



**Steven Winter Associates, Inc.**  
Architects and Engineers

293 Route 18 South, Suite 330  
East Brunswick, NJ 08816  
[www.swinter.com](http://www.swinter.com)

Telephone: (866) 676-1972  
E-mail: [swinter@swinter.com](mailto:swinter@swinter.com)

*June 09, 2010*

## **Local Government Energy Program Energy Audit Report**

*For*

***Recreation Building***  
*280 Pershing Avenue  
Carteret, NJ 07008*

***Project Number: LGEA24***



Recreation Building image attained from Microsoft via Bing Maps

**TABLE OF CONTENTS**

**INTRODUCTION.....3**  
**EXECUTIVE SUMMARY.....4**  
**1. HISTORIC ENERGY CONSUMPTION .....7**  
**1.1. ENERGY USAGE AND COST ANALYSIS.....7**  
**1.2. UTILITY RATE .....8**  
**1.3. ENERGY BENCHMARKING.....8**  
**2. FACILITY AND SYSTEMS DESCRIPTION .....11**  
**2.1. BUILDING CHARACTERISTICS .....11**  
**2.2. BUILDING OCCUPANCY PROFILES .....11**  
**2.3. BUILDING ENVELOPE .....11**  
**2.3.1. EXTERIOR WALLS.....11**  
**2.3.2. ROOF .....11**  
**2.3.3. BASE .....11**  
**2.3.4. WINDOWS.....11**  
**2.3.5. EXTERIOR DOORS .....11**  
**2.3.6. BUILDING AIR TIGHTNESS.....12**  
**2.4. HVAC SYSTEMS .....12**  
**2.4.1. HEATING .....12**  
**2.4.2. COOLING .....12**  
**2.4.3. VENTILATION .....12**  
**2.4.4. DOMESTIC HOT WATER .....12**  
**2.5. ELECTRICAL SYSTEMS .....12**  
**2.5.1. LIGHTING.....12**  
**2.5.2. APPLIANCES AND PROCESS .....13**  
**2.5.3. ELEVATORS.....13**  
**2.5.4. OTHER ELECTRICAL SYSTEMS .....13**  
**3. EQUIPMENT LIST.....14**  
**4. ENERGY CONSERVATION MEASURES.....14**  
**CATEGORY I RECOMMENDATIONS: CAPITAL IMPROVEMENT MEASURES .....14**  
**CATEGORY II RECOMMENDATIONS: OPERATIONS AND MAINTENANCE .....14**  
**CATEGORY III RECOMMENDATIONS: ENERGY CONSERVATION MEASURES .....14**  
**5. RENEWABLE AND DISTRIBUTED ENERGY MEASURES.....19**  
**5.1. EXISTING SYSTEMS.....20**  
**5.2. SOLAR PHOTOVOLTAIC .....20**  
**5.3. SOLAR THERMAL COLLECTORS .....20**  
**5.4. COMBINED HEAT AND POWER .....20**  
**5.5. GEOTHERMAL .....20**  
**5.6. WIND .....20**  
**6. ENERGY PURCHASING AND PROCUREMENT STRATEGIES .....20**  
**6.1. LOAD PROFILES .....20**  
**6.2. ENERGY PROCUREMENT STRATEGIES .....22**  
**7. METHOD OF ANALYSIS.....24**  
**7.1. ASSUMPTIONS AND METHODS.....24**  
**7.2. DISCLAIMER .....24**  
**APPENDIX A: LIGHTING STUDY .....25**  
**APPENDIX B: THIRD PARTY ENERGY SUPPLIERS (ESCOs) .....26**

## **INTRODUCTION**

Launched in 2008, the Local Government Energy Audit (LGEA) Program provides subsidized energy audits for municipal and local government-owned facilities, including offices, courtrooms, town halls, police and fire stations, sanitation buildings, transportation structures, schools and community centers. The Program will subsidize 75% of the cost of the audit. If the net cost of the installed measures recommended by the audit, after applying eligible NJ SmartStart Buildings incentives, exceeds the remaining cost of the audit, then the additional 25% will also be paid by the program. The Board of Public Utilities (BPU) Office of Clean Energy has assigned TRC Energy Services to administer the Program.

On November 13, 2009 and January 7, 2010, Steven Winter Associates, Inc (SWA) and PMK Group, Inc., a business unit of Birdsall Services Group (BSG-PMK), performed an energy audit and assessment for the Recreation Building. The building is located at 280 Pershing Ave, Carteret, NJ 07008, in Middlesex County. The current conditions and energy-related information were collected in order to analyze the implementation of energy conservation measures for the building.

The one-story facility, built in 1998 is 7,750 square feet in area. This building is used as a meeting area for recreation organizations. The building is open on an as needed basis based on the needs of the recreation programs.

Energy data and building information collected in the field were analyzed to determine the baseline energy performance of each building. Using spreadsheet-based calculation methods, SWA/BSG-PMK estimated the energy and cost savings associated with the installation of each of the recommended energy conservation measures. The findings for the building are summarized in this report.

The goal of this energy audit is to provide sufficient information to make decisions regarding the implementation of the most appropriate and most cost effective energy conservation measures for the buildings

## **EXECUTIVE SUMMARY**

This document contains the energy audit report for the Recreation Building, located at 280 Pershing Ave, Carteret, New Jersey 07008.

Based on the field visits performed by SWA/BSG-PMK staff on November 13, 2009 and January 7, 2010 and the results of a comprehensive energy analysis, this report describes the site's current conditions and recommendations for improvements. Suggestions for measures related to energy conservation and improved comfort are provided in the scope of work. Energy and resource savings are estimated for each measure that results in a reduction of heating, cooling, and electric usage.

### **Current conditions**

In the most recent full year of data collected, March, 2008 through February, 2009, the Recreation Building consumed a total of 64,140 kWh of electricity for a total cost of \$17,413, and 6,622 therms of natural gas for a total cost of \$6,856.

With electricity and fossil fuel combined, the building consumed 881MMBtus of energy at a total cost of \$24,269.

SWA/BSG-PMK has entered energy information about the Recreation Building in the US Environmental Protection Agency's (EPA) *Energy Star Portfolio Manager* energy benchmarking system. In order to compare commercial buildings equitably, the *Portfolio Manager* ratings convey the consumption of each type of energy in a single common unit. The EPA uses source energy to represent the total amount of raw fuel required to operate the building. After energy efficiency improvements are made, future utility bills can be added to the *Portfolio Manager* and the site energy use intensity for a different time period can be compared to the year 2009 baseline to track the changes in energy consumption associated with the energy improvements.

The building performance rating could not be determined because the electric-utility consumption data provided is greater than 120 days old.

Buildings achieving an Energy Star rating of 75 are eligible to apply for the Energy Star award and receive the Energy Star plaque to convey superior performance. These ratings also greatly help when applying for Leadership in Energy and Environmental Design (LEED) building certification through the United States Green Building Council (USGBC). SWA/BSG-PMK encourages the Borough of Carteret to continue entering utility data in *Energy Star Portfolio Manager* in order to track whether normalized source energy use over time.

(Refer to Section 1.3 for Energy Star Rating)

### **Category I Recommendations: Capital Improvement Measures**

- 1) Based on the results of SWA/BSG-PMK's survey, no capital improvements are recommended, as the building is well maintained.

### **Category II Recommendations: Operations and Maintenance**

- 1) Based on the results of SWA/BSG-PMK's survey, no operations and maintenance measures are recommended, as the building is well maintained.

### **Category III Recommendations: Energy Conservation Measures - Upgrades with associated energy savings**

At this time, SWA/BSG-PMK highly recommends a total of two (2) Energy Conservation Measures (ECMs) for the Recreation building which are summarized in the following Table 1. The total investment cost for these ECMs, without incentives, is **\$18,880**, and with incentives, is **\$17,245**. SWA /BSG-PMK estimates a first year savings of **\$2,484** with a simple payback of **6.9 years**. SWA/BSG-PMK estimates that implementing the highly recommended ECMs will reduce the carbon footprint of the building by **11,630 lbs of CO<sub>2</sub>**.

SWA/BSG-PMK also recommends that the Borough of Carteret contacts third party energy suppliers in order to negotiate a lower electricity rate. Comparing the current electric rate to average utility rates of similar type buildings in New Jersey, it may be possible to save up to \$ 0.12/kWh, which would have equated to \$7,793 for the past 12 months.

There are various incentives that the Borough of Carteret could apply for that could also help lower the cost of installing the ECMs. SWA/BSG-PMK recommends that the Borough apply for the NJ SmartStart program through the New Jersey Office of Clean Energy. This incentive can help provide technical assistance for the building in the implementation phase of any energy conservation project. A new NJ Clean Power program, Direct Install, could also assist to cover up to 80% of the capital investment. In order to qualify, the facility being upgraded must not have had a peak demand that exceeded 200 kW in any of the preceding 12 months; the highest peak demand for the Recreation building in the previous year was 113.4 kW.

The following tables summarize the proposed Energy Conservation Measures (ECM) and their economic relevance:

**Table 1 - Recommended 5-10 Year Payback ECMs**

ECM #	ECM description	Source	Est. Installed Cost, \$	Est. Incentives, \$	Net Est. ECM Cost with Incentives, \$	kWh, 1st Yr Savings	kW, Demand Reduction/Mo	Therms, 1st Yr Savings	kBtu/sq ft, 1st Yr Savings	Est. Operating Cost, 1st Yr Savings, \$	Total 1st Yr Savings, \$	Life of Measure, Yrs	Est. Lifetime Energy Cost Savings, \$	Simple Payback, Yrs	Lifetime Return on Investment, %	Annual Return on Investment, %	Internal Rate of Return, %	Net Present Value, \$	CO <sub>2</sub> Reduced, lbs/yr
1	Convert Electric Water Heater to Natural Gas	Similar Projects	\$3,500	\$50	\$3,450	2,919	3.2	-151	-0.66	\$0.00	\$632	13	\$6,633	5.46	92%	7%	15%	\$3,268	2,232
2	Lighting Upgrades	Empirical Data	\$15,380	\$1,585	\$13,795	6,860	7.6	0	3.02	\$0.00	\$1,852	15	\$21,796	7.45	58%	4%	9%	\$5,904	9,399
TOTAL			\$18,880	\$1,635	\$17,245	9,779	10.8	-151	2.36	\$0.00	\$2,484	-	\$28,429	6.94	-	-	-	\$9,173	11,630

ROI: Return on Investment (%)

**Assumptions:**

Discount rate:

3.2% per DOE FEMP guidelines

Electricity rate:

\$0.27 \$/kWh

Energy price escalation rate:

0% per DOE FEMP guidelines

Gas rate:

\$1.04 \$/therm

Area of Building (SF)

7,750

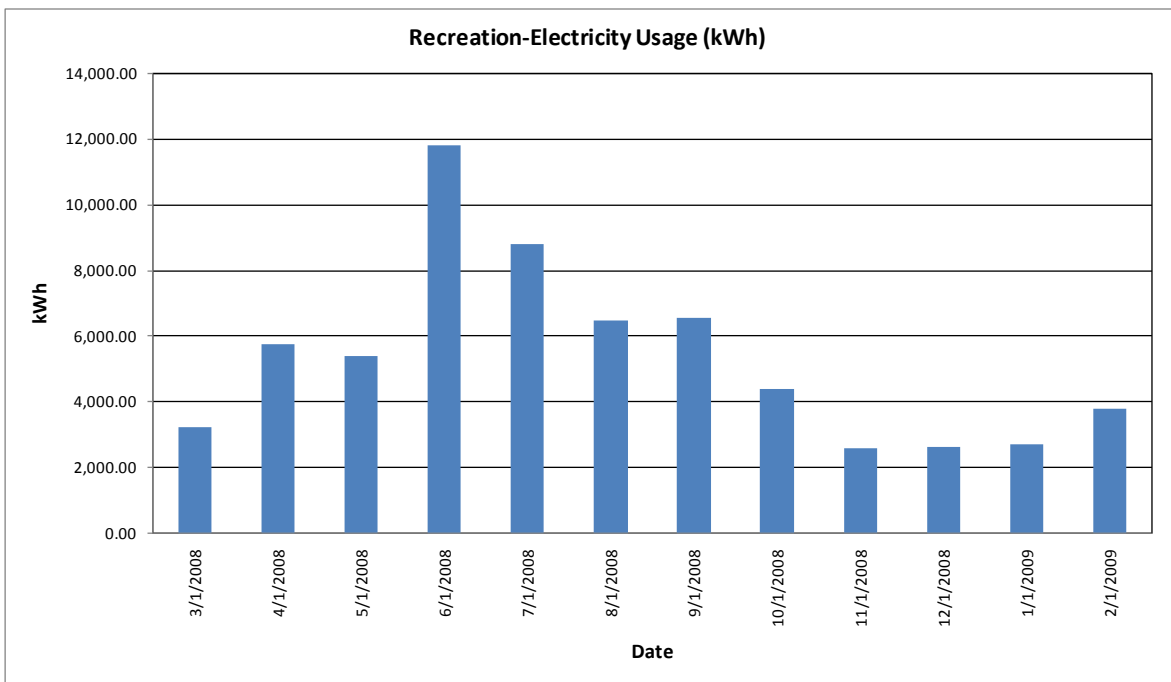
# 1. HISTORIC ENERGY CONSUMPTION

## 1.1. Energy usage and cost analysis

SWA/BSG-PMK analyzed utility bills from March, 2008 through February, 2009 that were received from the utility companies supplying the Recreation Building with electric and natural gas.

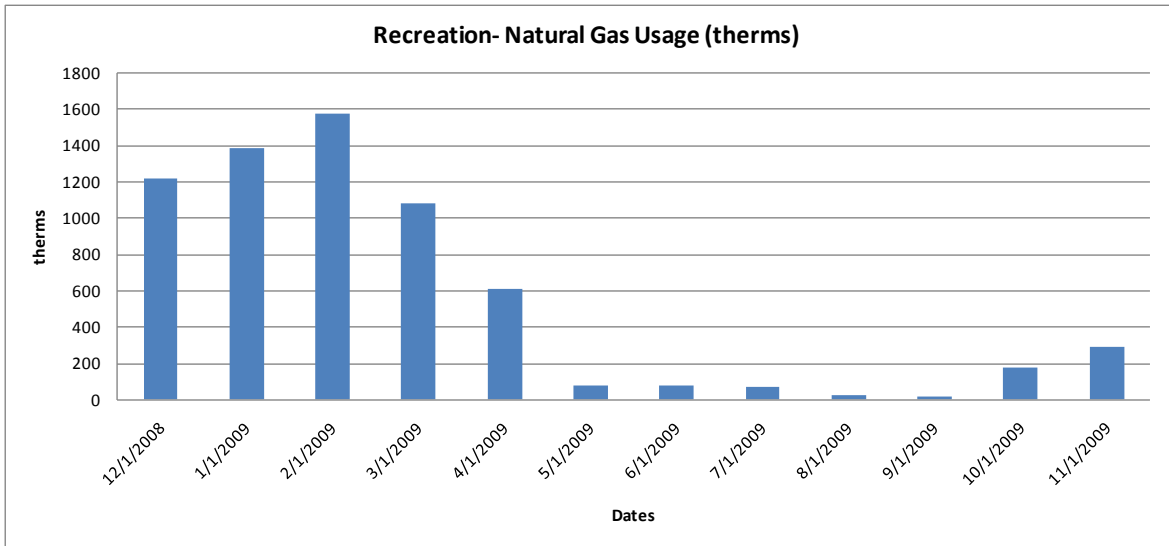
Electricity - The Recreation Building is currently served by one electric meter and purchases electricity from Public Service Electric & Gas at **an average rate of \$0.27/kWh** based on 12 months of utility bills from March, 2008 through February, 2009. The building purchased **64,140 kWh or \$17,413 worth of electricity** during that time span.

The following chart shows electricity usage for the building based on utility bills from March, 2008 through February, 2009:



Natural Gas - The Recreation Building is currently served by one natural gas meter and buys gas from Elizabethtown Gas at **an average rate of \$1.04/therm** based on 12 months of utility bills from December, 2008 through November, 2009. The building purchased **6,622 therms or \$6,856 worth of natural gas** during that time span.

The following chart shows the natural gas consumption for the complex based on natural gas bills for the 12 month period of December, 2008 through November, 2009:



### 1.2. Utility rate

The Recreation Building currently purchases electricity from Public Service Electric & Gas for electricity use (kWh) with a separate (kW) demand charge. The complex currently pays an average rate of approximately \$0.27/kWh based on the 12 months of utility bills of March, 2008 through February, 2009.

The Recreation Building currently purchases natural gas supply and transmission from Elizabethtown Gas at an average aggregated rate of \$1.04/therm based on 12 months of utility bills from December, 2008 through November, 2009.

### 1.3. Energy benchmarking

The building information and utility data were entered into the U.S. Environmental Protection Agency's (EPA) *Energy Star Portfolio Manager* Energy benchmarking system. SWA/BSG-PMK and SWA/BSG-PMK recommend that the Borough maintain the Portfolio Manager account at the link below. As the account is maintained, SWA/BSG-PMK can share with the Borough and allow future data to be added and tracked using the benchmarking tool.

[http://www.energystar.gov/index.cfm?c=evaluate\\_performance.bus\\_portfoliomanager](http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager)

**Username:** boroughofcarteret  
**Password:** carteret

Buildings achieving an Energy Star rating of 75 are eligible to apply for the Energy Star award and receive the Energy Star plaque to convey superior performance. These ratings also greatly help when applying for Leadership in Energy and Environmental Design (LEED) building certification through the United States Green Building Council (USGBC). SWA/BSG-PMK encourages the

Borough to continue entering utility data in Energy Star Portfolio Manager in order to track whether normalized source energy use over time.

The calculated Site Energy Use Intensity is 113.7kBtu/ft<sup>2</sup>yr. Implementing this report's recommendations will reduce use by approximately 2.4 kBtu/ft<sup>2</sup>yr, which when implemented would lower the buildings energy consumption.



## STATEMENT OF ENERGY PERFORMANCE Recreation Building

Building ID: 2035806  
For 12-month Period Ending: October 31, 2009<sup>1</sup>  
Date SEP becomes ineligible: N/A

Date SEP Generated: March 18, 2010

**Facility**  
Recreation Building  
280 Pershing Ave  
Carteret, NJ 07008

**Facility Owner**  
Borough of Carteret  
61 Cooke Ave  
Carteret, NJ 07008

**Primary Contact for this Facility**  
Anthony Neibert  
61 Cooke Ave  
Carteret, NJ 07008

**Year Built:** 1998  
**Gross Floor Area (ft<sup>2</sup>):** 7,750

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

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

Electricity - Grid Purchase(kBtu)	218,846
Natural Gas (kBtu) <sup>4</sup>	689,741
Total Energy (kBtu)	908,587

### Energy Intensity<sup>5</sup>

Site (kBtu/ft <sup>2</sup> /yr)	117
Source (kBtu/ft <sup>2</sup> /yr)	187

**Emissions** (based on site energy use)  
Greenhouse Gas Emissions (MtCO<sub>2</sub>e/year) 70

**Electric Distribution Utility**  
Public Service Elec & Gas Co

**National Average Comparison**

National Average Site EUI	65
National Average Source EUI	136
% Difference from National Average Source EUI	38%
Building Type	Recreation

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

### Meets Industry Standards<sup>6</sup> 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:

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.

The government estimates the average time needed to fill out this form is 6 hours (includes the time for entering energy data, PE facility inspection, and notarizing the SEP) and welcomes suggestions for reducing this level of effort. Send comments (referencing OMB control number) to the Director, Collection Strategies Division, U.S., EPA (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460.

EPA Form 5900-16

## 2. FACILITY AND SYSTEMS DESCRIPTION

### 2.1. Building Characteristics

The Recreation Building was built in 1998. The one-story building has a total area of 7,750 square feet. The Recreation Building is used by the recreation sports teams to house equipment and as a practice space.

### 2.2. Building occupancy profiles

The building is open as needed in evening hours for practices as well as on weekends, hours varies greatly with sport season. There are no permanent employees.

### 2.3. Building envelope

#### 2.3.1. Exterior walls

The exterior walls are constructed from split-face block and CMU blocks. The interior of the walls are insulated and finished with gypsum wallboard.

#### 2.3.2. Roof

The Dutch hip roof is a wood truss system, constructed from plywood and beams. The roof is finished with asphalt shingles.



*Aerial view of roof, Bing Maps*

#### 2.3.3. Base

The base of the building is a poured concrete slab on grade.

#### 2.3.4. Windows

There are approximately 32 double-pane aluminum framed windows on the building. All are in good condition and have thermal breaks.



*Double-paned windows*

#### 2.3.5. Exterior doors

The exterior doors are in good condition. There are five aluminum doors and two aluminum doors with glass panes. All are in good condition with recent weather stripping.

### 2.3.6. Building air tightness

The building's air tightness is appropriate for its use and there are no occupant complaints or signs of outside air infiltration.

## 2.4. HVAC systems

### 2.4.1. Heating

The Recreation Building's heating is generated by two York ground-mounted rooftop units, which provide gas heating. A 7.5-ton unit generates 180 MBH of heating, and a 6-ton unit generates 125 MBH of heating. The units were installed in 2007 and are in good condition. One unit services the gymnasium and one services the rest of the building, although it could not be determined which unit serviced which area.

### 2.4.2. Cooling

Cooling is provided by the aforementioned York ground-mounted rooftop units. The 7.5 ton unit has model # DM090 N15N4AAA4A, and the 6-ton unit has model # DM072 N125BA.

*York rooftop DX units, ground-mounted*



### 2.4.3. Ventilation

Ventilation is provided by the rooftop units, doors, and windows.

### 2.4.4. Domestic Hot Water

Water is heated by a 40 gallon, 4.5 kW electric water heater, which is about 5 years old. It is a Rheem unit with model # 81V40D.

Category III Recommendation – ECM #1: Replace the current water heater with a 40 gallon, gas-fired unit. Natural gas is much more cost efficient source of energy than electricity, and due to the fact that the gas-fired rooftop units are near the water heater, only a few feet of piping are needed to bring gas to the unit.

## 2.5. Electrical systems

### 2.5.1. Lighting

A complete inventory of all interior, exterior, and exit sign light fixtures were examined and documented in Appendix A of this report including an estimated total lighting power consumption. Our initial findings indicate that performing a detailed lighting upgrade per the recommendations in Appendix A will result in an annual savings of \$1,852 based on the current \$0.27/kWh and the current occupancy schedule. Implementation of this ECM will cost approximately \$15,380. Currently the Board of Public Utilities (BPU) would offer an

estimated rebate of \$1,585, yielding a net cost of \$13,795 for this project. The payback on this ECM would be about 7.4 years.

Category III Recommendation - ECM #2: Recommend upgrading all T-12 lighting fixtures with magnetic ballasts to T-8 fixtures with electronic ballasts, as well as various other lighting upgrades outlined in Appendix A. Also recommend installing lighting sensors to certain areas where lights typically remain lit when unoccupied for long periods of time.

**Refer to Appendix A for further details.**

#### **2.5.2. Appliances and process**

There is a coffee maker, a refrigerator, a microwave, and other cooking equipment in the kitchen.

#### **2.5.3. Elevators**

This facility is one-story and does not have an elevator.

#### **2.5.4. Other electrical systems**

There are currently no other significant energy impacting electrical systems installed at the Recreation Building.

### 3. EQUIPMENT LIST

Building System	Description	Location	Model #	Fuel	Space Served	Year Installed	Estimated Remaining Useful Life %
Domestic Hot Water	Electric-powered domestic water heater; 40 gallons, 4.5 kW	Mechanical room	Rheem M# 81V40D	Electricity	Entire building	approx. 2005	60%
Cooling/ Heating	7.5-ton York rooftop units (ground-mounted) w/ 180 MBH heating	Side of building	York M# DM090 N15N4AAA4A	Electricity /Natural Gas	Entire building	approx. 2007	85%
Cooling/ Heating	6-ton York rooftop units (ground-mounted) w/ 125 MBH heating	Side of building	York M# DM072 N125BA	Electricity /Natural Gas	Entire building	approx. 2007	85%

**Note:** The remaining useful life of a system (in %) is the relationship between the system manufactured and / or installed date and the standard life expectancy of similar equipment based on ASHRAE (2003), ASHRAE Handbook: HVAC Applications, Chapter 36.

### 4. ENERGY CONSERVATION MEASURES

Based on the assessment of this building, SWA/BSG-PMK have separated the investment opportunities into three categories of recommendations:

1. Capital Improvements – Upgrades not directly associated with energy savings
2. Operations and Maintenance – Low Cost/No Cost Measures
3. Energy Conservation Measures – Higher cost upgrades with associated energy savings

#### Category I Recommendations: Capital Improvement Measures

- 1) Based on the results of SWA/BSG-PMK's survey, no capital improvements are recommended, as the building is well maintained.

#### Category II Recommendations: Operations and Maintenance

- 1) Based on the results of SWA/BSG-PMK's survey, no operations and maintenance measures are recommended, as the building is well maintained.

#### Category III Recommendations: Energy Conservation Measures

##### Summary table

ECM #	ECM Description
1	Convert Electric Water Heater to Natural Gas
2	Lighting Upgrades and Occupancy Sensors

## ECM #1: Convert Electric Water Heater to Natural Gas

### Description:

Domestic hot water is provided by an electric-powered water heater, which has a volume of 40 gallons. A unit fired by natural gas would be much more cost-efficient. The current water heater is located very close to the ground-mounted rooftop units, which provide gas heating to the building, so switching to a gas-fired water heater is economically feasible.

### Installation cost:

Estimated installed cost: Installation: \$3,500; rebates/incentives: \$50; total: \$3,450  
 Source of cost estimate: Similar projects

### Economics:

ECM #	ECM description	Source	Est. Installed Cost, \$	Est. Incentives, \$	Net Est. ECM Cost with Incentives, \$	kWh, 1st Yr Savings	kW, Demand Reduction/Mo	Therms, 1st Yr Savings	kBtu/sq ft, 1st Yr Savings	Est. Operating Cost, 1st Yr Savings, \$	Total 1st Yr Savings, \$	Life of Measure, Yrs	Est. Lifetime Energy Cost Savings, \$	Simple Payback, Yrs	Lifetime Return on Investment, %	Annual Return on Investment, %	Internal Rate of Return, %	Net Present Value, \$	CO <sub>2</sub> Reduced, lbs/yr
1	Convert Electric Water Heater to Natural Gas	Similar Projects	\$3,500	\$50	\$3,450	2,919	3.2	-151	-0.66	\$0.00	\$632	13	\$6,633	5.46	92%	7%	15%	\$3,268	2,232

### Assumptions:

Using the facility's electricity bills from March, 2008 through February, 2009, it was determined that the cost of electricity is currently \$0.27/kWh. The cost of natural gas, from December, 2008 through November, 2009, is \$1.04/therm.

To calculate the savings from switching from electricity to gas, a spreadsheet created by Rheem was used. The temperature rise of the heated water was set at 77°F on the spreadsheet, and the energy factor (a unit that specifies the efficiency of water heaters) is specified as 0.94 for new electric units and 0.62 for gas units. Weight of water was set at 8.33 pounds/ft.<sup>3</sup>. Using this data, the BTUs of output heat used for heating the water were calculated by the following equation:

$$BTUs_{output} = Vol. \times Wt_{water} \times \Delta Temp.$$

This value would be the same for the current and proposed units. The actual BTUs purchased by each unit are calculated using this value and the energy factors:

$$BTUs_{input} = \frac{BTUs_{output}}{\text{Energy Factor}}$$

The annual costs for heating the water can now be calculated using this data:

**Current**

Volume of Hot Water Heated	H2O Weight	Temperature Rise in °F	BTUs Required to Heat Water	Energy Factor	BTUs Purchased to Heat Water	Cost per kWh	Actual Daily Cost to Heat	Actual Annual Cost to Heat Water
40	8.33	77	25,656	0.94	27,294	\$0.27	\$2.16	\$788.11

**Natural Gas**

Volume of Hot Water Heated	H2O Weight	Temperature Rise in °F	BTUs Required to Heat Water	Energy Factor	BTUs Purchased to Heat Water	Cost per Therm	Actual Daily Cost to Heat	Actual Annual Cost to Heat Water
40	8.33	77	25,656	0.62	41,381	\$1.04	\$0.43	\$156.38

**Rebates/financial incentives:**

This ECM qualifies for a New Jersey SmartStart rebate of \$50.

## ECM#2: Lighting Upgrades

**Description:**

Lighting at the Carteret Recreation Center consists primarily of standard efficient T-12 fluorescent lamps with magnetic ballasts and incandescent exit signs. There are a number of energy efficient compact fluorescent lamps in the lobby and hallways. The exterior was lit with a couple of metal halide wall packs. It is recommended that all the T-12 fixtures with magnetic ballasts be retrofit with T-8 lamps and electronic ballasts. Lighting replacement generally yields a very good payback, due to the fact that most lighting usage in commercial buildings is fairly high and the installation is relatively inexpensive.

**Installation cost:**

Estimated installed cost:

	<b>Lighting (Only)</b>	<b>Sensors (Only)</b>	<b>Complete Lighting Upgrade</b>
<b>Cost</b>	\$15,380.00	\$0.00	\$15,380.00
<b>Rebate</b>	\$1,585.00	\$0.00	\$1,585.00
<b>Net Cost</b>	\$13,795.00	\$0.00	<b>\$13,795.00</b>
<b>Savings (kWh)</b>	6,860	0	<b>6,860</b>
<b>Savings (\$)</b>	\$1,852.30	\$0.00	<b>\$1,852.30</b>
<b>Payback</b>	7.4		<b>7.4</b>

Source of cost estimate: RS Means / Empirical Data

**Economics:**

ECM #	ECM description	Source	Est. Installed Cost, \$	Est. Incentives, \$	Net Est. ECM Cost with Incentives, \$	kWh, 1st Yr Savings	kW, Demand Reduction/Mo	Thermus, 1st Yr Savings	kBtu/sq ft, 1st Yr Savings	Est. Operating Cost, 1st Yr Savings, \$	Total 1st Yr Savings, \$	Life of Measure, Yrs	Est. Lifetime Energy Cost Savings, \$	Simple Payback, Yrs	Lifetime Return on Investment, %	Annual Return on Investment, %	Internal Rate of Return, %	Net Present Value, \$	CO2 Reduced, lbs/yr
2	Lighting Upgrades	Empirical Data	\$15,380	\$1,585	\$13,795	6,860	7.6	0	3.02	\$0.00	\$1,852	15	\$21,796	7.45	58%	4%	9%	\$5,904	9,399

**Assumptions:**

The electric cost used in this ECM was \$0.27/kWh, which was the Municipal Complex’s average rate for the 12-month period ranging from March 1, 2008 through February 30, 2009. The replacements for each lighting fixture, the costs to replace or retrofit each one, and the rebates and wattages for each fixture are located in Appendix A.

**Rebates/financial incentives:**

The New Jersey SmartStart offers rebates for upgrading lighting fixtures and installing lighting controls. The total rebate this ECM qualifies for is \$1,585.

BSG-PMK/SWA has reviewed several funding options for the purposes of subsidizing the costs for installing the energy conservation measures noted within this report.

Although funding options are constantly changing and updating this project may benefit from enrolling in a number of alternative programs such as the; The NJ SmartStart program with Technical Assistance, ARRA grants available through the NJ Office of Clean Energy, alternate funding by applying for financing and competitive grants through the United States Department of Energy as well as local utility incentive programs in an effort to offset a portion of the cost of ECM implementation.

The Smart Start program offers reimbursement incentives for various equipment purchases, and lighting incentives. The benefits and requirements of this program can be found at:

<http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/nj-smartstart-buildings>

Financial assistance is also available through the United States Department of Energy in the form of; Grants, Cooperative Research and development agreements, small business innovation research, and Loan Guarantee Programs. Further information for these programs is available at:

[http://www1.eere.energy.gov/financing/types\\_assistance.html](http://www1.eere.energy.gov/financing/types_assistance.html)

Local Utility incentives such as a Direct Install Program, offer incentives that can provide up to 80% subsidy of the cost to install particular ECM's. As each utility company has different guidelines and incentives it is important to contact your local utility authority for eligibility in these programs.

Additional funding may also be found through the following funding methods:

- Energy Savings Improvement Program (ESIP) – Public Law 2009, Chapter 4 authorizes government entities to make energy related improvements to their facilities and pay for the costs using the value of energy savings that result from the improvements.
- Municipal Bonds – Municipal bonds are a bond issued by a city or other local government, or their agencies. 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.
- 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.

BSG-PMK/SWA 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.

## **5. RENEWABLE AND DISTRIBUTED ENERGY MEASURES**

### **5.1. Existing systems**

There are currently no existing renewable energy systems.

### **5.2. Solar Photovoltaic**

Photovoltaic (PV) technology would not be cost beneficial to this project since there is such a high cost of installation and small area of viable space available.

### **5.3. Solar Thermal Collectors**

Solar thermal collectors are not cost effective for this project and are not recommended due to the low amount of domestic hot water use throughout the building.

### **5.4. Combined Heat and Power**

CHP is not applicable to this project because of the HVAC system type and limited domestic hot water usage.

### **5.5. Geothermal**

Geothermal is not applicable to this project because it would require modifications to the existing heat distribution system, which would not be cost effective.

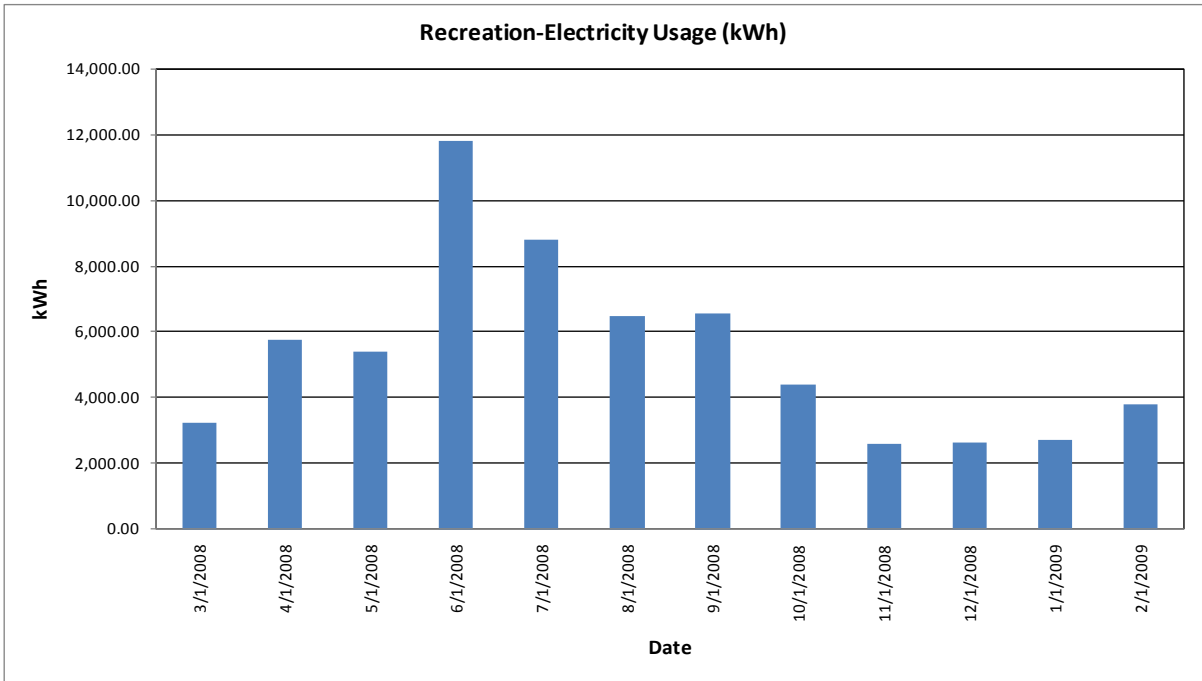
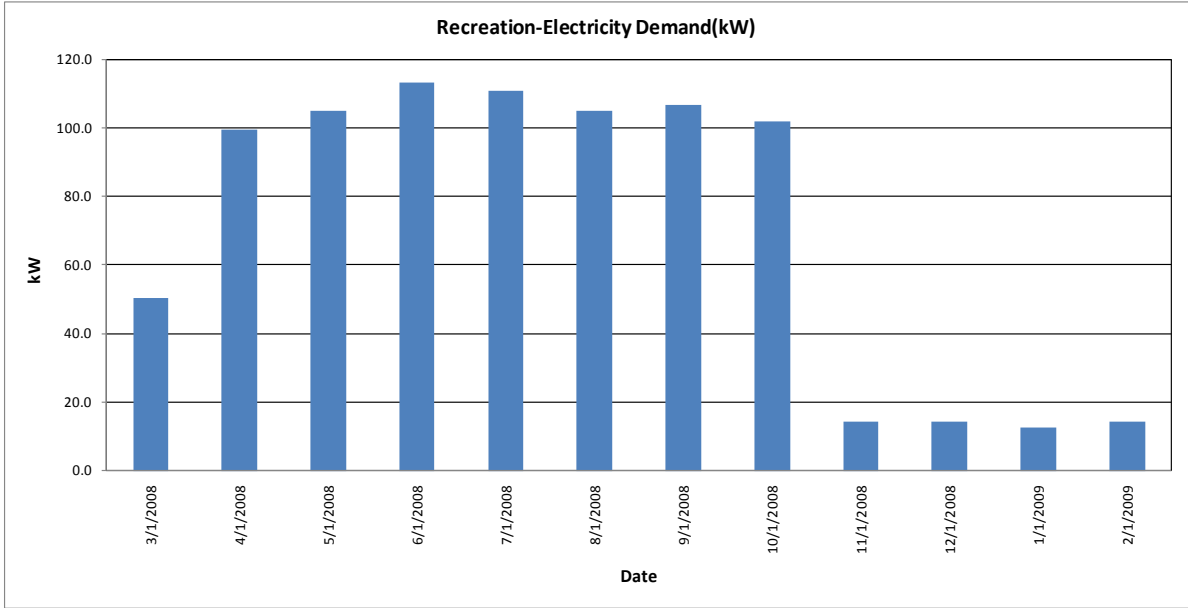
### **5.6. Wind**

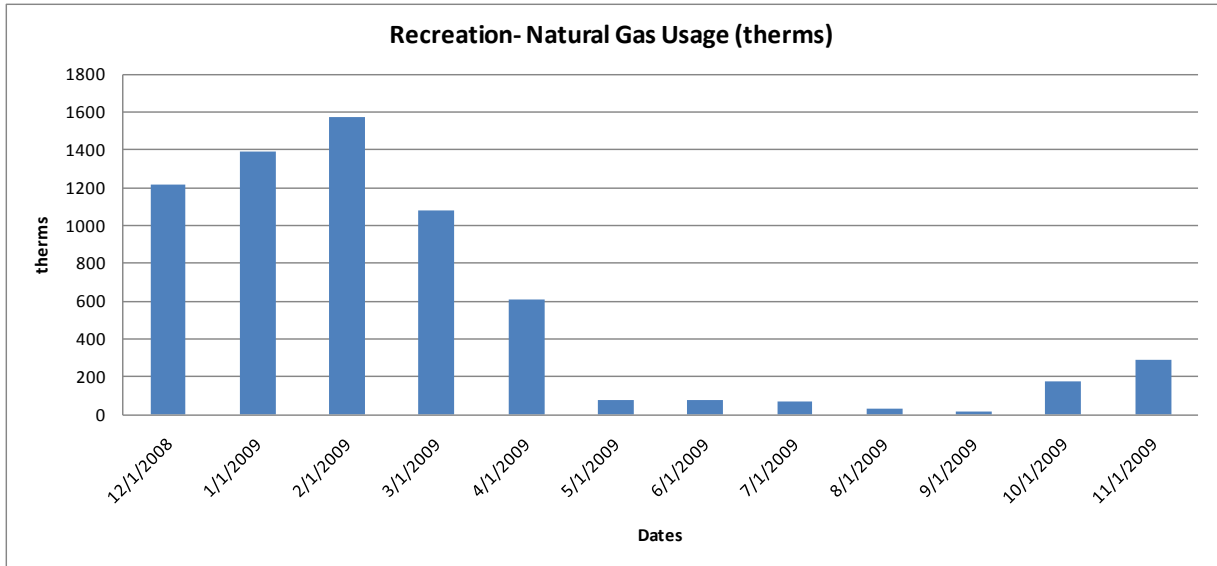
Wind power production is not appropriate for this location because required land is not available for the wind turbine. Also, the available wind energy resource is very low.

## **6. ENERGY PURCHASING AND PROCUREMENT STRATEGIES**

### **6.1. Load profiles**

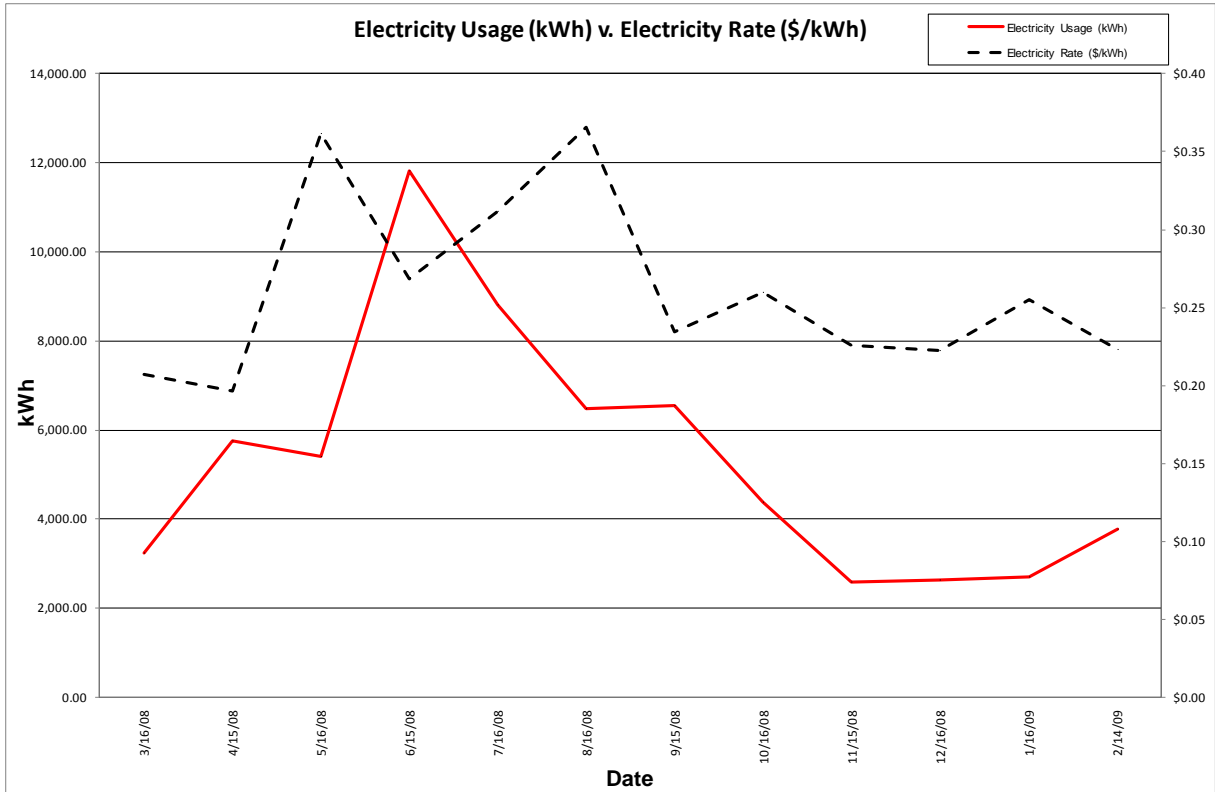
The average electrical peak demand for the facility during previous year was 70.8 kW and the maximum peak demand was 113.4 kW. The electric and gas load profiles for this project are presented in the following charts. The first chart shows the electric demand (in kW) for the previous 12 months and the other two charts show electric (in kWh) and gas usage (in therms), respectively.



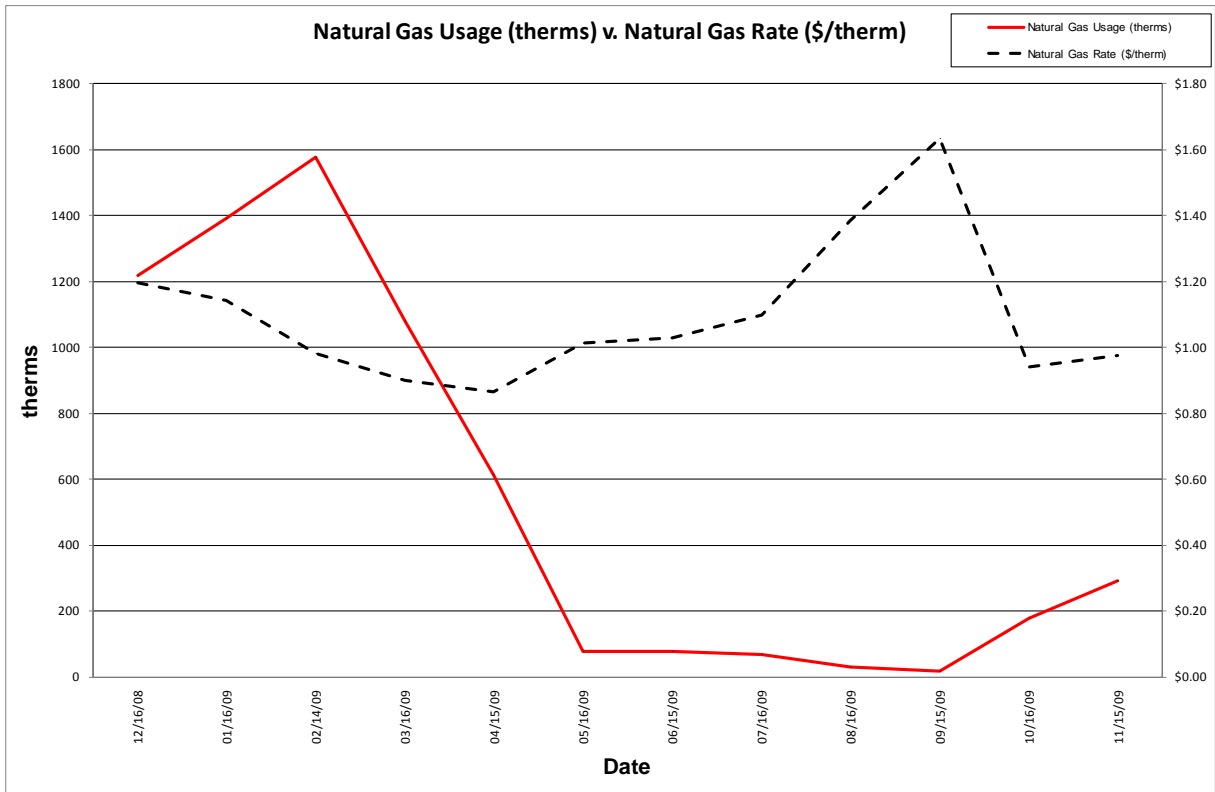


## 6.2. Energy Procurement strategies

Billing analysis shows price fluctuations over the course of the year for the building electrical and natural gas accounts. Customers that have a large variation in monthly billing rates can often reduce the costs associated with energy procurement by selecting a third party energy supplier. Contact the NJ Energy Choice Program for further information on Energy Services Companies (ESCOs) that can act as third party energy suppliers. Purchasing electricity from an ESCO can reduce electric rate fluctuation and ultimately reduce the annual cost of energy for the school. Appendix B contains a complete list of third party energy suppliers. SWA/BSG-PMK also recommends that the Borough of Carteret contacts third party energy suppliers in order to negotiate a lower electricity rate. Comparing the current electric rate to average utility rates of similar type buildings in New Jersey, it may be possible to save up to \$ 0.12/kWh, which would have equated to \$7,793 for the past 12 months.



*Electricity prices reflect electricity usage*



*Natural gas prices fluctuate as expected with usage*

## 7. METHOD OF ANALYSIS

### 7.1. Assumptions and methods

Energy modeling method: Spreadsheet-based calculation methods

Cost estimates: RS Means 2009 (Facilities Maintenance & Repair Cost Data)  
RS Means 2009 (Building Construction Cost Data)  
RS Means 2009 (Mechanical Cost Data)

Note: Cost estimates also based on utility bill analysis and prior experience with similar projects.


### 7.2. Disclaimer

This engineering audit was prepared using the most current and accurate fuel consumption data available for the site. The estimates that it projects are intended to help guide the owner toward best energy choices. The costs and savings are subject to fluctuations in weather, variations in quality of maintenance, changes in prices of fuel, materials, and labor, and other factors. Although we cannot guarantee savings or costs, we suggest that you use this report for economic analysis of the building and as a means to estimate future cash flow.

***THE RECOMMENDATIONS PRESENTED IN THIS REPORT ARE BASED ON THE RESULTS OF ANALYSIS, INSPECTION, AND PERFORMANCE TESTING OF A SAMPLE OF COMPONENTS OF THE BUILDING SITE. ALTHOUGH CODE-RELATED ISSUES MAY BE NOTED, SWA/BSG-PMK STAFF HAVE NOT COMPLETED A COMPREHENSIVE EVALUATION FOR CODE-COMPLIANCE OR HEALTH AND SAFETY ISSUES. THE OWNER(S) AND MANAGER(S) OF THE BUILDING(S) CONTAINED IN THIS REPORT ARE REMINDED THAT ANY IMPROVEMENTS SUGGESTED IN THIS SCOPE OF WORK MUST BE PERFORMED IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL LAWS AND REGULATIONS THAT APPLY TO SAID WORK. PARTICULAR ATTENTION MUST BE PAID TO ANY WORK WHICH INVOLVES HEATING AND AIR MOVEMENT SYSTEMS, AND ANY WORK WHICH WILL INVOLVE THE DISTURBANCE OF PRODUCTS CONTAINING MOLD, ASBESTOS, OR LEAD.***

### LIGHTING ANALYSIS

**Borough of Carteret  
Recreation Center  
280 Pershing Avenue**



Upgrade Code	Upgrade Description	Existing		Proposed		Lighting		
		Fixture	Watts	Fixture	Watts	Total # of Upgrades	Cost per Upgrade (\$)	SmartStart Rebate per Upgrade
1	(4) 34W T12 Lamps, Magnetic Ballast / Retrofit with 28W T8 Lamps, Electronic Ballast	4L4' EE/STD	160	4L4' T8/ELEC	110	44	\$100.00	\$15.00
2	Incandescent Exit Sign	15W Exit	15	LED	2	7	\$40.00	\$10.00
3	70W Metal Halide/ No Upgrade	70W MH/BALLAST	95	No Upgrade	95	2	\$0.00	\$0.00
4	2 Prong Hard Wired Compact Fluorescents / No Upgrade	18W CF/HW	19	No Upgrade	19	4	\$0.00	\$0.00
5	(2) 34W T12 U-Tube Lamps, Magnetic Ballast / Retrofit with T8 U-Tube Lamps, Electronic Ballast	2L22" STD/STD	94	2L22"	62	5	\$60.00	\$15.00
6	(4) 34W T12 Lamps, Magnetic Ballast / Retrofit with T8 High Output Lamps, Electronic Ballast	4L4' EE/STD	160	4L4' T8/ELEC HI	115	52	\$200.00	\$15.00
7						0	\$0.00	\$0.00
8						0	\$0.00	\$0.00
9						0	\$0.00	\$0.00
10						0	\$0.00	\$0.00
11						0	\$0.00	\$0.00
12						0	\$0.00	\$0.00

Summary	Lighting (Only)	Sensors (Only)	Complete Lighting Upgrade
Cost	\$15,380.00	\$0.00	\$15,380.00
Rebate	\$1,585.00	\$0.00	\$1,585.00
Net Cost	\$13,795.00	\$0.00	\$13,795.00
Savings (kWh)	6,660	0	6,660
Savings (\$)	\$1,852.30	\$0.00	\$1,852.30
Payback	7.4		7.4

**Variables:**

\$0.27	Avg. Electric Rate (\$/kWh)
	Avg. Demand Rate (\$/kW)
1040	Operating Hours/Year
4	Operating Hours/Work Day

**Assumptions:**

25%	Occupancy Sensor Savings (Avg)
40%	Occupancy Sensor Savings (-Avg)

**Notes:**

Seq. #	Upgrade Code	Room/Area	Hrs/Work Day	Hrs/Year	Existing				Proposed				Lighting			Occupancy Sensors (ONLY)				Lighting & Occupancy Sensors							
					Fixture	Qty.	Watts	Foot Candles	Fixture	Qty.	Watts	kW Reduction	Energy Savings, kWh	Cost (\$)	Savings (\$)	Payback (yrs)	Controls Type	Qty.	Energy Savings, kWh	Cost (\$)	Savings (\$)	Payback (yrs)	SmartStart Rebate Lighting	Sensors	Energy Savings, kWh	Post Rebate Cost (\$)	Savings (\$)
<b>Totals:</b>					16201		11410	4.791	6860	\$15,380.00	\$1,852.30	8.3	0	\$0.00	\$0.00	\$1,585.00	\$0.00	6860	\$13,795.00	\$1,852.30	7.4						
1	1	Kitchen	1	260	4L4' EE/STD	4	640		4L4' T8/ELEC	4	440	0.2	62	\$400.00	\$14.04	28.5	0	\$0.00	\$0.00	\$90.00	\$0.00	52	\$340.00	\$14.04	24.2		
2	1	Kitchen Hallway	1	260	4L4' EE/STD	3	480		4L4' T8/ELEC	3	330	0.15	39	\$300.00	\$10.63	28.5	0	\$0.00	\$0.00	\$45.00	\$0.00	39	\$355.00	\$10.63	24.2		
3	2	Inc Exit	24	8760	15W Exit	7	105		LED	7	14	0.001	797	\$280.00	\$215.23	1.3	0	\$0.00	\$0.00	\$70.00	\$0.00	797	\$210.00	\$215.23	1.0		
4	1	Football	4	1040	4L4' EE/STD	9	1440		4L4' T8/ELEC	9	990	0.45	468	\$900.00	\$126.36	7.1	0	\$0.00	\$0.00	\$135.00	\$0.00	468	\$765.00	\$126.36	6.1		
5	1	Restroom	4	1040	4L4' EE/STD	3	480		4L4' T8/ELEC	3	330	0.15	156	\$300.00	\$42.12	7.1	0	\$0.00	\$0.00	\$45.00	\$0.00	156	\$255.00	\$42.12	6.1		
6	1	Restroom	4	1040	4L4' EE/STD	3	480		4L4' T8/ELEC	3	330	0.15	156	\$300.00	\$42.12	7.1	0	\$0.00	\$0.00	\$45.00	\$0.00	156	\$255.00	\$42.12	6.1		
7	1	Electric Room	1	260	4L4' EE/STD	1	160		4L4' T8/ELEC	1	110	0.05	13	\$100.00	\$3.51	28.5	0	\$0.00	\$0.00	\$15.00	\$0.00	13	\$85.00	\$3.51	24.2		
8	3	Exterior Lights	7	1820	70W MH/BALLAST	2	190		No Upgrade	2	190	0	0	\$0.00	\$0.00		0	\$0.00	\$0.00	\$0.00	\$0.00	0	\$0.00	\$0.00			
9	6	Rec Room	6	1960	4L4' EE/STD	52	8320		4L4' T8/ELEC HI	52	6860	2.34	3650	\$10,400.00	\$995.61	10.6	0	\$0.00	\$0.00	\$780.00	\$0.00	3650	\$9,620.00	\$995.61	9.8		
10	1	Entry and Hall	8	2080	4L4' EE/STD	9	1440		4L4' T8/ELEC	9	990	0.45	336	\$900.00	\$252.72	3.6	0	\$0.00	\$0.00	\$135.00	\$0.00	936	\$765.00	\$252.72	3.0		
11	4		8	2080	18W CF/HW	4	76		No Upgrade	4	76	0	0	\$0.00	\$0.00		0	\$0.00	\$0.00	\$0.00	\$0.00	0	\$0.00	\$0.00			
12	1	Baseball Trophy Room	3	780	4L4' EE/STD	12	1920		4L4' T8/ELEC	12	1320	0.6	468	\$1,200.00	\$128.36	9.5	0	\$0.00	\$0.00	\$180.00	\$0.00	468	\$1,020.00	\$128.36	8.1		
13	5	Softball Coaches Room	3	780	2L22" STD/STD	4	376		2L22"	4	248	0.128	100	\$240.00	\$28.96	8.9	0	\$0.00	\$0.00	\$80.00	\$0.00	100	\$160.00	\$28.96	6.7		
14	5		3	780	2L22" STD/STD	1	94		2L22"	1	62	0.052	25	\$60.00	\$6.74	8.9	0	\$0.00	\$0.00	\$15.00	\$0.00	25	\$45.00	\$6.74	6.7		

## Appendix B: Third Party Energy Suppliers (ESCOs)

Third Party Electric Suppliers for PSEG Service Territory	Telephone & Web Site	Third Party Gas Suppliers for Elizabethtown Gas Co. Service Territory	Telephone & Web Site
<b>Hess Corporation</b> 1 Hess Plaza Woodbridge, NJ 07095	(800) 437-7872 <a href="http://www.hess.com">www.hess.com</a>	<b>Cooperative Industries</b> 412-420 Washington Avenue Belleville, NJ 07109	(800) 628-9427 <a href="http://www.cooperativenet.com">www.cooperativenet.com</a>
<b>American Powernet Management, LP</b> 437 North Grove St. Berlin, NJ 08009	(877) 977-2636 <a href="http://www.americanpowernet.com">www.americanpowernet.com</a>	<b>Direct Energy Services, LLC</b> 120 Wood Avenue, Suite 611 Iselin, NJ 08830	(866) 547-2722 <a href="http://www.directenergy.com">www.directenergy.com</a>
<b>BOC Energy Services, Inc.</b> 575 Mountain Avenue Murray Hill, NJ 07974	(800) 247-2644 <a href="http://www.boc.com">www.boc.com</a>	<b>Gateway Energy Services Corp.</b> 44 Whispering Pines Lane Lakewood, NJ 08701	(800) 805-8586 <a href="http://www.gesc.com">www.gesc.com</a>
<b>Commerce Energy, Inc.</b> 4400 Route 9 South, Suite 100 Freehold, NJ 07728	(800) 556-8457 <a href="http://www.commerceenergy.com">www.commerceenergy.com</a>	<b>UGI Energy Services, Inc.</b> 704 East Main Street, Suite 1 Moorestown, NJ 08057	(856) 273-9995 <a href="http://www.ugienergyservices.com">www.ugienergyservices.com</a>
<b>ConEdison Solutions</b> 535 State Highway 38 Cherry Hill, NJ 08002	(888) 665-0955 <a href="http://www.conedsolutions.com">www.conedsolutions.com</a>	<b>Great Eastern Energy</b> 116 Village Riva, Suite 200 Princeton, NJ 08540	(888) 651-4121 <a href="http://www.greateastern.com">www.greateastern.com</a>
<b>Constellation NewEnergy, Inc.</b> 900A Lake Street, Suite 2 Ramsey, NJ 07446	(888) 635-0827 <a href="http://www.newenergy.com">www.newenergy.com</a>	<b>Glacial Energy of New Jersey, Inc.</b> 207 LaRoche Avenue Harrington Park, NJ 07640	(877) 569-2841 <a href="http://www.glacialenergy.com">www.glacialenergy.com</a>
<b>Credit Suisse, (USA) Inc.</b> 700 College Road East Princeton, NJ 08450	(212) 538-3124 <a href="http://www.creditsuisse.com">www.creditsuisse.com</a>	<b>Hess Corporation</b> 1 Hess Plaza Woodbridge, NJ 07095	(800) 437-7872 <a href="http://www.hess.com">www.hess.com</a>
<b>Direct Energy Services, LLC</b> 120 Wood Avenue, Suite 611 Iselin, NJ 08830	(866) 547-2722 <a href="http://www.directenergy.com">www.directenergy.com</a>	<b>Intelligent Energy</b> 2050 Center Avenue, Suite 500 Fort Lee, NJ 07024	(800) 724-1880 <a href="http://www.intelligentenergy.org">www.intelligentenergy.org</a>
<b>FirstEnergy Solutions</b> 300 Madison Avenue Morristown, NJ 07926	(800) 977-0500 <a href="http://www.fes.com">www.fes.com</a>	<b>Metromedia Energy, Inc.</b> 6 Industrial Way Eatontown, NJ 07724	(877) 750-7046 <a href="http://www.metromediaenergy.com">www.metromediaenergy.com</a>
<b>Glacial Energy of New Jersey, Inc.</b> 207 LaRoche Avenue Harrington Park, NJ 07640	(877) 569-2841 <a href="http://www.glacialenergy.com">www.glacialenergy.com</a>	<b>MxEnergy, Inc.</b> 510 Thornall Street, Suite 270 Edison, NJ 08837	(800) 375-1277 <a href="http://www.mxenergy.com">www.mxenergy.com</a>
<b>Metro Energy Group, LLC</b> 14 Washington Place Hackensack, NJ 07601	(888) 536-3876 <a href="http://www.metroenergy.com">www.metroenergy.com</a>	<b>NATGASCO (Mitchell Supreme)</b> 532 Freeman Street Orange, NJ 07050	(800) 840-4427 <a href="http://www.natgasco.com">www.natgasco.com</a>
<b>Integrus Energy Services, Inc.</b> 99 Wood Ave, South, Suite 802 Iselin, NJ 08830	(877) 763-9977 <a href="http://www.integrusenergy.com">www.integrusenergy.com</a>	<b>Pepco Energy Services, Inc.</b> 112 Main Street Lebanon, NJ 08833	(800) 363-7499 <a href="http://www.pepco-services.com">www.pepco-services.com</a>
<b>Liberty Power Delaware, LLC</b> Park 80 West Plaza II, Suite 200 Saddle Brook, NJ 07663	(866) 769-3799 <a href="http://www.libertypowercorp.com">www.libertypowercorp.com</a>	<b>PPL EnergyPlus, LLC</b> 811 Church Road Cherry Hill, NJ 08002	(800) 281-2000 <a href="http://www.pplenergyplus.com">www.pplenergyplus.com</a>
<b>Liberty Power Holdings, LLC</b> Park 80 West Plaza II, Suite 200 Saddle Brook, NJ 07663	(800) 363-7499 <a href="http://www.libertypowercorp.com">www.libertypowercorp.com</a>	<b>South Jersey Energy Company</b> One South Jersey Plaza, Route 54 Folsom, NJ 08037	(800) 756-3749 <a href="http://www.southjerseyenergy.com">www.southjerseyenergy.com</a>
<b>Pepco Energy Services, Inc.</b> 112 Main St. Lebanon, NJ 08833	(800) 363-7499 <a href="http://www.pepco-services.com">www.pepco-services.com</a>	<b>Sprague Energy Corp.</b> 12 Ridge Road Chatham Township, NJ 07928	(800) 225-1560 <a href="http://www.spragueenergy.com">www.spragueenergy.com</a>
<b>PPL EnergyPlus, LLC</b> 811 Church Road Cherry Hill, NJ 08002	(800) 281-2000 <a href="http://www.pplenergyplus.com">www.pplenergyplus.com</a>	<b>Strategic Energy, LLC</b> 55 Madison Avenue, Suite 400 Morristown, NJ 07960	(888) 925-9115 <a href="http://www.sel.com">www.sel.com</a>
<b>Sempra Energy Solutions</b> 581 Main Street, 8th Floor Woodbridge, NJ 07095	(877) 273-6772 <a href="http://www.semprasolutions.com">www.semprasolutions.com</a>	<b>Suez Energy Resources NA, Inc.</b> 333 Thornall Street, 6th Floor Edison, NJ 08837	(888) 644-1014 <a href="http://www.suezenergyresources.com">www.suezenergyresources.com</a>
<b>South Jersey Energy Company</b> One South Jersey Plaza, Route 54 Folsom, NJ 08037	(800) 756-3749 <a href="http://www.southjerseyenergy.com">www.southjerseyenergy.com</a>	<b>UGI Energy Services, Inc.</b> 704 East Main Street, Suite 1 Moorestown, NJ 08057	(856) 273-9995 <a href="http://www.ugienergyservices.com">www.ugienergyservices.com</a>
<b>Sprague Energy Corp.</b> 12 Ridge Road Chatham Township, NJ 07928	(800) 225-1560 <a href="http://www.spragueenergy.com">www.spragueenergy.com</a>		
<b>Strategic Energy, LLC</b> 55 Madison Avenue, Suite 400 Morristown, NJ 07960	(888) 925-9115 <a href="http://www.sel.com">www.sel.com</a>		
<b>Suez Energy Resources NA, Inc.</b> 333 Thornall Street, 6th Floor Edison, NJ 08837	(888) 644-1014 <a href="http://www.suezenergyresources.com">www.suezenergyresources.com</a>		
<b>UGI Energy Services, Inc.</b> 704 East Main Street, Suite 1 Moorestown, NJ 08057	(856) 273-9995 <a href="http://www.ugienergyservices.com">www.ugienergyservices.com</a>		