STRATEGY

Load Profile:

Load Profile analysis was performed to determine the seasonal energy usage of the facility. Irregularities in the load profile will indicate potential problems within the facility. Consequently based on the profile a recommendation will be made to remedy the irregularity in energy usage. For this report, the facility's energy consumption data was gathered in table format and plotted in graph form to create the load profile. Refer to the Electric and Natural Gas Usage Profiles included within this report to reference the respective electricity and natural gas usage load profiles.

Electricity:

The Electric Usage Profile demonstrates a fairly atypical consumption profile. There is a steady load demonstrated in the summer (April –August), which is expected air-conditioner load. But there is increased electric usage in the winter (November – February). The increased winter electric load is caused by the presence of electric base-board heaters, and an electric Bradford White electric hot-water heater for domestic supply. The steady and slightly higher summer time consumption is due to cooling or air-conditioner load supplied by 2 (5) ton capacity split system heat pumps. There is also the presence of 4 ceiling mounted Nesbitt unit heaters. A flat (base-load) load profile is important because it will yield more competitive pricing when shopping for alternative energy supply.

Natural Gas:

There is no natural gas service at this location

Tariff Analysis:

Electricity:

This facility receives electrical Delivery Service from Atlantic City Electric on an MGS Secondary (Monthly General Service) utility rate. This rate is available at any point of Company's system where facilities of adequate character and capacity exist for the entire electric service requirements of any customer delivered at one point and metered at or compensated to the voltage of delivery. This delivery service includes the following charges: Delivery Service Charges, Distribution Demand Charges, Reactive Demand Charges, Distribution Rates, Non-Utility Generation Charges, Societal Benefits Charges, Regulatory Assets Recovery Charges, Transition Bond Charges, Market Transition Charge Tax, Transmission Demand Charge, Regional Greenhouse Gas Initiative Recovery Charge, and Infrastructure Investment Surcharge.
This facility receives electrical supply service through Atlantic City Electric on a BGS (Basic Generation Service) rate. Since the passing and implementation of the Electricity Discount and Energy Competition Act (EDECA) in 1999, there have been many changes brought about by the deregulation of the electric industry in New Jersey. Since that time, customers in New Jersey

have been able to choose their electrical supplier. Customers who do not choose to switch to a Third Party Supplier (TPS), or who leave a TPS to return to their Electric Delivery Company are supplied with Basic Generation Service. Beside the commodity itself, BGS also has the following charges: System Control Charge, CIEP Standby Fee, Transmission Enhancement Charge and Basic Generation Service Charge.

Natural Gas:

There is no natural gas service at this location.

Recommendations:

CEG recommends a global approach that will be consistent with all facilities within the scope. CEG's observations are seen in both the electric and natural gas costs. The average "price to compare" per kWh (kilowatt hour) for all buildings is $.1271 / kWh (kWh is the common unit of electric measure). The average "price to compare" per decatherm for natural gas is $.09975 /dth (dth is the common unit of measure). Energy commodities are among the most volatile of all commodities, however at this point and time, energy is extremely competitive. The city could see significant savings if it were to take advantage of these current market prices quickly, before energy increases. Based on last year's historical consumption (April 2008 – March 2009) and current electric rates, Margate City can see an improvement of over 20 % in its electric costs. (Note: Savings were calculated using an Average Annual Consumption of 637,617 kWh and a fixed one-year commodity contract). CEG recommends aggregating the entire electric load to gain the most optimal energy costs. CEG recommends that the city seek an energy advisor to maximize energy savings and to apply a managed approach to procuring energy.

CEG's secondary recommendation coincides with the city's natural gas costs. Based on the current market, (which is very competitive), the city could see a savings of over 15% in its natural gas expenditures. Again CEG recommends the use of any energy advisor to review alternative energy sourcing strategies.

CEG recommends the city schedule a meeting with their current utility providers to review their utility charges and current tariff structures for electricity and natural gas. This meeting would provide insight regarding alternative procurement options that are currently available. Through its meeting with the Local Distribution Company (LDC), the city will learn more about the competitive supply process. The town can acquire a list of approved Third Party Suppliers from the New Jersey Board of Public Utilities website at www.nj.gov/bpu, and should also consider using a billing-auditing service to further analyze the utility invoices, manage the data and use the data to manage ongoing demand-side management projects. Furthermore, CEG recommends special attention given to credit mechanisms, imbalances, balancing charges and commodity charges when meeting with their utility representative. In addition, they should also ask the utility representative about alternative billing options. Some utilities allow for consolidated billing options when utilizing the service of a Third Party Supplier.

Finally, if the city frequently changes its supplier for energy (natural gas), CEG recommends it closely monitor balancing, particularly when the contract is close to termination.

X. INSTALLATION FUNDING OPTIONS

CEG has reviewed various funding options for the Owner to utilize in subsidizing the costs for installing the energy conservation measures noted within this report. Below are a few alternative funding methods:

i. *Energy Savings Improvement Program (ESIP)* – Public Law 2009, Chapter 4 authorizes government entities to make energy related improvements to their facilities and par for the costs using the value of energy savings that result from the improvements. The "Energy Savings Improvement Program (ESIP)" law provides a flexible approach that can allow all government agencies in New Jersey to improve and reduce energy usage with minimal expenditure of new financial resources.

ii. *Municipal Bonds* – Municipal bonds are a bond issued by a city or other local government, or their agencies. Potential issuers of municipal bonds include cities, counties, redevelopment agencies, school districts, publicly owned airports and seaports, and any other governmental entity (or group of governments) below the state level. Municipal bonds may be general obligations of the issuer or secured by specified revenues. Interest income received by holders of municipal bonds is often exempt from the federal income tax and from the income tax of the state in which they are issued, although municipal bonds issued for certain purposes may not be tax exempt.

iii. *Power Purchase Agreement* – Public Law 2008, Chapter 3 authorizes contractor of up to fifteen (15) years for contracts commonly known as "power purchase agreements." These are programs where the contracting unit (Owner) procures a contract for, in most cases, a third party to install, maintain, and own a renewable energy system. These renewable energy systems are typically solar panels, windmills or other systems that create renewable energy. In exchange for the third party's work of installing, maintaining and owning the renewable energy system, the contracting unit (Owner) agrees to purchase the power generated by the renewable energy system from the third party at agreed upon energy rates.

CEG recommends the Owner review the use of the above-listed funding options in addition to utilizing their standard method of financing for facilities upgrades in order to fund the proposed energy conservation measures.

XI. 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. Use cog-belts instead of v-belts on all belt-driven fans, etc. These can reduce electrical consumption of the motor by 2-5%.

D. Reduce lighting in specified areas where the foot candle levels are above 70 in private offices and above 30 in corridor, lobbies, etc.

E. Provide more frequent air filter changes to decrease overall fan horsepower requirements and maintain better IAQ.

F. Recalibrate existing sensors serving the office spaces

G. Install a Vending Miser system to turn off the vending machines in the lunch room when not in use.

H. Clean all light fixtures to maximize light output.

I. Confirm that outside air economizers on the rooftop units that serve the Office Areas are functioning properly to take advantage of free cooling.

APPENDIX

Electric Cost Summary

Martin Bloom Pavilion

Appendix A

ATLANTIC CITY ELECTRIC

Acct.No: 0097 4349 9999

Month	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Total
Last Meter Read Date	4/9/2008	5/8/2008	6/9/2008	7/9/2008	8/7/2008	9/8/2008	10/8/2008	11/6/2008	12/8/2008	1/9/2009	2/6/2009	3/10/2009	4/9/2008
Current Meter Read Date	5/8/2008	6/9/2008	7/9/2008	8/7/2008	9/8/2008	10/8/2008	11/6/2008	12/8/2008	1/9/2009	2/6/2009	3/10/2009	4/8/2009	4/8/2009
Billing Days	29	32	30	29	32	30	29	32	32	28	32	29	364
KWH	6,320	5,680	5,040	6,560	6,680	4,720	4,600	5,960	9,120	9,920	8,880	6,160	79,640
KW	8	8	36	21	18	12	11	11	11	8	10	8	36
Monthly Load Factor	109%	91%	19%	45%	48%	57%	61%	72%	110%	189%	121%	113%	86%
Electric Delivery, $	$310	$312	$276	$287	$287	$188	$167	$211	$298	$304	$287	$201	$3,128
Delivery $/kwh	$0.049	$0.055	$0.055	$0.044	$0.043	$0.040	$0.036	$0.035	$0.033	$0.031	$0.032	$0.033	$0.040
Electric Supply, $	$570	$740	$657	$915	$927	$611	$500	$643	$971	$1,043	$944	$654	$9,174
Supply $/kwh	$0.090	$0.130	$0.130	$0.140	$0.139	$0.129	$0.109	$0.108	$0.106	$0.105	$0.106	$0.106	$0.117
Total Cost, $	$880	$1,052	$933	$1,203	$1,213	$799	$666	$853	$1,269	$1,348	$1,231	$855	$12,302
$/KWH	$0.1392	$0.1852	$0.1852	$0.1833	$0.1816	$0.1692	$0.1449	$0.1432	$0.1391	$0.1358	$0.1386	$0.1389	$0.1545

Martin Bloom Pavilion

CONSTRUCTION COST AND REBATES					
ECM # 1 - UPGRADE FLUORESCENT LIGHTING	Qty	Unit Cost $	Material $	Labor $	Total $
New T-8 & CFL Lamps & Ballasts	1	$453	$453	$1,125	$1,578
Total Cost					$1,578
Utility Incentive					-$150
Total Net Cost					**$1,428**
ECM # 2 - INSTALL LIGHTING CONTROLS	Qty	Unit Cost $	Material $	Labor $	Total $
Occupancy Sensors	16	$75	$1,200	$0	$1,200
Total Cost					$1,200
Utility Incentive					-$320
Total Net Cost					**$880**

Concord Engineering Group, Inc.

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

SmartStart Building Incentives

The NJ SmartStart Buildings Program offers financial incentives on a wide variety of building system equipment. The incentives were developed to help offset the initial cost of energy-efficient equipment. The following tables show the current available incentives as of January, 2009:

Electric Chillers

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

Gas Cooling

Gas Absorption Chillers	$185 - $400 per ton
Gas Engine-Driven Chillers	Calculated through custom measure path)

Desiccant Systems

	$1.00 per cfm – gas or electric

Electric Unitary HVAC

Unitary AC and Split Systems	$73 - $93 per ton
Air-to-Air Heat Pumps	$73 - $92 per ton
Water-Source Heat Pumps	$81 per ton
Packaged Terminal AC & HP	$65 per ton
Central DX AC Systems	$40- $72 per ton
Dual Enthalpy Economizer Controls	$250

Ground Source Heat Pumps

Closed Loop & Open Loop	$370 per ton

Gas Heating

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

Variable Frequency Drives

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

Natural Gas Water Heating

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

Premium Motors

Three-Phase Motors	$45 - $700 per motor

Prescriptive Lighting

T-5 and T-8 Lamps w/Electronic Ballast in Existing Facilities	$10 - $30 per fixture, (depending on quantity)
Hard-Wired Compact Fluorescent	$25 - $30 per fixture
Metal Halide w/Pulse Start	$25 per fixture
LED Exit Signs	$10 - $20 per fixture
T-5 and T-8 High Bay Fixtures	$16 - $284 per fixture

Lighting Controls – Occupancy Sensors

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

Lighting Controls – HID or Fluorescent Hi-Bay Controls

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

Other Equipment Incentives

Performance Lighting	$1.00 per watt per SF below program incentive threshold, currently 5% more energy efficient than ASHRAE 90.1-2004 for New Construction and Complete Renovation
Custom Electric and Gas Equipment Incentives	not prescriptive

EQUIPMENT LIST									
TAG	**MAKE**	**MODEL**	**TYPE**	**CAPACITY**	**EFFICIENCY**	**SERVES**	**LOCATION**	**REMAINING USEFUL LIFE**	**NOTES**
P-	ADP	BRCMC	VERTICAL AIR HANDLER, HEAT PUMP W/ELEC COIL BACK-UP	60,000 BTUH	-	1ST FLOOR	MENS ROOM CLOSET	6	SPLIT SYSTEM HEAT PUMP INDOOR UNIT
P-101	DUCANE	HP12B60T	OUTDOOR CONDENSING UNIT	5 TON	-	1ST FLOOR	2ND LEVEL DECK	6	SPLIT SYSTEM HEAT PUMP OUTDOOR UNIT
EBB	-	-	ELECTRIC BASEBOARD HEATERS (2)	APPROX 4 L.F.	100%	MENS & WOMENS ROOM	MENS & WOMENS ROOM	5	
P-102	RUDD	UBHC-24C21MFA	VERTICAL AIR HANDLER, HEAT PUMP W/ELEC COIL BACK-UP	208 / 240V, 15.8 / 21 KW HEATER, 1/2 HP, 2.9 FLA FAN	-	2ND FLOOR	2ND FLOOR CLOSET	9	SPLIT SYSTEM HEAT PUMP INDOOR UNIT
P-100	RUDD	UPKA-N2102-34735	OUTDOOR CONDENSING UNIT	5 TON	-	2ND FLOOR	2ND LEVEL DECK	9	SPLIT SYSTEM HEAT PUMP OUTDOOR UNIT
CUH	NESBITT	-	CABINET UNIT HEATERS (4)	7.5 KW	-	2ND FLOOR	2ND FLOOR CEILING	5	QUANTITY - 4
P-106	FLOAIRE	DU10H	SIDEWALL KITCHEN EXHAUST FAN	-	-	KITCHEN HOOD	2ND LEVEL DECK	-	
P-104	FRIEDRICH	WY12A33E	PTAC	10,500 BTU	-	ELEV MACH ROOM	ELEV MACH ROOM	5	
P-103	BRADFORD WHITE	M140S5DS12	ELECTRIC FIRED WITH STORAGE	(2)4500 WATTS, 40 GALLON	100%	ENTIRE BUILDING	1ST FLOOR CLOSET	5	

INVESTMENT GRADE LIGHTING AUDIT

CONCORD ENERGY SERVICES

CEG Project #: BS09-008
Project Name : M. Bloom Pavilion
Address: Granville & Beach
City, State: Margate, NJ.
Building SF: 3,998

kWh Cost: 0.15
Burn Hrs: 8760

		Existing Fixtures						Proposed Fixtures											Fixtures Retrofitted			Unit Installation Cost							
Existing Lighting Fixture Type	Room Name	Lighting Fixture Description	Lamps per Fixture	Voltage	Watts	Qty of Fixtures	Total Watts	New Lighting Fixture Type	Existing/Replace	Description	Lamps per Fixture	Watts	Qty of Fixtures	Total Watts	Wattage Reduction	Average Burn Hours	Ave $/kwh	Energy Savings, kWh	Energy Savings, $	Qty	Material Each	Labor Each	Total Each	Total Materials	Total Labor	Total All	Rebate Estimate	Simple Payback
First Floor																												
A	Office	2L-T8-31w Utube 2x2 Troffer	2	120	48	2	96	NA	Existing to Remain	2l-T8-31w Utube 2x2 Troffer	2	48	2	96	0	1000	$0.15	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00	
B	Recreation Area	4L-T12-40w 2x4 Troffer	4	120	154	14	2156	NB	Relamp, Reballast	32w-T8 energy saver w/electronic T8 High Efficiency ballasts	2	48	14	672	1484	2000	$0.15	2,968	$445.20	14	22.88	60	$82.88	$320.32	$840.00	$1,160.32	$140.00	2.3
C	Electrical Closet	2L-T12-60w 1x8 Surface Fixture	2	120	160	1	160	NC	Relamp, Ballast & Retrokit	32w-T8 energy saver w/ (2)electronic T8 High Efficiency ballasts	4	96	1	96	64	1200	$0.15	77	$11.52	1	105.76	60	$165.76	$105.76	$60.00	$165.76	$10.00	13.5
D	Main Lobby	2L-T8-31w Utube 2x2 Surface Fixture	2	120	48	4	192	ND	Existing to Remain	2L-T8-31w Utube 2x2 Surface Fixture	2	48	4	192	0	2000	$0.15	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00	
D	Vestibule	2L-T8-31w Utube 2x2 Surface Fixture	2	120	48	1	48	ND	Existing to Remain	2L-T8-31w Utube 2x2 Surface Fixture	2	48	1	48	0	2000	$0.15	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00	
D	Mens Room	2L-T8-31w Utube 2x2 Surface Fixture	2	120	48	2	96	ND	Existing to Remain	2L-T8-31w Utube 2x2 Surface Fixture	2	48	2	96	0	3000	$0.15	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00	
E	Mens Room Clos.	1L-75w A-Lamp Surface Fixture	1	120	75	1	75	NE	Relamp	1L-CFL-26w Medium base	1	28	1	28	47	1000	$0.15	47	$7.05	1	4.55	37.5	$42.05	$4.55	$37.50	$42.05	$0.00	6.0
F	Lobby Closet	1L-42w CPF Surface Fixture	1	120	45	1	45	NF	Existing to Remain	1L-42w CPF Surface Fixture	1	45	1	45	0	3000	$0.15	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00	
D	Womens Room	2L-T8-31w Utube 2x2 Surface Fixture	2	120	48	2	96	ND	Existing to Remain	2L-T8-31w Utube 2x2 Surface Fixture	2	48	2	96	0	1500	$0.15	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00	
L	Elevator Machine Rm.	2L-T8-32w 1x4 Surface Fixture	2	120	48	1	48	NL	Existing to Remain	2L-T8-32w 1x4 Surface Fixture	2	48	1	48	0	2500	$0.15	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00	
M	Exterior Ltg.	1L-70w MH Wall Pack	1	120	70	1	70	NM	Existing to Remain	1L-70w MH Wall Fixure	1	70	1	70	0	2500	$0.15	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00	
N	Exterior Ltg.	1L-250w MH Wall Pack	1	120	250	2	500	NN	Existing to Remain	1L-250w MH Wall Pack	1	250	2	500	0	8760	$0.15	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00	
O	Exterior Ltg.	1L-350w Quartz Halogen Spot Light	1	120	350	1	350	NO	Existing to Remain	1L-350w Quartz Halogen Spot Light	1	350	1	350	0	2500	$0.15	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00	
H	Exterior Ltg.	1L-100w Incand. Surface Fixture	1	120	100	1	100	NH	Relamp	1L-CFL-42w Medium base	1	45	1	45	55	2000	$0.15	110	$16.50	1	4.55	37.5	$42.05	$4.55	$37.50	$42.05	$0.00	2.5
Total First Floor						**34**	**4032**						**34**	**2382**	**1650**			**3,202**	**$480.27**	**17**				**$435**	**$975**	**$1,410**	**$150**	**2.6**
Second Floor																												
G	Stairwell	1L-60w Incand. Surface Fixture	1	120	60	2	120	NG	Relamp	1L-CFL-26w Medium base	1	28	2	56	64	2000	$0.15	128	$19.20	2	4.55	37.5	$42.05	$9.10	$75.00	$84.10	$0.00	4.4
H	Closet	1L-100w Incand. Surface Fixture	1	120	100	1	100	NH	Relamp	1L-CFL-42w Medium base	1	45	1	45	55	1000	$0.15	55	$8.25	1	4.55	37.5	$42.05	$4.55	$37.50	$42.05	$0.00	5.1
I	Main Recreation Area	4L-T8-32w 2x4 Surface Fixture	4	120	96	16	1536	NI	Existing to Remain	4L-T8-32w 2x4 Surface Fixture	4	96	16	1536	0	1200	$0.15	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00	
D	Kitchenette	2L-T8-31w Utube 2x2 Surface Fixture	2	120	48	1	48	ND	Existing to Remain	2L-T8-31w Utube 2x2 Surface Fixture	2	48	1	48	0	2000	$0.15	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00	
D	Elevator Lobby	2L-T8-31w Utube 2x2 Surface Fixture	2	120	48	1	48	ND	Existing to Remain	2L-T8-31w Utube 2x2 Surface Fixture	2	48	1	48	0	2000	$0.15	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00	
J	Bathroom	1L-T8-32w 48" Vanity Fixture	1	120	28	1	28	NJ	Existing to Remain	1L-T8-32w 48" Vanity Fixture	1	28	1	28	0	3000	$0.15	0	$0.00	0	0	0	$0.00	$0.00	$0.00	$0.00	$0.00	
K	Main Recreation Area	3L-35w Par Lamp Track Ltg	3	120	105	1	105	NK	Relamp	1L-CFL-18w Medium base	1	21	1	21	84	2000	$0.15	168	$25.20	1	4.55	37.5	$42.05	$4.55	$37.50	$42.05	$0.00	1.7
Total Second Floor						**23**	**1985**						**23**	**1782**	**203**			**351**	**$52.65**	**4**				**$18**	**$150**	**$168**	**$0**	**3.2**

APPENDIX F

Martin Bloom Pavilion
Granville Ave. & Beach
Margate City, NJ 08402

↑ **NORTH**

OMB No. 2060-0347

STATEMENT OF ENERGY PERFORMANCE
Martin Bloom Pavilion

Building ID: 1813329
For 12-month Period Ending: March 31, 2009[1]
Date SEP becomes ineligible: N/A

Date SEP Generated: August 06, 2009

Facility
Martin Bloom Pavilion
Granville Ave. & Beach
Margate City, NJ 08402

Facility Owner
N/A

Primary Contact for this Facility
N/A

Year Built: 1980
Gross Floor Area (ft²): 3,997

Energy Performance Rating[2] (1-100) N/A

Site Energy Use Summary[3]

Electricity (kBtu)	266,308
Natural Gas (kBtu)[4]	0
Total Energy (kBtu)	266,308

Energy Intensity[5]

Site (kBtu/ft²/yr)	68
Source (kBtu/ft²/yr)	228

Emissions (based on site energy use)

Greenhouse Gas Emissions ($MtCO_2e$/year)	41

Electric Distribution Utility
Atlantic City Electric Co

National Average Comparison

National Average Site EUI	77
National Average Source EUI	182
% Difference from National Average Source EUI	25%
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.

Certifying Professional
N/A

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

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

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. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
5. Values represent energy intensity, annualized to a 12-month period.
6. 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) 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 in double-checking the information that the building owner or operator has entered into Portfolio Manager.

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

CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	☑
Building Name	Martin Bloom Pavilion	Is this the official building name to be displayed in the ENERGY STAR Registry of Labeled Buildings?		☐
Type	Office	Is this an accurate description of the space in question?		☐
Location	Granville Ave. & Beach, Margate City, NJ 08402	Is this address accurate and complete? Correct weather normalization requires an accurate zip code.		☐
Single Structure	Single Facility	Does this SEP represent a single structure? SEPs cannot be submitted for multiple-building campuses (with the exception of acute care or children's hospitals) nor can they be submitted as representing only a portion of a building		☐

Martin Bloom Pavilion (Office)

CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	☑
Gross Floor Area	3,997 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.		☐
Weekly operating hours	35 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.		☐
Workers on Main Shift	5	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 10 workers per 1000 square feet (92.8 square meters)		☐
Number of PCs	3	Is this the number of personal computers in the Office?		☐
Percent Cooled	50% or more	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		☐
Percent Heated	50% or more	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		☐

ENERGY STAR® Data Checklist for Commercial Buildings

Energy Consumption

Power Generation Plant or Distribution Utility: Atlantic City Electric Co

Fuel Type: Electricity		
Meter: Electric (kWh (thousand Watt-hours)) **Space(s):** Entire Facility		
Start Date	**End Date**	**Energy Use (kWh (thousand Watt-hours))**
02/09/2009	03/08/2009	8,880.00
01/09/2009	02/08/2009	9,920.00
12/09/2008	01/08/2009	9,120.00
11/09/2008	12/08/2008	5,960.00
10/09/2008	11/08/2008	4,600.00
09/09/2008	10/08/2008	4,720.00
08/09/2008	09/08/2008	6,680.00
07/09/2008	08/08/2008	6,560.00
06/09/2008	07/08/2008	5,040.00
05/09/2008	06/08/2008	5,680.00
04/09/2008	05/08/2008	6,320.00
Electric Consumption (kWh (thousand Watt-hours))		**73,480.00**
Electric Consumption (kBtu)		**250,713.76**
Total Electricity Consumption (kBtu)		**250,713.76**
Is this the total Electricity consumption at this building including all Electricity meters?		☐

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

Certifying Professional

(When applying for the ENERGY STAR, this must be the same PE 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
Martin Bloom Pavilion
Granville Ave. & Beach
Margate City, NJ 08402

Facility Owner
N/A

Primary Contact for this Facility
N/A

General Information

Martin Bloom Pavilion	
Gross Floor Area Excluding Parking: (ft^2)	3,997
Year Built	1980
For 12-month Evaluation Period Ending Date:	March 31, 2009

Facility Space Use Summary

Martin Bloom Pavilion	
Space Type	Office
Gross Floor Area(ft^2)	3,997
Weekly operating hours	35
Workers on Main Shift	5
Number of PCs	3
Percent Cooled	50% or more
Percent Heated	50% or more

Energy Performance Comparison

	Evaluation Periods		Comparisons		
Performance Metrics	**Current** (Ending Date 03/31/2009)	**Baseline** (Ending Date 03/31/2009)	**Rating of 75**	**Target**	**National Average**
Energy Performance Rating	N/A	N/A	75	N/A	N/A
Energy Intensity					
Site (kBtu/ft^2)	68	68	20	N/A	77
Source (kBtu/ft^2)	228	228	65	N/A	182
Energy Cost					
$/year	$ 12,081.50	$ 12,081.50	$ 3,458.44	N/A	$ 13,656.42
$/$ft^2$/year	$ 3.02	$ 3.02	$ 0.86	N/A	$ 3.41
Greenhouse Gas Emissions					
$MtCO_2e$/year	41	41	12	N/A	46
$kgCO_2e/ft^2$/year	10	10	3	N/A	11

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

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