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November 11, 2010

Local Government Energy Program
Final Energy Audit Report

For

Lakewood Township
Blue Claws Stadium
2 Stadium Way
Lakewood, NJ 08701

Project Number: LGEA80

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INTRODUCTION

On August 23rd, 2010 Steven Winter Associates, Inc. (SWA) and Birdsall Services Group (BSG) performed an energy audit and assessment of the Lakewood Blue Claws Baseball Stadium in Lakewood Township, NJ. Current conditions and energy-related information were collected in order to analyze and facilitate the implementation of energy conservation measures for the building.

The Township of Lakewood Blue Claws Baseball Stadium (Stadium) is a two-story, slab on grade structure comprised of a Concourse and Maintenance Level, a Suite Level and partial basements housing stairs which lead from each dugout tunnel up to the Concourse Level for player access, and a Partial Lower Level Maintenance Shop and Boiler Room, having a floor area comprised of 58,374 square feet. The building was built in 2002, and there have been no major renovations or additions since then, but there have been HVAC improvements in the conditioned spaces.

The Stadium is occupied by approximately 30 to 55 occupants on a daily basis, Monday through Saturday, 50 hours per week, according to staff personal. From April to September there are baseball games at the stadium, as many as 7 a week. During games the stadium could be filled to its capacity of 6,588.

Energy data and building information collected in the field were analyzed to determine the baseline energy performance of the building. Using spreadsheet-based calculation methods, SWA and BSG 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 building.

Launched in 2008, the 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 that additional 25% will also be paid by the program. The Board of Public Utilities (BPU's) Office of Clean Energy has assigned TRC Energy Services to administer the Program.

EXECUTIVE SUMMARY

This document contains the energy audit report for the Lakewood Blue Claws Baseball Stadium in the Township of Lakewood, NJ 08701.

Based on the field visit performed by Steven Winter Associates (SWA) and BSG staff on August 23rd, 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, July, 2009 through June, 2010, the Stadium consumed a total of 1,715,200 kWh of electricity for a total cost of $299,284. In the most recent full year of natural gas data collected, July, 2009 through June, 2010, 24,584 therms of gas were consumed for a total cost of $28,757. With electricity and natural gas combined, the building consumed 2,618 MMBtus of energy at a total cost of $328,041.

SWA/BSG has entered energy information about the Lakewood Blue Claws Stadium in the U.S. Environmental Protection Agency's (EPA) *Energy Star Portfolio Manager* Energy benchmarking system. The username is *lakewoodtwp* and the password is *lakewood*. The building type was classified as Recreation because the structure is primarily used as a baseball stadium and for public events. A classification of Recreation does not allow it to receive a performance rating which could be used to achieve an Energy Star building certification.

The Site Energy Use Intensity is 102 kBtu/sq.ft/yr compared to the national average of buildings classified as Recreation consuming 65 kBtu/sq.ft./yr. Implementing this report's recommended Energy Conservations Measures (ECMs) will reduce use by approximately 51 kBtu/sq.ft./yr.

Based on the assessment of the Stadium, SWA/BSG has separated the recommendations into three categories (See Section 4 for more details). These are summarized as follows:

Category I Recommendations: Capital Improvements:

Based on the findings of SWA/BSG's survey, capital improvement measures are not recommended, due to the age and condition of the building.

Category II: Operations & Maintenance:

- Improve grease maintenance and monitor\replace when needed the deteriorating roof membrane over the kitchen.(see photo on page 17)
- Weather-strip jambs and the bottoms of exterior doors and doors adjacent to condition spaces. (see photos on page 19)

Category III: Energy Conservation Measures:

At this time, SWA/BSG highly recommends a total of **2** Energy Conservation Measures (ECMs) for the FirstEnergy Park that are summarized in the following table. The total investment cost for these ECMs, with incentives, is **$9,891,840** (based on a projected eligibility for New Jersey's Office of Clean Energy current incentive and rebate programs). SWA/BSG estimates a first year savings of **$588,558** with an

aggregated simple payback of **16.8 years**. SWA/BSG estimates that implementing the highly recommended ECMs will reduce the carbon footprint of the facility by **1,200,895 lbs of CO_2**.

There are various incentives that the Township of Lakewood could apply for that could also help lower the cost of installing the ECMs. SWA/BSG recommends that Lakewood 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.

The following table summarizes the proposed Energy Conservation Measures (ECM) and their economic relevance:

ROI: Return on Investment (%)

Assumptions:

Discount rate:	3.2%	per DOE FEMP guidelines	Electricity rate	$0.17	$/kWh
Energy price escalation rate:	0%	per DOE FEMP guidelines	Gas rate	$1.17	$/therm

Avg. Annual Demand: 0.00318 Area of Building (SF): 58,374

Table 1 - Highly Recommended 0-5 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, $	CO2 Reduced, lbs/yr
1	Plumbing Upgrade	Similar Projects	$21,000	$0	$21,000	0	0.00	0	0.00	$0.00	$3,259	15	$38,347	6.44	83%	6%	13%	$17,904	0
TOTAL			$21,000	$0	$21,000	0	0.00	0	0.00	$0.00	$3,259	-	$38,347	6.44	-	-	-	$17,904	0

Table 3 - Recommended 10+ Year 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, $	CO2 Reduced, lbs/yr
2	824-kW Roof-Mounted PV System	Similar Projects	$9,891,840	$0	$9,891,840	876,566	232.11	0	51.24	$0	$585,299	30	$11,181,129	16.90	13%	0%	4%	$1,580,279	1,200,895
TOTAL			$9,891,840	$0	$9,891,840	876,566	232.11	0	51.24	$0.00	$585,299	-	$11,181,129	16.90	-	-	-	$1,580,279	1,200,895

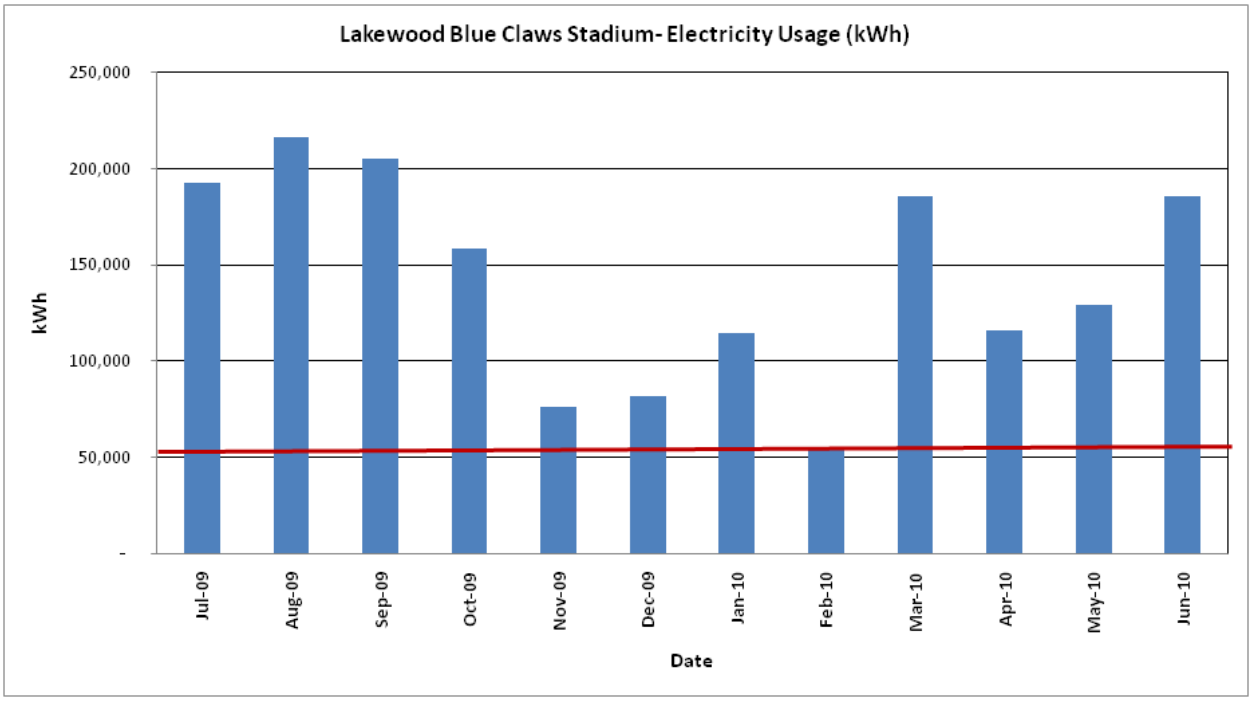
1. HISTORIC ENERGY CONSUMPTION

1.1. Energy Usage and Cost Analysis

SWA/BSG analyzed utility bills that were received from the utility company supplying the Lakewood Blue Claws Stadium with electric and natural gas from July, 2009 through June, 2010.

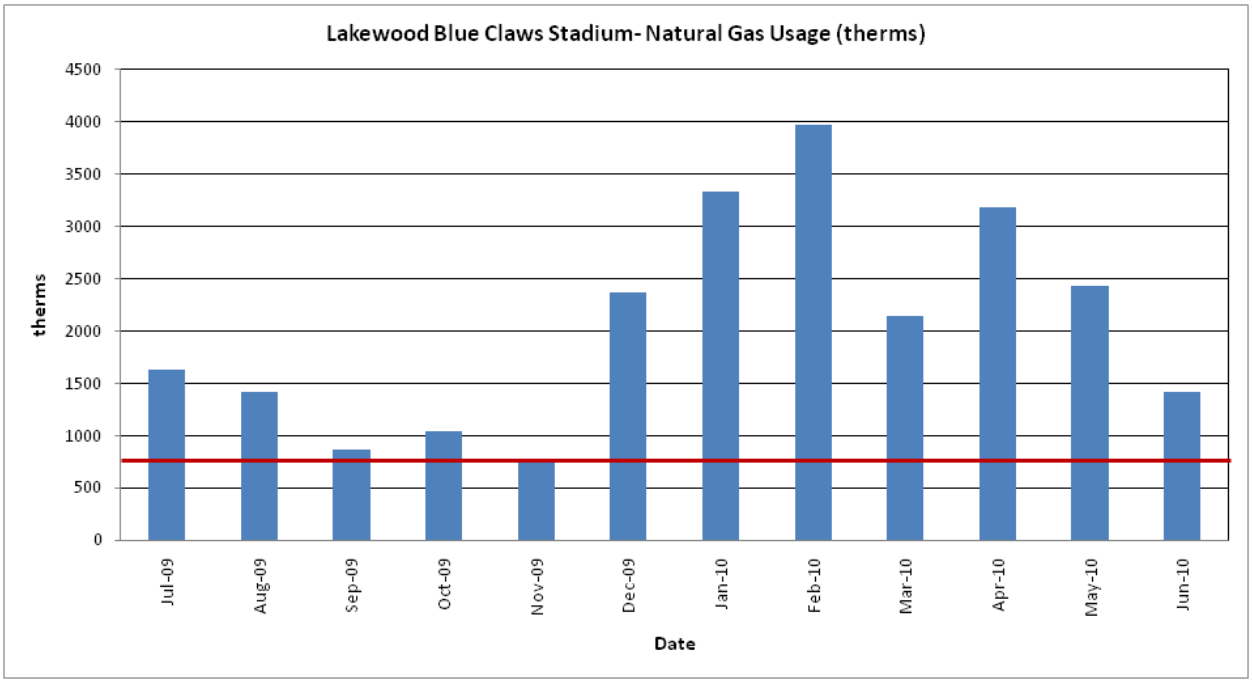
Electricity – The Lakewood Blue Claws Stadium is currently served by one electric meter. The marquee is separately metered. The facility currently receives electricity distribution service from Jersey Central Power & Light and as of January, 2010 electricity supply from Glacial Energy of New Jersey at **an average rate of $0.17/kWh** based on 12 months of utility bills from July, 2009 through June, 2010. The facility consumed **approximately 1,715,200 kWh or $299,284 worth of electricity** in the previous year with an average monthly demand of 454.2 kW.

The following chart show electricity usage for the Lakewood Blue Claws Stadium based on utility bills for the billing analysis period. The red line indicates the estimated base-load in kWh.



Natural Gas – The Lakewood Blue Claws Stadium is currently served by one meter for natural gas. The facility currently receives natural gas from New Jersey Natural Gas at **an average aggregated rate of $1.17/therm** based on 12 months of utility bills for July, 2009 through June, 2010. The facility consumed **approximately 24,584.696 therms or $28,757.09 worth of natural gas** in the previous year.

The following charts show the natural gas usage for the Lakewood Blue Claws Stadium based on utility bills for the analysis period of July, 2009 through June, 2010.



The natural gas usage mimics seasonal needs for heating the buildings showing that natural gas is primarily used for heating. The red line indicates the base-load level for the domestic hot water. The natural gas usage above the red line shows the amount of natural gas used for heating.

1.2. Utility Rate

The Lakewood Blue Claws Stadium currently receives electricity distribution from Jersey Central Power & Light and as of January, 2010 electricity supply from Glacial Energy of New Jersey at a general service market rate for electricity use (kWh) with (kW) demand charge. The facility currently pays an average rate of approximately $0.17/kWh based on the most recent 12 months of utility bills.

The Lakewood Blue Claws Stadium currently receives natural gas supply from New Jersey Natural Gas at a general service market rate for natural gas in (therms). There is one gas meter that provides natural gas service to the facility. The average aggregated rate (supply and transport) for the meter is approximately $1.17/therm based on the most recent 12 months of utility bills.

1.3. Energy Benchmarking

SWA/BSG has entered energy information about the Lakewood Blue Claws Stadium in the U.S. Environmental Protection Agency's (EPA) *Energy Star Portfolio Manager* Energy benchmarking system. The username is *lakewoodtwp* and the password is *lakewood*. The building type was classified as Recreation because the structure is primarily used as a baseball stadium and for public events. A classification of Recreation does not allow it to receive a performance rating which could be used to achieve an Energy Star building certification.

The Site Energy Use Intensity is 102 kBtu/sq.ft/yr compared to the national average of buildings classified as Recreation consuming 65 kBtu/sq.ft./yr. Implementing this report's recommended Energy Conservations Measures (ECMs) will reduce use by approximately 51 kBtu/sq.ft./yr.

SWA/BSG has created the Portfolio Manager site information for Lakewood Blue Claws Stadium. This information can be accessed at: https://www.energystar.gov/istar/pmpam/, with the following:

Username: *lakewoodtwp*
Password: *lakewood*

OMB No. 2060-0347

STATEMENT OF ENERGY PERFORMANCE
Lakewood Blue Claws Baseball Stadium

Building ID: 2427965
For 12-month Period Ending: May 31, 2010[1]
Date SEP becomes ineligible: N/A

Date SEP Generated: August 30, 2010

Facility	Facility Owner	Primary Contact for this Facility
Lakewood Blue Claws Baseball Stadium 2 Stadium Way Lakewood, NJ 08701	Township of Lakewood 231 Third St Lakewood, NJ 08701	Tony Arecchi 1 America Ave Lakewood, NJ 08701

Year Built: 2002
Gross Floor Area (ft²): 58,374

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

Site Energy Use Summary[3]	
Electricity - Grid Purchase(kBtu)	3,452,210
Natural Gas (kBtu)[4]	2,508,877
Total Energy (kBtu)	5,961,087
Energy Intensity[5]	
Site (kBtu/ft²/yr)	102
Source (kBtu/ft²/yr)	243
Emissions (based on site energy use)	
Greenhouse Gas Emissions ($MtCO_2e$/year)	659
Electric Distribution Utility	
FirstEnergy - Jersey Central Power & Lt Co	
National Average Comparison	
National Average Site EUI	65
National Average Source EUI	136
% Difference from National Average Source EUI	78%
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.

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.

EPA Form 5900-16

2. FACILITY AND SYSTEMS DESCRIPTION

This section gives an overview of the current state of the facility and systems. Please refer to the Proposed Further Recommendations section for recommendations for improvement.

Based on visits from Steven Winters Associates (SWA) and PMK staff on Monday, August 23, 2010 the following data was collected and analyzed.

2.1. Building Characteristics

The Township of Lakewood Blue Claws Baseball Stadium Building is a two-story, slab on grade structure comprised of a Concourse and Maintenance Level, a Suite Level and partial basements housing stairs which lead from each dugout tunnel up to the Concourse Level for player access, and a Partial Lower Level Maintenance Shop and Boiler Room, having a floor area comprised of 58,374 square feet. The building was built in 2002, and there have been no major renovations or additions since then.

2.2. Building occupancy profiles

The Stadium is occupied by approximately 30 to 55 occupants on a daily basis, Monday through Saturday, 50 hours per week, according to staff personal. From April to September there are baseball games at the stadium, as many as 7 a week. During games the stadium could be filled to its capacity of 6,588.

2.3. Building Envelope

It is our understanding that the building was initially designed for seasonal use rather than all-year use. It is also our understanding that portions of the building are now utilized for all-year use, which creates envelope issues between portions of the building that are not used during winter months versus those portions of the building that are used throughout the year.

Due to unfavorable weather conditions (rain) and the age of the building, no exterior envelope infrared (IR) images were taken during the field audit.

General Note: All findings and recommendations on the exterior envelope (Base, walls, roofs, doors and windows) are based on the energy auditor's experience and expertise, construction document review, and on a detailed visual analysis based on having access to the building spaces, and weather conditions at the time of the field audit.

East Facade – Side Concourse Level

Partial North Facade - Front

Partial North Facade - Front

Partial North Facade - Front

Partial West/North Facade – Front

Partial North Facade – Front

Partial North Facade – Front

Partial North Facade – Front

Partial North/East Facade – Front

Partial North Facade – Front

Partial North Facade – Front

Partial West Facade – Side

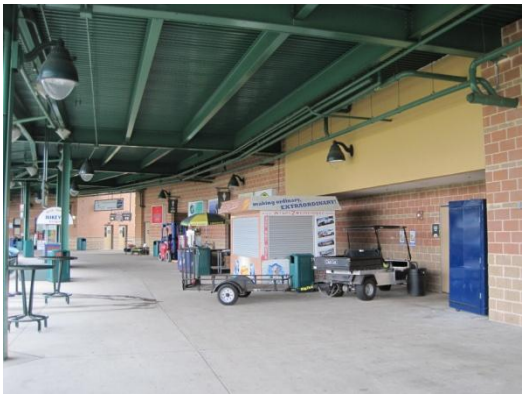
Partial West Facade – Side

Partial South Facade – Concourse Level

Partial South/West Facade

Partial South Facade – Concourse Level

Partial South Facade – Concourse Level



Partial South Facade – Concourse Level

Partial East/South Facade – Concourse/ Suite Level

Partial South Facade – Concourse Level

Partial West/South Facade - Suite Level

Partial South Facade - Suite Level

Partial South Facade – Suite Level

Partial South Facade – Suite Level

2.3.1. Exterior Walls

The exterior wall construction is comprised of three basic assemblies that repeat throughout the complex. However, hybrids of these three basic wall assemblies are found throughout the building.

The first wall assembly is comprised of a brick veneer in combination with a concrete masonry unit veneer at base of wall, an air space, exterior sheathing board with a building wrap applied to the cavity surface, 6-inch metal studs filled with batt-type insulation (R-19), with ½ inch gypsum board interior finish.

The second wall assembly is comprised of an exterior insulation and finish system (EIFS) with typically 2-inch thick rigid insulation in combination with a concrete masonry veneer unit at base of wall, applied to a single-wythe, 8-inch concrete masonry unit back up wall. There is no insulation inserts within the backup wall construction.

The third wall assembly is comprised of an exterior insulation and finish system (EIFS) with 1-inch thick rigid insulation (variations include 2-inch and 4-inch insulation thicknesses), applied to exterior sheathing board attached to 6-inch metal studs filled with batt-type insulation (R-19), with ½ inch gypsum board interior finish.

Note: Most of the conditioned (heated and air-conditioned) spaces with exterior wall exposures are constructed with insulated wall assemblies. However, in some cases the upper section of the wall assembly is insulated while the lower section is not. Other exterior wall assemblies may include insulation in the wall assembly for aesthetic reasons only. Wall insulation levels could not be verified in the field. Insulation types and "R-values" are identified from reviewing the construction plans.

Exterior and interior wall surfaces were inspected during the field audit. They were found to be in overall good condition with no signs of uncontrolled moisture, air-leakage and other energy-compromising issues. However, interior partitions and exterior wall assemblies between conditioned spaces and unconditioned spaces do not appear to be insulated based upon review of the contract drawings

2.3.2.Roof

The building is comprised of multiple types of roof assemblies. However, the most typical are as follows:

The steep-sloped roofing assembly over unoccupied spaces is comprised of a metal stud framing spanning between steel roof framing members, covered with ¾-inch fire-retardant plywood sheathing. Applied to the sheathing is an asphalt shingle roofing system (Yellow color Roof Insulation Legend). There was no evidence of insulation being present in this roof assembly.

The steep-sloped roofing assembly over unoccupied spaces is comprised of a metal stud framing spanning between steel roof framing members, covered with ¾-inch fire-retardant plywood sheathing. Applied to the sheathing is a vented (R-16) roof insulation board under an asphalt shingle roofing system (Green color Roof Insulation Legend). There was no evidence of insulation being present in this roof assembly.

The steep-sloped roofing assembly over occupied spaces is comprised of a 1 ½-inch metal decking spanning between steel roof framing members, covered with ¾-inch fire-retardant plywood sheathing. Applied to the metal decking is a non-vented (R-23) roof insulation board under an asphalt shingle roofing. Insulation is present in these roof assemblies (Blue color Roof Insulation Legend).

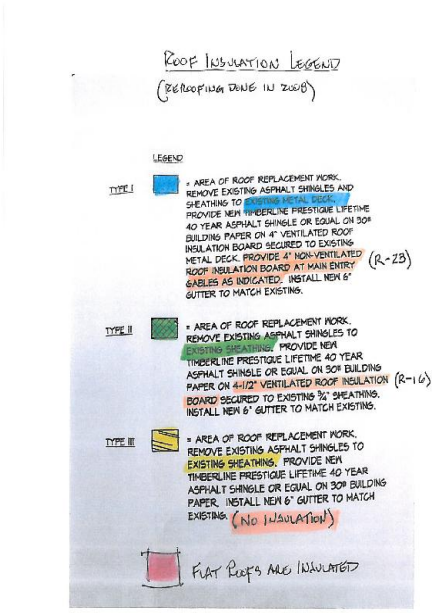
The flat roofing assembly is comprised of a 1 ½-inch metal decking spanning between steel joist members. Applied to the metal decking is a tapered insulation and EPDM roofing system (Red color Roof Insulation Legend). Flat roofs generally house mechanical equipment such as exhaust fans, mechanical units, etc. Thickness of insulation could not be verified.

Transitions between steep-sloped roofs and flat roofs are constructed of 6-inch metal stud framing with exterior sheathing board then covered with EPDM roofing system. Vertical transitions are not insulated. However, the EIFS system is installed for aesthetic reasons. Vertical transitions are vented with gravity roof vents mounted in vertical transitions.

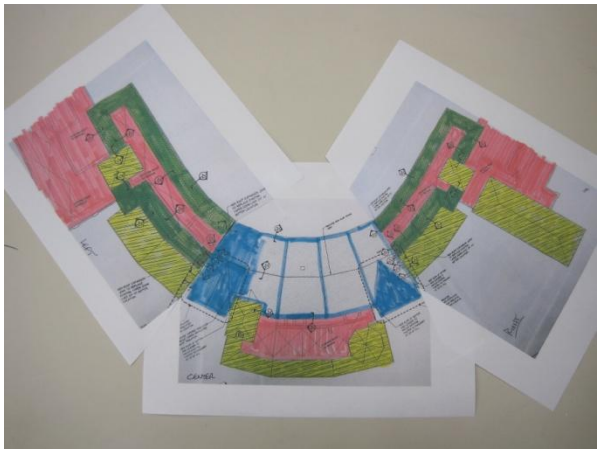
Typical Sloped Roof in Foreground/Flat Roof in Background

Typical Sloped Roof/Flat Roof in Foreground

Membrane Deterioration over Kitchen Due to Grease Exhaust



Roof Insulation Legend



Roof Insulation Diagram

2.3.3. Base

The building's base is comprised of a slab-on-grade floor with a perimeter foundation. Based upon review of the contract drawings, there is no evidence that perimeter insulation is installed either vertically on the foundation wall or horizontally under the slab-on-grade.

The building's base and its perimeter were inspected for signs of uncontrolled moisture or water presence and other energy-compromising issues. Overall the base was observed to be in acceptable condition with no signs of uncontrolled moisture, air-leakage, and/or other energy-compromising issues.

2.3.4. Windows

The building contains no operable windows. However, vision panels (glazed storefront framing, fixed and ticket window) are installed into exterior walls (See comments under Exterior Doors and Exterior Storefronts).

Vision panels, shading devices, sills, related flashings and sealants were inspected where accessible for signs of moisture, air-leakage, and other compromising issues. Overall, the vision panels were found to be in acceptable condition with no signs of uncontrolled moisture, air-leakage and/or other energy-comprising issues. No specific vision panel problem spots were identified.

Typical Vision Panel

Ticket Pass-Thru Panel

2.3.5. Exterior Doors

The building contains aluminum storefronts, aluminum entry doors and frames, steel doors and frames, and steel roll-up doors.

1. Aluminum entry doors in storefront are wide stile (5-inch nominal width) un-insulated doors, glazed with 1/4-inch tempered clear pane. Weather-stripping and thresholds are installed at the bottom of each door. Doors have integral weather-stripping at head or jambs.
2. Aluminum storefront system is not comprised of thermally broken construction, glazed with 1/4-inch tempered clear pane. Storefront system is installed at entrances to conditioned spaces such as offices, private suites, etc.
3. Steel doors and frames are not insulated, but the steel frame is filled solid with grout. No weather-stripping is installed at the bottom of each door. Only some doors have weather-stripping at head or jambs.

4. Steel roll-up doors are comprised of galvanized steel sheets without an insulated inner core of thermal insulation. No vision panels are located in each door. Continuous weather-stripping is not installed at head, jambs and bottom of each door.

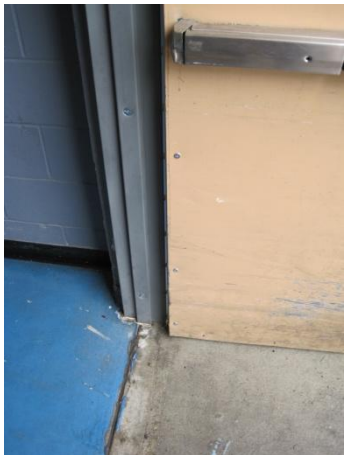
All exterior doors, thresholds, related flashings, sealants and weather-stripping were inspected where accessible for signs of moisture, air-leakage, and other energy-compromising issues. Overall, the doors to conditioned spaces were found to be in acceptable condition with no signs of uncontrolled moisture, air-leakage and/or other energy-comprising issues.

The following specific door/storefront problem spots were identified at unconditioned spaces which could have an effect on conditioned spaces adjacent to unconditioned spaces:

Air Holes in Ticket Slot

Worn Weather-stripping

No Threshold/No Weather-stripping



No Threshold/No Weather-stripping

2.3.6. Building Air Tightness

Overall, the field auditors found the building to be not adequately air-tight with numerous areas of suggested improvements, as described in more detail earlier in this chapter.

The air-tightness of buildings helps maximize all other implemented energy measures and investments, and minimize potentially costly long-term maintenance, repair and replacement expenses.

The air-tightness of buildings helps maximize all other implemented energy measures and investments, and minimize potentially costly long-term maintenance, repair and replacement expenses.

2.4. HVAC systems

2.4.1. Heating

A variety of units provide heating to the ballpark. Each of the eight (8) fan restrooms are heated by a 125 MBH, 80% efficient Reznor gas-fired unit heater, and the batting cage is heated by a 400 MBH unit. The mechanical room (#401), electrical room, and storage room (#376) are each heated by electric unit heaters. The stairway by the administration area is heated by two (2) 4' electric baseboards, the elevator room (#365) is heated by one (1) 8' electric baseboard, and the bar on the 2nd floor is heated by six (6) 8' electric baseboards. The 2nd floor conference room is heated by two (2) Fujitsu ductless split-system heat pumps, located on the administration roof, both of which feed 27.6 MBH of heat to a pair of wall-mounted evaporators with supplemental electric heat.. In 2007, four (4) split-system Carrier heat pumps, which feed four (4) indoor split-system fan coils, were installed on the roof to heat areas of the building that had previously not been used during the winter. Each of these units provides the 2nd floor kitchen, restroom, hallway, bar area, PA room, TV room, and print room with 27.4 MBH of electric heat. The sky boxes on the 3rd and 1st base sides of the stadium are heated by RTU-7 and RTU-8, respectively; these units are Carrier packaged rooftop DX units, both of which provide 36 kW of electric heat to VAV boxes. These suites are only in use from April through September, however, so they are rarely heated. The remainder of the building is heated by seven (7) Carrier packaged rooftop DX units (RTU-1 through RTU-6 and RTU-9), which provide a total of 1,450 MBH of gas heating at 80% efficiency. Four (4) Aristocrat and three (3) Berner air curtains are located above doors and windows in the concession areas.

Carrier packaged rooftop DX unit

2.4.2. Cooling

Many of the same units that provide heating also provide cooling. The four (4) Carrier split-system heat pumps that were installed in 2007 each provide 3 tons of cooling to four (4) split-system indoor fan coils. The two (2) Fujitsu ductless split-system heat pumps, which feed wall-mounted evaporators in the conference room, are each rated at 2 tons. Four (4) additional ductless split-system condensing units – a 3-ton Goodman unit, two 1½-ton EVI units, and a 3-ton EVI unit – provide only cooling to wall-mounted evaporators in the commissary

administration room, 3rd base side elevator room, mechanical room by the administration area, and the electrical room by the batting cages, respectively. The remainder of the building is cooled by the same nine (9) Carrier packaged rooftop DX units that provide most of the building's heating; these units combine for 149 tons of cooling.

Carrier split-system heat pumps

2.4.3. Ventilation

A variety of units provide ventilation for the ballpark. Four (4) Captive Aire kitchen hoods are located in the kitchens. On the roof, there are seven (7) Loren Cook roof hoods, five (5) of which are intake hoods and two (2) of which are combustion hoods; three (3) kitchen exhaust fans (two manufactured by Captive Aire, one by Dayton), used for the concession and kitchen areas; three (3) Captive Aire make-up air units, which serve the kitchen exhaust fans; one (1) Captive Aire dishwasher exhaust fan; and twenty-two (22) Loren Cook roof-mounted exhaust fans, ten (10) used for restroom exhaust, six (6) used for general exhaust, and six (6) used for the kitchen and concession areas.

Loren Cook exhaust fan

2.4.4. Domestic Hot Water

Most of the domestic hot water (DHW) is heated by two large natural gas water heating systems. In the mechanical room on the 3rd base side, domestic water is heated by a 1,255 MBH, 81% efficient Lochinvar boiler, used only for DHW. Water is stored in a 400 gallon Lochinvar tank, and used throughout the entire western wing of the stadium. In the mechanical room on the 1st base side, water used throughout the eastern wing of the stadium is again stored in a 400 gallon Lochinvar tank, but is heated by a 2,618 MBH, 81% efficient Lochinvar boiler. In the janitor's closet (room #362), water for the administration area is heated by a 40 gallon, 3 kW AO Smith electric water heater. All water heating systems are approximately 10 years old and in good working condition.

Lochinvar 400-gallon domestic hot water tank

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. The facility consists primarily of energy efficient lamps and fixtures with electronic ballasts.

Due to the current use of energy efficient lamps and ballasts and the irregular use of the facility the payback on an upgrade of the facility lighting to more energy efficient lamps would be extensive. On an as fail basis 32 Watt lamps should be replaced with 28 Watt lamps. The greatest savings will come from retrofitting the sports (field) lighting. The field lighting energy consumption could be reduced by eliminating lamps and improving the reflectors of the remaining fixtures. The Township and the Blue Claws administration are currently investigation this project.

2.5.2. Appliances and Process

Appliances, such as refrigerators, that are over 10 years of age should be replaced with newer efficient models with the Energy Star label. For example, Energy Star refrigerators use as little as 315 kWh / yr. When compared to the average electrical consumption of older equipment, Energy Star equipment results in a large savings. Building management should select Energy Star label appliances and equipment when replacing: refrigerators, printers, computers, and copy machines, etc.

More information can be found in the "Products" section of the Energy Star website at: http://www.energystar.gov.

In this facility, there are nineteen (19) ice storage bins, nine (9) freezers, eight (8) deep fryers, five (5) convection ovens, two (2) gas grills, seven (7) conveyor ovens, eight (8) walk-in freezers, forty-one (41) refrigerators, ten (10) food warmers, thirteen (9) hot food storage bins and warmers, two (2) food warming racks, twelve (12) pretzel racks, four (4) transfer cabinets, two (2) wine chillers (used for energy drinks), four (4) hot cheese dispensers, two (2) hot chocolate makers, three (3) coffee makers, two (2) pizza storage/warming cabinets, one (1) dishwasher, one (1) power meat slicer, one (1) 10-burner stove with a dual oven, three (3) microwaves, three (3) ice makers, three (3) clothes dryers, two (2) clothes washers, two (2) water coolers, and two (2) kegerators. There are approximately thirty-five (35) computers at this facility, most of which are cash registers. In this facility, most of the appliances found and noted in the attached equipment list were at or past the 10 year threshold and should be considered for the Energy Star program.

2.5.3. Elevators

There are two elevators in the building.

2.6. Domestic Water

In the four fan restrooms, there are a total of twenty-eight (28) urinals that require 1 gallon of water per flush. Due to the frequent use of these units, replacing these with waterless units would result in considerable savings. It should be noted that this would be strictly a cost-saving measure, not an energy-conservation measure.

Category III Recommendation – ECM #1: Install waterless urinals in restrooms.

3. Building Systems Equipment List

Lakewood Blue Claws Stadium							
Building System	Description	Locations	Model #	Fuel	Space Served	Year Installed	Estimated Remaining Useful Life %
Heating	(8) gas-fired unit heater, 125 MBH, 80% efficient	(1) per fan restroom	Reznor, M# F125, S# AZI31K5N76349X	Natural gas	(1) per fan restroom	2000	23%
Heating	Gas-fired unit heater, 400 MBH, 80% efficient	Batting tunnel	Modine	Natural gas	Batting tunnel	2000	23%
Heating	5 kW electric unit heater	Room 401 - Mechanical Room	Taskmaster, M# F1F505N	Electricity	Room 401 - Mechanical Room	2000	33%
Heating	Electric unit heater	Electrical room	Not accessible	Electricity	Electrical room	2000	33%
Heating	Electric unit heater	Storage room, room #376	Not accessible	Electricity	Storage room, room #376	2000	33%
Heating	(2) 4' electric baseboards	Admin stairs	No nameplate	Electricity	Admin stairs	2000	33%
Heating	(6) 8' electric baseboards	2nd floor bar	No nameplate	Electricity	2nd floor bar	2000	33%
Heating	8' electric baseboard	Elevator room (#365)	No nameplate	Electricity	Elevator room (#365)	2000	50%
Heating/ Cooling	RTU-1: 20-ton packaged rooftop DX unit, 360 MBH gas heat, 81% efficient	Roof above kitchen, 3rd base side	Carrier, M# 48TJF024, S# 4300F40728	Electricity/ natural gas	Visitor's locker room	2000	33%
Heating/ Cooling	RTU-2: Packaged rooftop DX unit; 12 1/2 tons, 9.0 EER; 250 MBH gas heating, 80% efficient	Admin roof	Carrier, M# 48TFE014---601GA, S# 4300G30489	Electricity/ natural gas	Admin east, ticket windows	2000	33%

Heating/ Cooling	RTU-3: Packaged rooftop DX unit; 12 1/2 tons, 9.0 EER; 250 MBH gas heating, 80% efficient	Admin roof	Carrier, M# 48TFE014---601GA, S# 4300G30491	Electricity/ natural gas	Admin west	2000	33%
Heating/ Cooling	RTU-4: Packaged rooftop DX unit; 15 tons, 8.6 EER; 230 MBH, 80% efficient	Admin roof	Carrier, M# 48TJD016, S# 4900F48294	Electricity/ natural gas	Retail store	2000	33%
Heating/ Cooling	RTU-5: Packaged rooftop DX unit; 7 1/2 tons, 8.9 EER; 180 MBH gas heating, 80% efficient	Roof above kitchen, 1st base side	Carrier, M# 48TFE008---601GA, S# 4500G34362	Electricity/ natural gas	Home team shower, restroom, hallway	2000	33%
Heating/ Cooling	RTU-6: Packaged rooftop DX unit; 20 tons, 8.6 EER; 360 MBH gas heating, 80% efficient	Roof above kitchen, 1st base side	Carrier, M# 48TJF024, S# 4300F40727	Electricity/ natural gas	Home locker room	2000	33%
Heating/ Cooling	RTU-7: 27-ton packaged rooftop DX unit; 10 HP supply fan w/ VFD; 36 kW electric heat	Roof, above 3rd base side sky boxes	Carrier, M# 50EKB030---610CC, S# 4600F44958	Electricity	Sky boxes (VAV boxes 7-1 through 7-13)	2000	50%
Heating/ Cooling	RTU-8: 27-ton packaged rooftop DX unit; 10 HP supply fan w/ VFD; 36 kW electric heat	Roof, above 1st base side sky boxes	Carrier, M# 50EKB030---610CC	Electricity	Sky boxes (VAV boxes 8-1 through 8-18)	2000	50%
Heating/ Cooling	RTU-9: Packaged rooftop DX unit; 7 1/2 tons, 8.9 EER;	Roof above kitchen, 3rd base side	Carrier, M# 48TFE008---601GA, S# 4500G34359	Electricity	Kitchen, 3rd base side	2000	33%

	180 MBH gas heating, 80% efficient						
Heating/ Cooling	3-ton split-system heat pump, 13 SEER; 27.4 MBH electric heat, 3.44 COP	Admin roof	Carrier, M# 25HBR360A520, S# 3207E01035	Electricity	Kitchen, bathroom, hallway	2007	80%
	Indoor split-system electric fan coil	Kitchen, bathroom, hallway	Carrier, M# FA4CNB060000 AAAA, S# 2807A89178				
Heating/ Cooling	3-ton split-system heat pump, 13 SEER; 27.4 MBH electric heat, 3.44 COP	Admin roof	Carrier, M# 25HBR360A510, S# 2607E33743	Electricity	Bar area	2007	80%
	Indoor split-system electric fan coil	Bar area	Carrier, M# FA4CNB060000 AAAA, S# 2807A89170				
Heating/ Cooling	3-ton split-system heat pump, 13 SEER; 27.4 MBH electric heat, 3.44 COP	Admin roof	Carrier, M# 25HBR360A520, S# S# 4107E10535	Electricity	Bar, PA room	2007	80%
	Indoor split-system electric fan coil	Bar, PA room	Carrier, M# FA4CNB060000 AAAA, S# 2807A89225				
Heating/ Cooling	3-ton split-system heat pump, 13 SEER; 27.4 MBH electric heat, 3.44 COP	Admin roof	Carrier, M# 25HBR360A520, S# 4407E03843	Electricity	TV room, print room, hallway	2007	80%
	Indoor split-system electric fan coil	TV room, print room, hallway	Carrier, M# FA4CNB060000 AAAA, S# 2807A89088				
Heating/ Cooling	(2) 2-ton ductless split-system heat pumps, 18 SEER; 27.6	Admin roof	Fujitsu, M# AOU24RLQ, S# GXN001447	Electricity	Conferenc e room	2000	33%

	MBH electric heat						
	(2) ductless split-system evaporators	Conference room	Fujitsu, M# ASU24RLQ				
Cooling	CU-1: 3-ton ductless split-system condensing unit	Roof above kitchen, 3rd base side	Goodman, M# CKL36-1L, S# 0501752621	Electricity	Commissi on-ary admin	2005	67%
	EV-1: Wall-mounted evaporator	Commissi on-ary admin	Goodman				
Cooling	CU-2: Ductless split-system condensing unit, 18 MBH	Roof above kitchen, 3rd base side	EMI, M# SCC18, S# 1-99-K-7977-42	Electricity	Elevator machine room, 3rd base side	2000	33%
	EV-2: Ductless split-system evaporator	Elevator machine room, 3rd base side	EMI, M# WSP18				
Cooling	CU-3: Ductless split-system condensing unit, 18 MBH	Roof above admin	EMI, M# SCC18	Electricity	Mech. room by admin	2000	33%
	EV-3: Ductless split-system evaporator	Mech. room by admin	EMI, M# WSP18				
Cooling	EV-4: Wall-mounted evaporator	Elec. room by batting cages	EMI	Electricity	Elec. room by batting cages	2000	33%
	CU-4: 3-ton ductless split-system condensing unit	Roof above kitchen, 1st base side	EMI (nameplate weathered)	Electricity			
Domestic Hot Water	400 gallon domestic hot water tank	Room 401 - Mechanical Room	Lochinvar, M# CW2620, S# G0009194 2000	Natural gas	3rd base side	2000	33%
	Circulation pump, 1/25 HP, 3,250 RPM		Taco, M# 007-SF5				
	Expansion tank		Amtrol, M# ST-210V, S# 24804501				

	Hot water boiler, 1,255 MBH, 81% efficient (used for DHW only)	Room 401 - Mechanical Room	Lochinvar, M# CWN1255PM, S# L008357	Natural gas	3rd base side	2000	67%
	Circulation pump	Pipe-mounted	Armstrong, M# 816032-000, S# 0807	Electricity			0%
	Pump motor, 1/2 HP, 1,725 RPM, high-efficiency		Armstrong, M# 70K56B17D77K P, S# 116640-062				44%
Domestic Hot Water	400 gallon domestic hot water tank	Mechanical room, 1st base side	Lochinvar, M# CW2620	Natural gas	1st base side	2000	33%
	Circulation pump, 1/25 HP, 3,250 RPM		Taco, M# 007-SF5				
	Hot water boiler, 2,618 MBH, 81% efficient (used for DHW only)		Lochinvar, M# CWN2620				67%
Domestic Hot Water	40 gallon, 3 kW electric water heater	Room #362 (Janitor)	AO Smith, M# DEN 40 102, S# MA01-1008086-102	Electricity	Admin	2001	40%
Ventilation	Air curtain	Above door	Aristocrat, M# ASR-1-36A, S# ASR1036AA/41286-6	Electricity	Kitchen, 3rd base side	2001	40%
Ventilation	Air curtain	Above door	Aristocrat, M# ASR-1-36A, S# ASR1036AA/41286-4	Electricity	Kitchen, 3rd base side	2001	40%
Ventilation	Air curtain	Above window	Berner, M# FZP-1-36, S# EZP1036AA/4I	Electricity	Kitchen, 3rd base side	2001	40%
Ventilation	Air curtain	Above window	Berner, M# FZP-1-36	Electricity	Kitchen, 3rd base side	2001	40%
Ventilation	(2) air curtains	Right field kitchen, above doors	Aristicrat, M# ASR-1-36A	Electricity	Right field kitchen, above doors	2001	50%
Ventilation	Air curtain	Right field kitchen, above window	Berner, M# FZP-1-36	Electricity	Right field kitchen, above window	2001	40%

Ventilation	(2) kitchen hoods	Kitchen, 3rd base side	Captive Aire, M# 4224 VH1	Electricity	Kitchen, 3rd base side	2000	50%
Ventilation	(2) air curtains	Above door	Aristocrat, M# ASR-1-36A, S# ASR1036AA/41266-8	Electricity	Room 411 - General commissi on-ary kitchen	2001	40%
Ventilation	(2) kitchen hoods	Room 411 - General commissi on-ary kitchen	Captive Aire, M# 4224 VH1	Electricity	Room 411 - General commissi on-ary kitchen	2000	50%
Ventilation	(2) air curtains	Above doors	Aristicrat, M# ASR-1-36A	Electricity	Kitchen by commissi on-ary admin	2001	50%
Ventilation	(2) air curtains	Above doors	Aristicrat, M# ASR-1-36A	Electricity	Kitchen by commissi on-ary admin	2001	50%
Ventilation	Air curtain	Kitchen by commissi on-ary admin	FWE, M# TS-1826-18	Electricity	Kitchen by commissi on-ary admin	2000	50%
Ventilation	EF-1: Ventilation fan, 5,400 CFM, 1 HP, 800 RPM	Roof above kitchen, 1st base side	Loren Cook, M# 225C7B, S# 215S628591000000701 0101	Electricity	Restroom exhaust	2000	50%
Ventilation	EF-2: Exhaust fan, 200 CFM, 1/25 HP, 1,600 RPM	Roof above kitchen, 1st base side	Loren Cook, M# 90C15DM, S# 215S628591000007701 0101	Electricity	Restroom exhaust	2000	50%
Ventilation	EF-3: Exhaust fan, 200 CFM, 1/25 HP, 1,600 RPM	Roof above kitchen, 1st base side	Loren Cook, M# 90C15DM, S# 215S628591000007702 0101	Electricity	Restroom exhaust	2000	50%
Ventilation	EF-4: Exhaust fan, 1/3 HP, 790 RPM, 2,750 CFM	Roof above kitchen, 3rd base side	Loren Cook, M# 180C4B, S# 215S662859100000970 10101	Electricity	Restroom exhaust	2000	50%

Ventilation	EF-5: Exhaust fan, 600 CFM, 1/4 HP, 1,375 RPM	Roof above kitchen, 3rd base side	Loren Cook, M# 100C3B, S# 215S628591000010701 0101	Electricity	Restroom exhaust	2000	50%
Ventilation	EF-6: Exhaust fan, 600 CFM, 1/4 HP, 1,375 RPM	Roof above kitchen, 3rd base side	Loren Cook, M# 100C3B	Electricity	Visitor's locker room, general exhaust	2000	50%
Ventilation	EF-7: Exhaust fan, 4,000 CFM, 3/4 HP, 1,055 RPM	Roof above kitchen, 3rd base side	Loren Cook, M# 180C6B, 215S628591000012701 0101	Electricity	Concessio n, 3rd base side	2000	50%
Ventilation	EF-8: Exhaust fan, 4,000 CFM, 3/4 HP, 1,055 RPM	Roof	Loren Cook, M# 195C5B, S# 215S628591000013701 0101	Electricity	Restroom exhaust	2000	50%
Ventilation	EF-9: Exaust fan, 325 CFM, 1/4 HP, 925 RPM	Roof above admin	Loren Cook	Electricity	General exhaust, admin	2000	50%
Ventilation	EF-10: Exhaust fan, 3,270 CFM, 1/2 HP, 910 RPM	Roof	Loren Cook, M# 195C5B, S# 215S628591000013702 0101	Electricity	Restroom exhaust	2000	50%
Ventilation	EF-11: Exhaust fan, 5,400 CFM,1 HP, 755 RPM	Roof above batting cages	Loren Cook	Electricity	General exhaust, batting cages	2000	50%
Ventilation	EF-12: Exhaust fan, 850 CFM, 1/4 HP, 1,210 RPM	Roof above kitchen, 1st base side	Loren Cook, M# 120C3B, S# 2153628591000001701 0101	Electricity	Restroom exhaust	2000	50%
Ventilation	EF-13: Exhaust fan, 1,800 CFM, 1/3 HP, 1,125 RPM	Roof above kitchen, 1st base side	Loren Cook (no nameplate)	Electricity	General exhaust	2000	50%
Ventilation	EF-14: Exhaust fan, 3/4 HP, 1,055 RPM, 4,000 CFM	Roof above kitchen, 1st base side	Loren Cook, M# 180C6B, S# 215S628591000012702 0101	Electricity	Kitchen exhaust	2000	50%

Ventilation	EF-15: Exhaust fan, 2,750 CFM, 1/3 HP, 740 RPM	Roof above kitchen, 1st base side	Loren Cook, M# 195C5B, S#215S6285910000037 010101	Electricity	Storage exhaust	2000	50%
Ventilation	EF-16: Exhaust fan, 600 CFM, 1/4 HP, 1,375 RPM	Roof above lobby	Loren Cook	Electricity	Restroom exhaust	2000	50%
Ventilation	EF-17: Exhaust fan, 100 CFM, 1/60 HP, 1,300 RPM	Roof above lobby	Loren Cook	Electricity	Restroom exhaust	2000	50%
Ventilation	EF-19: Exhaust fan, 3,000 CFM, 1/2 HP, 855 RPM	Roof above kitchen, 3rd base side	Loren Cook, M# 180C5B, S# 215S628591000006 7010101	Electricity	Vendor commissi on-ary general exhaust	2000	50%
Ventilation	EF-20: Exaust fan, 2,000 CFM, 1/4 HP, 825 RPM	Roof above kitchen, 3rd base side	Loren Cook, M# 165C3B, S# 215S628591000008701 0101	Electricity	Concessio n, 3rd base side	2000	50%
Ventilation	EF-21: Concession fan, 2,000 CFM, 1/4 HP, 825 RPM	Roof above kitchen, 1st base side	Loren Cook, M# 165C3B, S# 215S628591000008702 0101	Electricity	Concessio n exhaust	2000	50%
Ventilation	EF-22: Exhaust fan, 3,000 CFM, 1/2 HP, 855 RPM	Roof above kitchen, 1st base side	Loren Cook, M# 180C5B, S# 215S628591000006702 0101	Electricity	Kitchen exhaust	2000	50%
Ventilation	KEF-1: 3,500 CFM1.5 HP, 803 RPM	Roof above kitchen, 3rd base side	Dayton, M# 4YY20, S# 11867844 0909	Electricity	Kitchen	2000	50%
Ventilation	MAU-1: Make-up air unit, 1 HP, 2,800 CFM, 722 RPM	Roof above kitchen, 3rd base side	Captive Aire, M# NRIP B-NSAU-2-G12-NCA24B	Electricity	KEF-1	2000	50%
Ventilation	KEF-2: Exhaust fan, 3 HP, 465 RPM, 6,400 CFM	Roof above kitchen, 3rd base side	Captive Aire, M# NCA24BFT	Electricity	Concessio n, 3rd base side	2000	50%

Ventilation	MAU-2: Make-up air unit, 3 HP, 5,120 CFM, 700 RPM	Roof above kitchen, 3rd base side	Captive Aire, M# NRIP B-NSAU-2-G15-NCA24B	Electricity	KEF-2	2000	50%
Ventilation	KEF-3: Exhaust fan, 1.5 HP	Roof above kitchen, 1st base side	Captive Aire, M# NCA24BFT	Electricity	Concession, 1st base side	2000	50%
Ventilation	MAU-3: Make-up air unit, 3 HP, 5,120 CFM, 700 RPM	Roof above kitchen, 3rd base side	Captive Aire, M# NRIP B-NSAU-2-G15-NCA24B	Electricity	KEF-2	2000	50%
Ventilation	DEF-1: Exhaust fan, 700 CFM, 1/3 HP	Roof above kitchen, 3rd base side	Caprive Aire, M# NCA14BFT	Electricity	Dishwasher	2000	50%
Ventilation	RH-1: Intake hood, 3,000 CFM	Roof above kitchen, 3rd base side	Loren Cook, M# 24X36 VI, S# 215S628591000015701 0101	Electricity	Kitchen	2000	50%
Ventilation	RH-2: Intake hood, 2,000 CFM	Roof above kitchen, 3rd base side	Loren Cook, M# 24X24 VI, S# 215S628591000016501 0101	Electricity	Kitchen	2000	33%
Ventilation	RH-3: Intake hood, 2,000 CFM	Roof above kitchen, 1st base side	Loren Cook, M# 24X24 VI, S# 215S628591000016502 0101	Electricity	Kitchen	2000	50%
Ventilation	RH-4: Intake hood, 3,000 CFM	Roof above kitchen, 1st base side	Loren Cook, M# 24X36 VI, S# 215S628591000015702 0101	Electricity	Concession area	2000	50%
Ventilation	RH-5: Intake hood, 800 CFM	Roof above kitchen, 3rd base side	Loren Cook, M# 12X24 VI, S# 215S628591000017301 0101	Electricity	Kitchen	2000	50%
Ventilation	RH-6: Combustion hood	Roof above kitchen, 1st base side	Loren Cook, M# 20X66 VI, S# 215S628591000018101 0101	Electricity	Maintenance	2000	50%

Ventilation	RH-7: Combustion hood	Roof above kitchen, 3rd base side	Loren Cook, M# 18X36 VI, S# 215S628591000018801 0101	Electricity	Concessio n, 3rd base side	2000	50%
Elevator	Elevator submersible hydraulic pump	Elevator room (#365)	Schindler Elevator, M# EOB 187	Electricity	Elevator room (#365)	2000	50%
	Pump motor, 25 HP, 3,440 RPM, 75.5% efficient, 87.9% PF		US Electric, M# D10-H12684-M				
Appliances	Ice storage bin	Kitchen, 3rd base side	Follett, M# LSG114S, S# A21293-03100	Electricity	Kitchen, 3rd base side	2000	47%
Appliances	Freezer	Kitchen, 3rd base side	Cold Tech	Electricity	Kitchen, 3rd base side	2000	47%
Appliances	(3) deep fryers	Kitchen, 3rd base side	Pitco	Electricity	Kitchen, 3rd base side	2000	50%
Appliances	Convection oven	Kitchen, 3rd base side	Vulcan, M# VC4ES 1, S# 481354869	Electricity	Kitchen, 3rd base side	2000	50%
Appliances	Gas grill	Kitchen, 3rd base side	Star Max	Natural gas	Kitchen, 3rd base side	2000	50%
Appliances	(2) convection ovens	Kitchen, 3rd base side	Vulcan, M# VC4CS 13, S#481352775 NX	Natural gas	Kitchen, 3rd base side	2000	50%
Appliances	(2) conveyor ovens, 110 MBH each	Kitchen, 3rd base side	Lincoln, M# 1600-000-A	Natural gas	Kitchen, 3rd base side	2000	50%
Appliances	Walk-in freezer	Kitchen, 3rd base side	Bally, M# BA82P-A-S2A, S# 00040381	Electricity	Kitchen, 3rd base side	2000	47%
	Air-cooled condensing unit		Bally, M# RPH100M6-HT3A-BA, S# 000400707				33%
Appliances	(3) refrigerators	Kitchen, 3rd base side	Beverage-Air, M# BKV UCF67	Electricity	Kitchen, 3rd base side	2000	47%
Appliances	Food warmer, 2,050 W	Kitchen, 3rd base side	Food Warming Equipment, M# TS-1826-18, S# 06126883	Electricity	Kitchen, 3rd base side	2000	50%
Appliances	(9) food storage bins/warmers,	Concessi on stand, 3rd base	Toastmaster, M# 3B82D, S# 101510101	Electricity	Concessio n stand, 3rd base	2000	50%

	1 kW	side			side		
Appliances	(7) ice storage bins	Concession stand, 3rd base side	No nameplate	Electricity	Concession stand, 3rd base side	2000	47%
Appliances	Food warming rack, 1,280 W	Concession stand, 3rd base side	Star Max, M# 8D-HFD-1-CR, S# H1806179	Electricity	Concession stand, 3rd base side	2007	70%
Appliances	(2) soda refrigerators	Concession stand, 3rd base side	True, M# GDM-33, S# 1-4064246	Electricity	Concession stand, 3rd base side	2000	47%
Appliances	(2) small refrigerators	Concession stand, 3rd base side	True, M# GDM-7, S# 1-2968705	Electricity	Concession stand, 3rd base side	2000	47%
Appliances	(5) pretzel racks, 965 W	Concession stand, 3rd base side	J&J Snack Foods, M# 825, S# 11025-01603	Electricity	Concession stand, 3rd base side	2000	33%
Appliances	Coffee maker, 100 W	Concession stand, 3rd base side	Curtis, M# GEM-5-02, S# 10918162	Electricity	Concession stand, 3rd base side	2006	60%
Appliances	Pizza storage/warming cabinet	Concession stand, 3rd base side	Baker's Pride	Electricity	Concession stand, 3rd base side	2000	33%
Appliances	(2) transfer cabinets	Concession stand, 3rd base side	Marshall, M# CB1, S# 0101H01901	Electricity	Concession stand, 3rd base side	2000	33%
Appliances	(2) hot food storage	Concession stand, 3rd base side	JJ Connelly, M# BW-2A, S# 28-9386	Electricity	Concession stand, 3rd base side	2001	40%
Appliances	Wine chiller	Concession stand, 3rd base side	Avanti, M# WC191BG/192SS, S# 07402A23	Electricity	Concession stand, 3rd base side	2005	74%
Appliances	(2) cheese dispensers, 200 W	Concession stand, 3rd base side	AFP Dispensers, M# Sierra, S# MI037096	Electricity	Concession stand, 3rd base side	2000	33%
Appliances	Coffee maker	Concession stand, 3rd base	Curtis	Electricity	Concession stand, 3rd base	2000	33%

		side			side		
Appliances	Hot chocolate maker, 1.7 kW	Concession stand, 3rd base side	Curtis, M# SCHC-1D-10-02, S# 10204314	Electricity	Concession stand, 3rd base side	2001	40%
Appliances	(2) walk-in freezers (one locked)	Room 404 - Kitchen	Bally, M# BF87P-ED-S2A, S# 00033625	Electricity	Room 404 - Kitchen	2000	47%
Appliances	Dishwasher	Room 411 - General commissi on-ary kitchen	Hobart	Electricity	Room 411 - General commissi on-ary kitchen	2000	50%
Appliances	Meat slicer, 1/2 HP, 1,725 RPM	Room 411 - General commissi on-ary kitchen	Hobart, M# 2712, S# 561-141-377	Electricity	Room 411 - General commissi on-ary kitchen	2000	50%
Appliances	(2) freezers	Room 411 - General commissi on-ary kitchen	Cold Tech, M# J4SFF-40B, S# FF40-0010-062	Electricity	Room 411 - General commissi on-ary kitchen	2000	47%
Appliances	Refrigerator, 1/2 HP	Room 411 - General commissi on-ary kitchen	True, M# TWT-60F, S# 1-3709906	Electricity	Room 411 - General commissi on-ary kitchen	2000	47%
Appliances	(2) deep fryers	Room 411 - General commissi on-ary kitchen	Pitco	Electricity	Room 411 - General commissi on-ary kitchen	2000	50%
Appliances	(2) convection ovens	Room 411 - General commissi on-ary kitchen	Vulcan, M# VC4GS, S# 481352771 NX	Electricity	Room 411 - General commissi on-ary kitchen	2000	50%
Appliances	Gas grill, 40 MBH, 87.5% efficient	Room 411 - General commissi	Star, M# 6024CBB, S# 61241487	Natural gas	Room 411 - General commissi on-ary	2000	50%

		on-ary kitchen			kitchen		
Appliances	10-burner stove/dual oven	Room 411 - General commissi on-ary kitchen	Vulcan	Natural gas	Room 411 - General commissi on-ary kitchen	2000	50%
Appliances	Food warmer	Room 411 - General commissi on-ary kitchen	Wells Mfg., M# SMPT, S# PT11616	Electricity	Room 411 - General commissi on-ary kitchen	2000	50%
Appliances	Food warmer, 1,200 W	Room 411 - General commissi on-ary kitchen	Admiral Craft, M# FW-1200WF	Electricity	Room 411 - General commissi on-ary kitchen	2006	75%
Appliances	Walk-in freezer	Room 411 - General commissi on-ary kitchen	Bally, M# BA82P-A-S2A, S# 00040382	Electricity	Room 411 - General commissi on-ary kitchen	2000	50%
Appliances	Microwave	Room 411 - General commissi on-ary kitchen	Panasonic, M# NE-1257R	Electricity	Room 411 - General commissi on-ary kitchen	2000	33%
Appliances	Ice maker	Left field concessio n hallway	Scotsman	Electricity	Left field concessio n hallway	2000	47%
Appliances	Ice maker	Left field concessio n hallway	Hoshizaki, M# KM-1200SWE	Electricity	Left field concessio n hallway	2000	47%
Appliances	(2) refrigerators, 1/2 HP	Left field concessio n hallway	True, M# TR2RRI-2S	Electricity	Left field concessio n hallway	2000	47%
Appliances	(6) food warmers/conve ction ovens, 2,050 W	Left field concessio n hallway	FWE, M# TS-1826-18	Electricity	Left field concessio n hallway	2000	50%
Appliances	(2) walk-in freezers (locked)	Kitchen by commissi	Bally	Electricity	Kitchen by commissi	2000	47%

		on-ary admin			on-ary admin		
Appliances	Refrigerator	Kitchen by commissi on-ary admin	No nameplate	Electricity	Kitchen by commissi on-ary admin	2000	47%
Appliances	Refrigerator	Kitchen by commissi on-ary admin	Beverage-Air, M# ABU EF74-5AS	Electricity	Kitchen by commissi on-ary admin	2000	47%
Appliances	Refrigerator	Room 403	No nameplate	Electricity	Room 403	2000	47%
Appliances	Refrigerator	Snack stand	M# MT45	Electricity	Snack stand	2000	47%
Appliances	(2) pretzel racks, 965 W	Snack stand	J&J Snack Foods, M# 825	Electricity	Snack stand	2000	33%
Appliances	Water cooler	Umpire's locker room	Oasis, M# BPE1SK-D101, S# 9940489313	Electricity	Umpire's locker room	2000	50%
Appliances	Clothes dryer	Visiting team's hallway	No nameplate	Electricity	Visiting team's hallway	2000	50%
Appliances	Clothes washer	Visiting team's hallway	Continental, M# L1050PM21010, S# 1021168H98	Electricity	Visiting team's hallway	2000	50%
Appliances	Microwave, 1.5 kW	Visiting team's hallway	Daewoo, M KOR-1NOA, S# TM09E03905836	Electricity	Visiting team's hallway	2009	93%
Appliances	Water cooler	Visiting team's hallway	Oasis, M# PDT1AQHK--D100, S# 0403010722	Electricity	Visiting team's hallway	2000	50%
Appliances	(2) ice storage	3rd base party deck	No nameplate	Electricity	3rd base party deck	2000	47%
Appliances	Kegerator	3rd base party deck	Beverage-Air, M# BKV BM23	Electricity	3rd base party deck	2000	47%
Appliances	(20) Mini-fridge (one in each sky box)	Sky boxes	Haier	Electricity	Sky boxes	2000	47%
Appliances	Kegerator	Party deck, right field	Beverage-Air, M# BKV BM23	Electricity	Party deck, right field	2000	47%
Appliances	Ice storage	Party deck, right field	No nameplate	Electricity	Party deck, right field	2000	47%

Appliances	Ice maker	Trainer's room	Hoshizaki, M# F-450MAF	Electricity	Trainer's room	2000	47%
Appliances	Clothes dryer	Home team's laundry room	Huebsh, M# HT075NMTB1G1 W03, S# 0502012761	Electricity	Home team's laundry room	2000	50%
Appliances	Clothes dryer	Home team's laundry room	Continental, M# L1050PM21010, S# 1021384M98	Electricity	Home team's laundry room	2000	50%
Appliances	Clothes washer	Home team's laundry room	Maytag, M# MAT13MNAAW, S# 26362696YU	Electricity	Home team's laundry room	2000	50%
Appliances	Ice storage bin	Right field kitchen	Follett, M# LD124S, S# A21276-03100	Electricity	Right field kitchen	2000	47%
Appliances	(3) deep fryers	Right field kitchen	Pitco	Electricity	Right field kitchen	2000	50%
Appliances	Freezer	Right field kitchen	ColdTech, M# J6SFF-61B, S# FF61-0010-009	Electricity	Right field kitchen	2000	47%
Appliances	Conveyor toaster	Right field kitchen	Neico	Electricity	Right field kitchen	2000	50%
Appliances	Food warmer, 2,050 W	Right field kitchen	FEW, M# TS-1826-18, S# 06126881	Electricity	Right field kitchen	2000	50%
Appliances	(2) convection ovens	Right field kitchen	Vulcan	Electricity	Right field kitchen	2000	50%
Appliances	(2) conveyor ovens, 110 MBH each	Right field kitchen	Lincoln, M# 1600-000-A	Natural gas	Right field kitchen	2000	50%
Appliances	Refrigerator	Right field kitchen	Beverage-Air, M# BKV UCF67	Electricity	Right field kitchen	2000	47%
Appliances	Refrigerator	Right field kitchen	Beverage-Air, M# BKV UCR48A	Electricity	Right field kitchen	2000	47%
Appliances	Ice storage bin	Right field kitchen	Master-Bilt	Electricity	Right field kitchen	2000	47%
Appliances	Walk-in freezer	Right field kitchen	Bally, M# BA102P-A-S2A, S# 00012371	Electricity	Right field kitchen	2000	47%
	Condensing unit for walk-in freezer	Roof	Hoshizaki, M# URC-24F, K10481J				

Appliances	(4) freezers	Concession stand, right field	Elcold, M# EL 51 LT, S# 03031867	Electricity	Concession stand, right field	2003	63%
Appliances	Freezer (not plugged in - storage only)	Concession stand, right field	No nameplate	Electricity	Concession stand, right field	Approx. 1990	0%
Appliances	Soda refrigerator	Concession stand, right field	True, M# GDM-33, S# 1-4064244	Electricity	Concession stand, right field	2000	47%
Appliances	(4) pretzel racks, 965 W	Concession stand, 1st base side	J&J Snack Foods, M# 825	Electricity	Concession stand, 1st base side	2000	33%
Appliances	(2) cheese dispensers, 200 W	Concession stand, 1st base side	AFP Dispensers, M# Sierra	Electricity	Concession stand, 1st base side	2000	33%
Appliances	Food warming rack, 1,280 W	Concession stand, 1st base side	Star Max, M# 8D-HFD-1-CR	Electricity	Concession stand, 1st base side	2007	70%
Appliances	Hot chocolate maker, 1.7 kW	Concession stand, 1st base side	Curtis, M# SCHC-1D-10-02	Electricity	Concession stand, 1st base side	2001	40%
Appliances	(2) soda refrigerators	Concession stand, 1st base side	True, M# GDM-33	Electricity	Concession stand, 1st base side	2000	47%
Appliances	(6) ice chests/coolers	Concession stand, 1st base side	Universal Stainless, Inc.	Electricity	Concession stand, 1st base side	2000	47%
Appliances	Coffee maker	Concession stand, 1st base side	Gemini, M# 312IL	Electricity	Concession stand, 1st base side	2000	33%
Appliances	(2) small refrigerators	Concession stand, 1st base side	True, M# GDM-7	Electricity	Concession stand, 1st base side	2000	47%
Appliances	Pizza storage/warming cabinet	Concession stand, 1st base side	Baker's Pride	Electricity	Concession stand, 1st base side	2000	33%
Appliances	(2) transfer cabinets	Concession stand, 1st base side	Marshall, M# CB1	Electricity	Concession stand, 1st base side	2000	33%

Appliances	Wine chiller	Concession stand, 1st base side	Avanti, M# WC191BG/192SS	Electricity	Concession stand, 1st base side	2005	74%
Appliances	(2) hot food storage	Concession stand, 1st base side	JJ Connelly, M# BW-2A	Electricity	Concession stand, 1st base side	2001	40%

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 and BSG 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 Improvements:

Based on the findings of SWA/BSG's survey, capital improvements measures are not recommended, due to the age and condition of the building.

Category II: Operations & Maintenance:

- Improve grease maintenance and monitor\replace when needed the deteriorating roof membrane over the kitchen.
- Weather-strip jambs and the bottoms of exterior doors and doors adjacent to condition spaces

Category III Recommendations: Energy Conservation Measures:

Summary Table

ECM #	Description
1	Plumbing Upgrade
2	824-kW Roof-Mounted PV System

ECM #1: Upgrade Plumbing Fixtures

Description:

In the four fan restrooms, there are a total of twenty-eight (28) urinals that require 1 gallon of water per flush. Due to the frequent use of these units, replacing these with waterless units would result in considerable savings. It should be noted that this would be strictly a cost-saving measure, not an energy-conservation measure.

Installation cost: Waterless urinals: $750 each
Total: $21,000
Source of cost estimate: Vendor website, RS Means CostWorks 2009

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_2 Reduced, lbs/yr
1	Plumbing Upgrade	Similar Projects	$21,000	$0	$21,000	0	0.00	0	0.00	$0.00	$3,259	15	$38,347	6.44	83%	6%	13%	$17,904	0

Assumptions:

The cost per gallon of water is approximately $0.0075/gal. In the past decade, the Lakewood BlueClaws have attracted a total attendance of 4,456,533 fans, or 6,366 fans per game (98% of the stadium's total capacity) for a 70-game season. It can be assumed that 65% of these fans are male, and that each male uses the urinals 1½ times per game.

Rebates/financial incentives:

No rebates or incentives available for this measure at this time.

ECM #2: 824-kW Roof-Mounted PV System

Description:

Currently, FirstEnergy Park does not use any renewable energy systems. Renewable energy systems, such as photovoltaic panels, can be mounted on the roof of the facility and can offset a significant portion of the purchased electricity for the building. Power stations generally have two separate electrical charges: usage and demand. Usage is the amount of electricity in kilowatt-hours that a building uses from month to month. Demand is the amount of electrical power that a building uses at any given instance in a month period. During the summer periods, when electric demand at a power station is high due to the amount of air conditioners, lights, equipment, etc. being used within the region, demand charges go up to offset the utility's cost to provide enough electricity at that given time. Photovoltaic systems not only offset the amount of electricity use by a building, but also reduce the building's electrical demand, resulting in a higher cost savings as well. SWA/BSG presents below the economics of installing a 824-kW PV system to offset electrical demand for the building and reduce the annual net electric consumption for the building. A system of 3,584 commercial multi-crystalline 230 watt panels would generate 876,566 kWh of electricity per year, or 51.1% of FirstEnergy Park's annual electric consumption.

Installation cost:

Estimated installed cost: $9,891,840; SREC revenue included in "Total 1st Year Savings"
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_2 Reduced, lbs/yr
2	824-kW Roof-Mounted PV System	Similar Projects	$9,891,840	$0	$9,891,840	876,566	232.11	0	51.24	$0	$585,299	30	$11,181,129	16.90	13%	0%	4%	$1,580,279	1,200,895

Assumptions:
Cost of installation was estimated, using data from similar projects, at approximately $7,000 per kW. Annual energy savings were calculated via "PV Watts", an online tool on the website of the National Renewable Energy Laboratory.

Rebates/financial incentives:

This ECM is eligible for New Jersey's Solar Renewable Energy Certificates (SREC). SRECs are marketable certificates issued to the owner of a PV system for each 1,000 kWh (1MWh) of electricity generated. SRECs are sold or traded separately from the power generated; the income from the sale of the SREC can be used to offset the cost of the system by applying the revenue to a loan payment or debt service. The value of the SREC is market driven, and is controlled by the amount of the Solar Alternative Compliance Payment (SACP) which is set by the NJBPU. The SREC market is derived from New Jersey's Renewable Portfolio Standard (RPS), which requires that all licensed energy suppliers in the state invest in energy generated from renewable sources, with specific requirements for solar power. If a supplier does not invest by purchasing SRECs, the supplier must pay the SACP for a percentage of the total annual power produced. Since SRECs typically trade just below the SACP, there is an incentive for the supplier to buy SRECs. The SREC Program provides a

market for SRECs to be created and verified on the owner's behalf. The New Jersey Clean Energy program facilitates the sale of SRECs to New Jersey electric suppliers. PV system owners in New Jersey with a grid-connected PV system are eligible to participate in New Jersey's SREC Program.

The NJBPU has stated its intention to continue to operate a program of rebates and SRECs, On September 12, 2007, the NJBPU approved an SREC only pilot incentive program. The program set the SACP at an initial value of $711, decreasing annually for an eight (8) year period. SRECs would be generated for fifteen (15) years (referred to as the Qualification Life), and have a two (2) year trading life. The NJBPU believes that to achieve an internal rate of return of twelve (12) percent, the target SREC price would be $611, reducing by three (3) percent per year for the same eight (8) year period that the SACP is set.

BSG/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, 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

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 par 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/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

As a result of our study, a canopy over the parking lot of the Lakewood Blue Claws Stadium has been identified as conducive for the application of a Photovoltaic (PV) system.

Based on the goal of generating as much of the stadium's electric load as possible utilizing renewable energy while meeting the limitations of usable space available and rebate requirements, a PV system with a design capacity of 824 kW was selected. The total annual generating capacity of the system is 876,566 kWh as estimated using PV WATTS calculator provided by the Department of Energy (DOE), National Renewable Energy Laboratory (NREL).

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

Station Identification	
City:	Atlantic_City
State:	New_Jersey
Latitude:	39.45° N
Longitude:	74.57° W
Elevation:	20 m
PV System Specifications	
DC Rating:	824.3 kW
DC to AC Derate Factor:	0.770
AC Rating:	634.7 kW
Array Type:	Fixed Tilt
Array Tilt:	0.0°
Array Azimuth:	180.0°
Energy Specifications	
Cost of Electricity:	11.2 ¢/kWh

Results			
Month	Solar Radiation (kWh/m^2/day)	AC Energy (kWh)	Energy Value ($)
1	2.09	38872	4353.66
2	2.87	50239	5626.77
3	3.95	76418	8558.82
4	4.95	90985	10190.32
5	5.73	106924	11975.49
6	6.09	105539	11820.37
7	5.97	105667	11834.70
8	5.32	94888	10627.46
9	4.48	78124	8749.89
10	3.28	59228	6633.54
11	2.20	38135	4271.12
12	1.80	31548	3533.38
Year	4.07	876566	98175.39

This proposed PV system would include 3,584 flat, crystalline PV modules installed on a canopy over the parking lot. The system is based on commonly used 230 Watt PV modules, and one (1) inverter for conversion to AC power.

The proposed system would generate approximately 51 percent of the electric power consumed annually by the Lakewood Blue Claws Stadium. It is noted this system would supplement the utility power supply since PV electricity production is based on weather and the system size is limited to 51 percent. The estimated cost of construction would be approximately $9,891,840 for this system. The system that is being recommended would not meet the qualifications for an upfront incentive through the New Jersey Clean Energy Program. The approximate annual savings would be $585,299, which would make the approximate payback 16.9 years

PV System – Lakewood Blue Claws Stadium		
	Savings	**Cost**
Estimated Cost Of Construction		$9,891,840
REIP Incentive		$0
Township Investment		$9,891,840
First Year Electric Energy Savings	$149,016	
Estimated Annual SREC Revenue	$438,283	
Annual Maintenance		$2000
First Year Savings	$585,299	
Simple Payback Analysis	Approximately 16.9 Years	

If the Client is interested in moving forward, a structural analysis of the roofs must be performed to confirm they will support the addition of PV modules.

5.3. Solar Thermal Collectors

Solar thermal collectors are feasible for this location based on the shading and amount of roof area available with unobstructed southern exposure. Installation of a solar thermal hot water heat system would reduce the space available for photovoltaic modules and would be redundant to the current domestic hot water system.

5.4. Combined Heat and Power

Combined Heat Power is not applicable to this project because of the lack of available resources and the demand for heat and hot water is being met by the high efficiency boilers currently in place

5.5. Geothermal

Geothermal is not applicable to this project. A geothermal system would require the existing heating distribution system to be removed and replaced with a heat pump system. Large underground vertical or horizontal loop systems would need to be installed beneath the existing concrete pad and asphalt. These modifications to the existing heat distribution system would be extremely disruptive to the use of the stadium and the surrounding neighborhood in addition to the high cost of such an installation and retrofit.

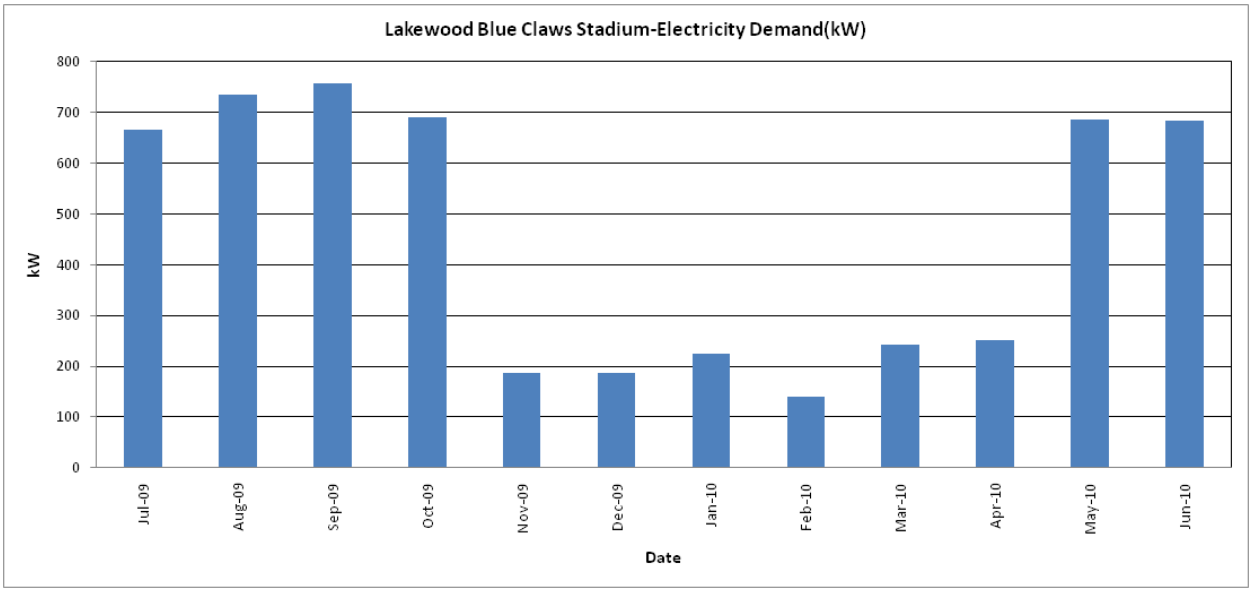
5.6. Wind

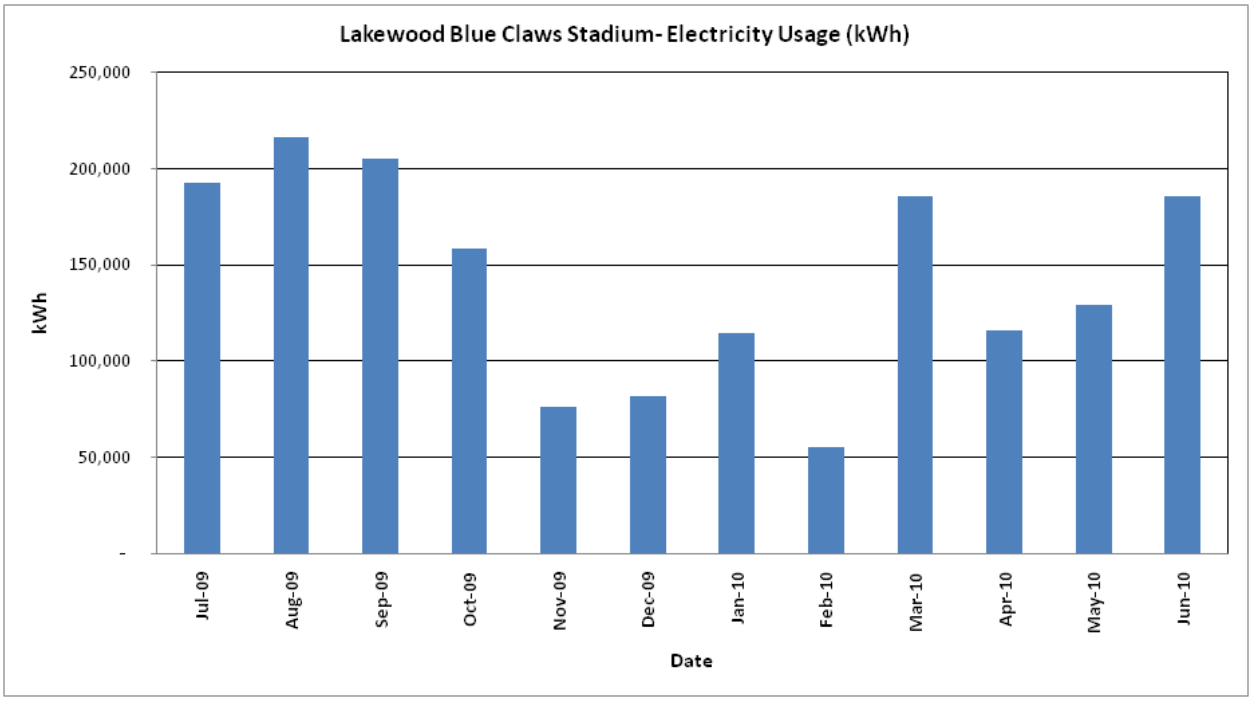
Wind power production is not appropriate for this location because required land is not available for the wind turbine. Also, the available wind energy resource is very low.

6. ENERGY PURCHASING AND PROCUREMENT STRATEGIES

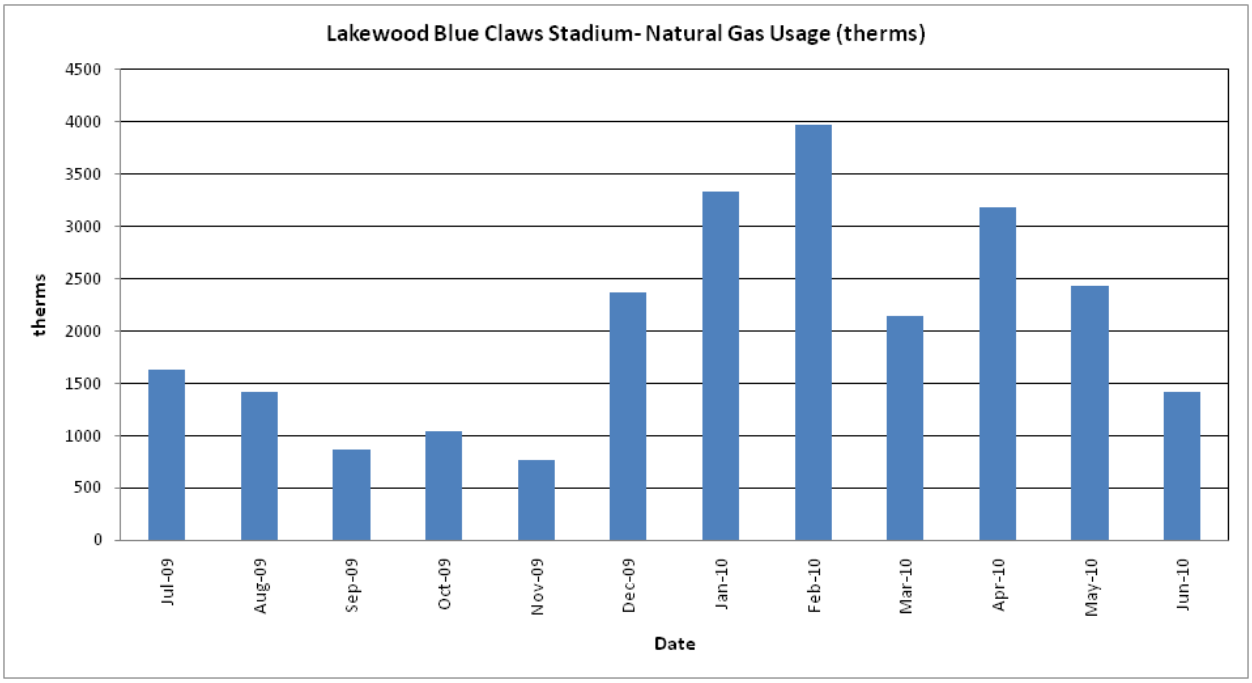
6.1. Energy Purchasing

The average electrical peak demand for the previous year was 454.2 kW and the maximum peak demand was 756.8 kW. The electric and gas load profiles for this project are presented in the following charts. The first chart shows electric demand (in kW) for the previous 12 months and the other two charts show electric and gas usage (in kWh), respectively.





The electrical demand peaks (except for a few fluctuations) reflect the electrical consumption peaks.



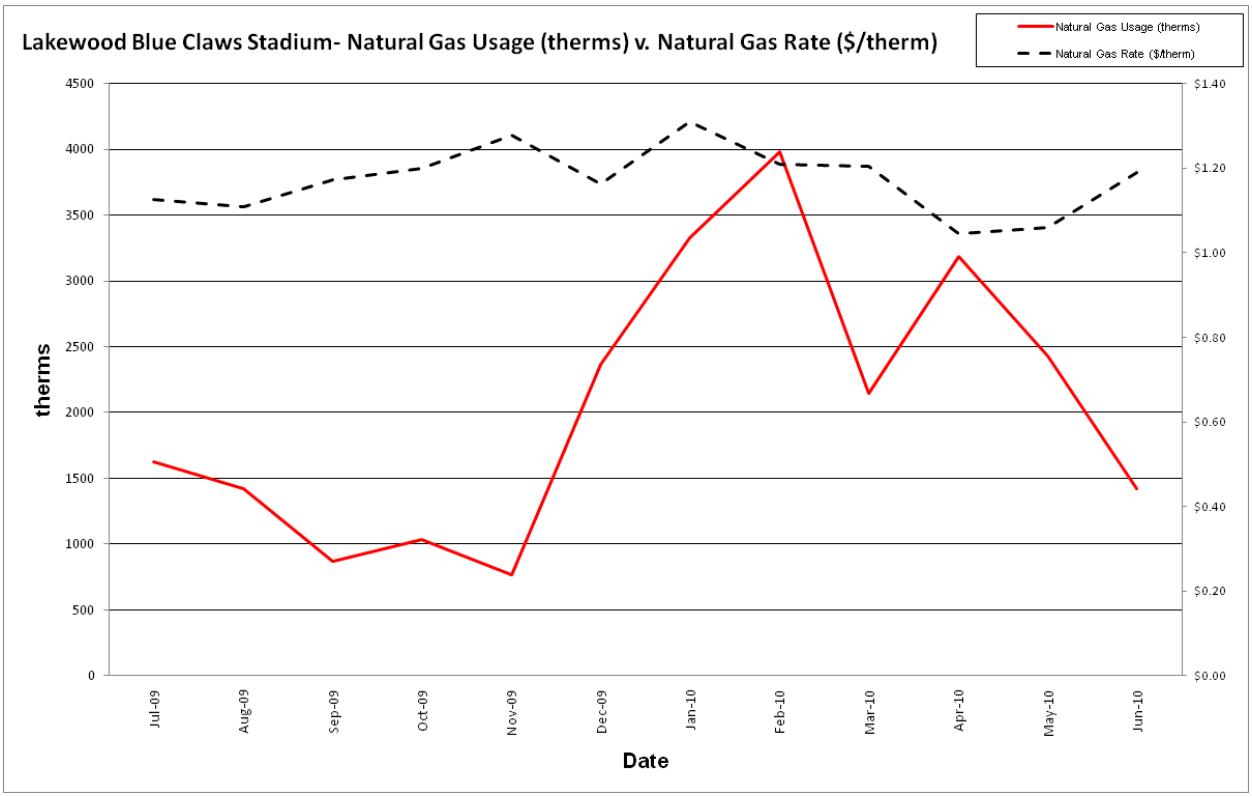
The natural gas usage shows that the most natural gas is consumed in the winter months, meaning the majority of natural gas use in this stadium is for heating.

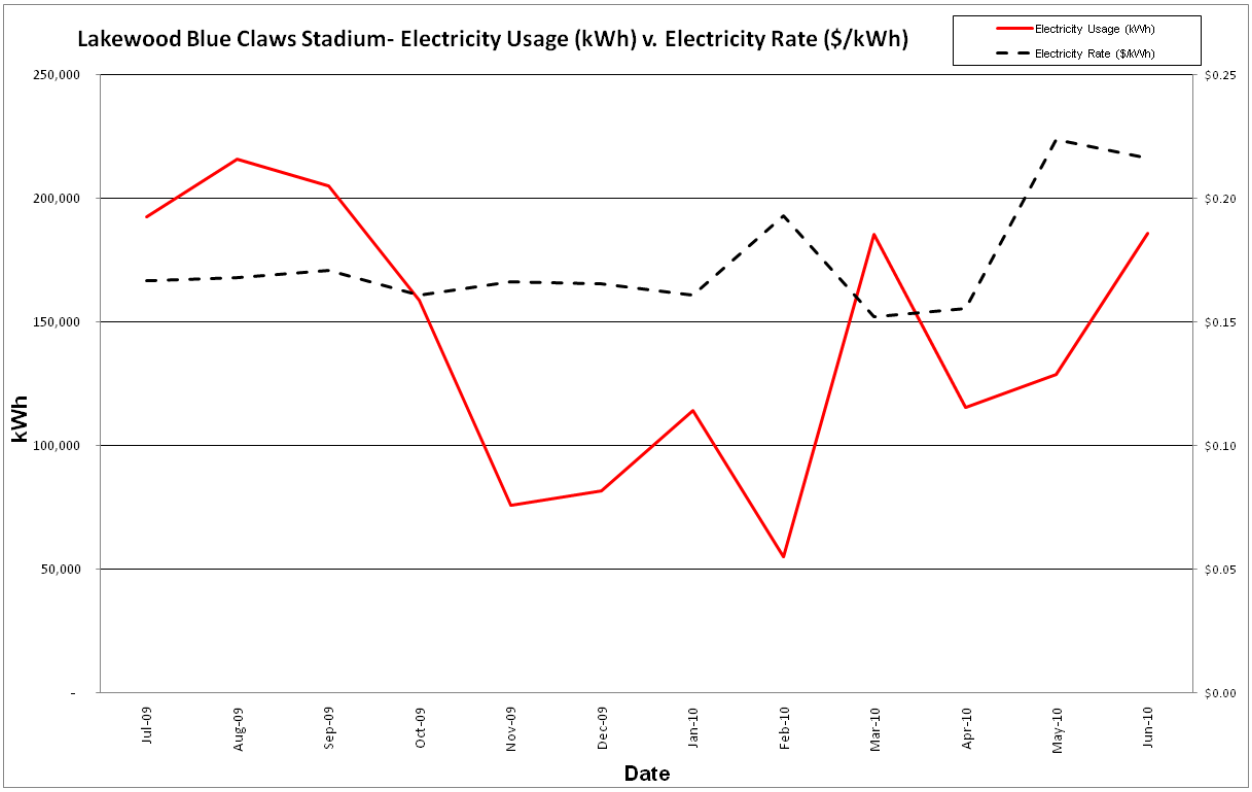
6.2. Tariff analysis

Currently, natural gas is provided via one gas meter with New Jersey Natural Gas serving as transmission and supply provider. The general service rate for natural gas charges a market-rate price based on use and the Lakewood Blue Claws Stadium billing data does not breakdown demand costs for all periods. Typically, the natural gas prices increase during the cooling months when natural gas is less of a demand.

The Lakewood Blue Claws Stadium is direct-metered (via one meter) and currently purchases electricity distribution service from Jersey Central Power& Light and as of January, 2010 electricity supply service from Glacial Energy of New Jersey at a general service rate. The general service rate for electric charges are market-rate based on use and the stadium billing does show a breakdown of demand costs. Demand prices are reflected in the utility bills and can be verified by observing the price fluctuations throughout the year. Typically, the electricity prices increase during the cooling months when electricity is used by the HVAC condensing units and air handlers.

The following charts compare the utility consumption and utility rates for the natural gas and electricity over the previous 12 month period.


Lakewood Blue Claws Stadium- Natural Gas Usage (therms) v. Natural Gas Rate ($/therm)
Natural Gas Usage (therms)
Natural Gas Rate ($/therm)
therms
4500
4000
3500
3000
2500
2000
1500
1000
500
0
$1.40
$1.20
$1.00
$0.80
$0.60
$0.40
$0.20
$0.00
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Date


Lakewood Blue Claws Stadium- Electricity Usage (kWh) v. Electricity Rate ($/kWh)
Electricity Usage (kWh)
Electricity Rate ($/kWh)
kWh
250,000
200,000
150,000
100,000
50,000
-
$0.25
$0.20
$0.15
$0.10
$0.05
$0.00
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Date

6.3. Energy Procurement strategies

Billing analysis shows large price fluctuations of over the course of the year for the Lakewood Blue Claws Stadium natural gas account. Selecting third party suppliers could reduce the cost associated with energy procurement. 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. Appendix B contains a complete list of third party energy suppliers.

Lakewood already purchases natural gas for lower rate than the average rate. Electricity is purchased through the third party supplier, Glacial Energy of New Jersey, but since the beginning of this supply the cost per kWh has been higher than the price per kWh from Jersey Central Power & Light. It is our understanding that Lakewood has already sought a new third party supplier, Liberty Power, and expects a lower price per kWh..

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 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

Lakewood Township
Lakewood Blue Claws Stadium
2 Stadium Way

BIRDSALL SERVICES GROUP
ENGINEERS & CONSULTANTS

Upgrade Code	Upgrade Description	Existing Fixture	Existing Watts	Proposed Fixture	Proposed Watts	Lighting Total # of Upgrades	Lighting Cost per Upgrade ($)	Lighting SmartStart Rebate per Upgrade
1	250W Metal Halide Pole Mounted Exterior Fixture	250W MH/BALLAST	286	No Upgrade	286	0	$0.00	$0.00
2	4' fixture with (2) 4' T8 Lamps / replace the (2) 32w lamps with 28w energy saving lamps	2L4' T8/ELEC	61	2L4' T8/ELEC LO	55	50	$25.00	$0.00
3	Hanging 2x4 fixture with (4) 4' T8 lamps / replace the (4) 32w lamps with 28w energy saving lamps	4L4' T8/ELEC	110	4L4' T8/ELEC LO	99	273	$35.00	$0.00
4	Hanging 2x4 fixture with (2) 4' T8 lamps / replace the (2) 32w lamps with 28w energy saving lamps	2L4' T8/ELEC	61	2L4' T8/ELEC LO	55	29	$25.00	$0.00
5	100W Metal Halide High-Hat Fixture	100W MH/BALLAST	120	No Upgrade	120	18	$0.00	$0.00
6	Aluminum Ceiling mounted 2x4 fixture with (2) 4' T8 lamps / replace the (2) 32w lamps with 28w energy saving lamps	2L4' T8/ELEC	61	2L4' T8/ELEC LO	55	26	$25.00	$0.00
7	Wall mounted 2x4 fixture with (2) 4' T8 lamps / replace the (2) 32w lamps with 28w energy saving lamps	2L4' T8/ELEC	61	2L4' T8/ELEC LO	55	43	$25.00	$0.00
8	100W Metal Halide High-Hat Fixture	100W MH/BALLAST	120	No Upgrade	120	65	$0.00	$0.00
9	Wall mounted 2x4 fixture with (2) 4' T8 lamps indirectly lit / replace the (2) 32w lamps with 28w energy saving lamps	2L8' T8/ELEC	118	2L8' T8/ELEC LO	103	40	$25.00	$0.00
10	Track Lighting with 3 Incandescent Lamps / replace with 15W Compact Fluorescent lamps	(3) 75W INCANDESCENT	225	(3) 15W CF/SI	45	0	$6.00	$0.00
11	2'X2' T8 fixture with 17W lamps	(2) FO17T8/ELEC	34	No Upgrades	34	46	$0.00	$0.00
12	60W Incandescent Lamp / Replace with 15W Compact Fluorescent	60W INCANDESCENT	60	13W CF/SI	15	12	$6.00	$0.00
13	26W Recessed Compact Fluorescent Fixture	26W CF/SI	28	No Upgrade	28	20	$0.00	$0.00
14	Recessed 2x4 fixture with (4) 4' T8 lamps / replace the (4) 32w lamps with 28w energy saving lamps	4L4' T8/ELEC	110	4L4' T8/ELEC LO	99	18	$35.00	$0.00
15	Suspended 150W Metal Halide Fixture Indirectly Lit	150W MH/BALLAST	195	No Upgrade	195	8	$0.00	$0.00
16	Quarts Halogen Outdoor Fixture 200W	150W Quartz Halogen Flood	150	No Upgrade	150	8	$0.00	$0.00
18	250 W Metal Halide High Bay Fixtures	250W MH/BALLAST	286	No Upgrade	286	12	$0.00	$0.00
19	Wall pack 2 lamp 26W CFL	26W CF/SI	28	No Upgrade	26	1	$0.00	$0.00
20	Incandescent Track Display Liight Fixture	15W Incandescent	15	No Upgrade	15	0	$0.00	$0.00
21	Wall Mounted 8' fixture with (2) T8 Lamps and an Electronic Ballast	2L8' T8/ELEC	118	No Upgrade	118	4	$30.00	$0.00
22	100W Metal Halide Wall Mounted Fixture	100W MH/BALLAST	120	No Upgrade	120	4	$0.00	$0.00
23	LED Exit Signs	LED	2	No Upgrade	2	107	$0.00	$0.00
24	Field Lights ZA	1500W MH/Ballast	1625	"	1625	60	$0.00	$0.00
25	Field Lights ZB	1500W MH/Ballast	1625	"	1625	8	$0.00	$0.00
26	Field Lights ZC	1500W MH/Ballast	1625	"	1625	11	$0.00	$0.00

Summary

	Lighting (Only)	Sensors (Only)	Complete Lighting Upgrade
Cost	$14,957.00	$1,800.00	$16,757.00
Rebate	$0.00	$180.00	$180.00
Net Cost	$14,957.00	$1,620.00	**$16,577.00**
Savings (kWh)	6,743	1,502	**8,094**
Savings ($)	$1,146.24	$255.26	**$1,375.97**
Payback	13.0	6.3	**12.0**

Variables:

$0.17	Avg. Electric Rate ($/kWh)
	Avg. Demand Rate ($/kW)
2080	Operating Hours/Year
8	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 Fixture	Existing Qty.	Existing Watts	Existing Foot Candles	Proposed Fixture	Proposed Qty.	Proposed Watts	kW Reduction	Lighting Energy Savings, kWh	Lighting Cost ($)	Lighting Savings ($)	Lighting Payback (yrs)	Controls Type	Controls Qty.	Occupancy Sensors (ONLY) Energy Savings, kWh	Occupancy Sensors (ONLY) Cost ($)	Occupancy Sensors (ONLY) Savings ($)	Occupancy Sensors (ONLY) Payback (yrs)	SmartStart Rebate Lighting	SmartStart Rebate Sensors	Lighting & Occupancy Sensors Energy Savings, kWh	Lighting & Occupancy Sensors Post-Rebate Cost ($)	Lighting & Occupancy Sensors Savings ($)	Lighting & Occupancy Sensors Payback (yrs)
Totals:							195973				189092	5.187	6743	$14,957.00	$1,146.24	13.0			1502	$1,800.00	$255.26	7.1	$0.00	$180.00	8094	$16,577.00	$1,375.97	12.0

					Existing				Proposed				Lighting				Controls		Occupancy Sensors (ONLY)				SmartStart Rebate		Lighting & Occupancy Sensors			
Seq. #	Upgrade Code	Room/Area	Hrs/ Work Day	Hrs/ Year	Fixture	Qty.	Watts	Foot Candles	Fixture	Qty.	Watts	kW Reduction	Energy Savings, kWh	Cost ($)	Savings ($)	Payback (yrs)	Type	Qty.	Energy Savings, kWh	Cost ($)	Savings ($)	Payback (yrs)	Lighting	Sensors	Energy Savings, kWh	Post-Rebate Cost ($)	Savings ($)	Payback (yrs)
1	2	Women's Rest Room	2	520	2L4' T8/ELEC	10	610		2L4' T8/ELEC LO	10	550	0.06	31	$250.00	$5.30	47.1			0	$0.00	$0.00		$0.00	$0.00	31	$250.00	$5.30	47.1
2	2	Men's Rest Room	2	520	2L4' T8/ELEC	10	610		2L4' T8/ELEC LO	10	550	0.06	31	$250.00	$5.30	47.1			0	$0.00	$0.00		$0.00	$0.00	31	$250.00	$5.30	47.1
3	3	Refrigerator Room	8	2080	4L4' T8/ELEC	5	550		4L4' T8/ELEC LO	5	495	0.055	114	$175.00	$19.45	9.0			0	$0.00	$0.00		$0.00	$0.00	114	$175.00	$19.45	9.0
4	3	Office	8	2080	4L4' T8/ELEC	1	110		4L4' T8/ELEC LO	1	99	0.011	23	$35.00	$3.89	9.0			0	$0.00	$0.00		$0.00	$0.00	23	$35.00	$3.89	9.0
5	3	Lobby	10	2600	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	57	$70.00	$9.72	7.2	OSW	1	143	$200.00	$24.31	8.2	$0.00	$20.00	186	$250.00	$31.60	7.9
6	3	Office	8	2080	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	46	$70.00	$7.78	9.0	OSW	1	114	$200.00	$19.45	10.3	$0.00	$20.00	149	$250.00	$25.28	9.9
7	3	Office	8	2080	4L4' T8/ELEC	3	330		4L4' T8/ELEC LO	3	297	0.033	69	$105.00	$11.67	9.0	OSW	1	172	$200.00	$29.17	6.9	$0.00	$20.00	223	$285.00	$37.92	7.5
8	3	Office	8	2080	4L4' T8/ELEC	1	110		4L4' T8/ELEC LO	1	99	0.011	23	$35.00	$3.89	9.0			0	$0.00	$0.00		$0.00	$0.00	23	$35.00	$3.89	9.0
9	3	Office	8	2080	4L4' T8/ELEC	1	110		4L4' T8/ELEC LO	1	99	0.011	23	$35.00	$3.89	9.0			0	$0.00	$0.00		$0.00	$0.00	23	$35.00	$3.89	9.0
10	3	Hallway	10	2600	4L4' T8/ELEC	11	1210		4L4' T8/ELEC LO	11	1089	0.121	315	$385.00	$53.48	7.2			0	$0.00	$0.00		$0.00	$0.00	315	$385.00	$53.48	7.2
11	4	Electrical Room	1	260	2L4' T8/ELEC	2	122		2L4' T8/ELEC LO	2	110	0.012	3	$50.00	$0.53	94.3			0	$0.00	$0.00		$0.00	$0.00	3	$50.00	$0.53	94.3
12	3	General Commissary	6	1560	4L4' T8/ELEC	11	1210		4L4' T8/ELEC LO	11	1089	0.121	189	$385.00	$32.09	12.0			0	$0.00	$0.00		$0.00	$0.00	189	$385.00	$32.09	12.0
13	3	Pantry	1	260	4L4' T8/ELEC	4	440		4L4' T8/ELEC LO	4	396	0.044	11	$140.00	$1.94	72.0			0	$0.00	$0.00		$0.00	$0.00	11	$140.00	$1.94	72.0
14	3	Hallway	10	2600	4L4' T8/ELEC	4	440		4L4' T8/ELEC LO	4	396	0.044	114	$140.00	$19.45	7.2			0	$0.00	$0.00		$0.00	$0.00	114	$140.00	$19.45	7.2
15	3	Kitchen	2	520	4L4' T8/ELEC	7	770		4L4' T8/ELEC LO	7	693	0.077	40	$245.00	$6.81	36.0			0	$0.00	$0.00		$0.00	$0.00	40	$245.00	$6.81	36.0
16	3	Concession Area	2	520	4L4' T8/ELEC	18	1980		4L4' T8/ELEC LO	18	1782	0.198	103	$630.00	$17.50	36.0			0	$0.00	$0.00		$0.00	$0.00	103	$630.00	$17.50	36.0
17	4	Mechanical Room	1	260	2L4' T8/ELEC	4	244		2L4' T8/ELEC LO	4	220	0.024	6	$100.00	$1.06	94.3			0	$0.00	$0.00		$0.00	$0.00	6	$100.00	$1.06	94.3
18	3	Elevator Lobby	1	260	4L4' T8/ELEC	1	110		4L4' T8/ELEC LO	1	99	0.011	3	$35.00	$0.49	72.0			0	$0.00	$0.00		$0.00	$0.00	3	$35.00	$0.49	72.0
19	4	Electrical Closet	1	260	2L4' T8/ELEC	2	122		2L4' T8/ELEC LO	2	110	0.012	3	$50.00	$0.53	94.3			0	$0.00	$0.00		$0.00	$0.00	3	$50.00	$0.53	94.3
20	3	Umpires Lockers	2	520	4L4' T8/ELEC	3	330		4L4' T8/ELEC LO	3	297	0.033	17	$105.00	$2.92	36.0			0	$0.00	$0.00		$0.00	$0.00	17	$105.00	$2.92	36.0
21	2		2	520	2L4' T8/ELEC	3	183		2L4' T8/ELEC LO	3	165	0.018	9	$75.00	$1.59	47.1			0	$0.00	$0.00		$0.00	$0.00	9	$75.00	$1.59	47.1
22	5		2	520	100W MH/BALLAS	2	240		No Upgrade	2	240	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
23	3	Visitors Clubhouse	2	520	4L4' T8/ELEC	19	2090		4L4' T8/ELEC LO	4	396			$140.00					0	$0.00	$0.00		$0.00	$0.00	0	$140.00	$0.00	
24	3	Coaches Clubhouse	2	520	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	11	$70.00	$1.94	36.0			0	$0.00	$0.00		$0.00	$0.00	11	$70.00	$1.94	36.0
25	2	Bathroom	1	260	2L4' T8/ELEC	3	183		2L4' T8/ELEC LO	3	165	0.018	5	$75.00	$0.80	94.3			0	$0.00	$0.00		$0.00	$0.00	5	$75.00	$0.80	94.3
26	5		1	260	100W MH/BALLAS	2	240		No Upgrade	2	240	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
27	3	Office	2	520	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	11	$70.00	$1.94	36.0			0	$0.00	$0.00		$0.00	$0.00	11	$70.00	$1.94	36.0
28	5	Showers	1	260	100W MH/BALLAS	6	720		No Upgrade	6	720	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
29	6	Bathroom	1	260	2L4' T8/ELEC	4	244		2L4' T8/ELEC LO	4	220	0.024	6	$100.00	$1.06	94.3			0	$0.00	$0.00		$0.00	$0.00	6	$100.00	$1.06	94.3
30	4	Janitors Closet	1	260	2L4' T8/ELEC	1	61		2L4' T8/ELEC LO	1	55	0.006	2	$25.00	$0.27	94.3			0	$0.00	$0.00		$0.00	$0.00	2	$25.00	$0.27	94.3
31	3	Trainer	1	260	4L4' T8/ELEC	3	330		4L4' T8/ELEC LO	3	297	0.033	9	$105.00	$1.46	72.0			0	$0.00	$0.00		$0.00	$0.00	9	$105.00	$1.46	72.0
32	3	Equipment Storage	1	260	4L4' T8/ELEC	3	330		4L4' T8/ELEC LO	3	297	0.033	9	$105.00	$1.46	72.0			0	$0.00	$0.00		$0.00	$0.00	9	$105.00	$1.46	72.0
33	7	Stairwell/ Tunnel	10	2600	2L4' T8/ELEC	12	732		2L4' T8/ELEC LO	12	660	0.072	187	$300.00	$31.82	9.4			0	$0.00	$0.00		$0.00	$0.00	187	$300.00	$31.82	9.4
34	6	Duggout	2	520	2L4' T8/ELEC	4	244		2L4' T8/ELEC LO	4	220	0.024	12	$100.00	$2.12	47.1			0	$0.00	$0.00		$0.00	$0.00	12	$100.00	$2.12	47.1
35	7	Stairwell	10	2600	2L4' T8/ELEC	5	305		2L4' T8/ELEC LO	5	275	0.03	78	$125.00	$13.26	9.4			0	$0.00	$0.00		$0.00	$0.00	78	$125.00	$13.26	9.4
36	8	Patio	2	520	100W MH/BALLAS	18	2160		No Upgrade	18	2160	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
37	3	Elevator Lobby/Storage	4	1040	4L4' T8/ELEC	1	110		4L4' T8/ELEC LO	1	99	0.011	11	$35.00	$1.94	18.0			0	$0.00	$0.00		$0.00	$0.00	11	$35.00	$1.94	18.0
38	9	Suite 220	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
39	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
40	9	Suite 219	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
41	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
42	9	Suite 218	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
43	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
44	9	Suite 217	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
45	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
46	9	Suite 216	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
47	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
48	9	Suite 215	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
49	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
50	9	Suite 214	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
51	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
52	9	Suite 213	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
53	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
54	9	Suite 212	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
55	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
56	9	Suite 211	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
57	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
58	8	Hallway	10	2600	100W MH/BALLAS	9	1080		No Upgrade	9	1080	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
59	11	Bar Area	10	2600	(2) FO17T8/ELEC	14	476		No Upgrades	14	476	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
60	12	Bar	10	2600	60W INCANDESC	12	720		13W CF/SI	12	180	0.54	1404	$72.00	$238.68	0.3			0	$0.00	$0.00		$0.00	$0.00	1404	$72.00	$238.68	0.3
61	11	Hallway	10	2600	(2) FO17T8/ELEC	6	204		No Upgrades	6	204	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
62	6	Restroom	2	520	2L4' T8/ELEC	5	305		2L4' T8/ELEC LO	5	275	0.03	16	$125.00	$2.65	47.1			0	$0.00	$0.00		$0.00	$0.00	16	$125.00	$2.65	47.1
63	13		2	520	26W CF/SI	3	84		No Upgrade	3	84	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
64	3	Kitchen/Pantry	1	260	4L4' T8/ELEC	7	770		4L4' T8/ELEC LO	7	693	0.077	20	$245.00	$3.40	72.0			0	$0.00	$0.00		$0.00	$0.00	20	$245.00	$3.40	72.0
65	13	Lobby	10	2600	26W CF/SI	2	56		No Upgrade	2	56	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
66	14	Annoucers Booth	2	520	4L4' T8/ELEC	4	440		4L4' T8/ELEC LO	4	396	0.044	23	$140.00	$3.89	36.0			0	$0.00	$0.00		$0.00	$0.00	23	$140.00	$3.89	36.0
67	11		2	520	(2) FO17T8/ELEC	2	68		No Upgrades	2	68	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
68	14	TV press box	4	1040	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	23	$70.00	$3.89	18.0			0	$0.00	$0.00		$0.00	$0.00	23	$70.00	$3.89	18.0
69	14	Radio press box	4	1040	4L4' T8/ELEC	1	110		4L4' T8/ELEC LO	1	99	0.011	11	$35.00	$1.94	18.0			0	$0.00	$0.00		$0.00	$0.00	11	$35.00	$1.94	18.0
70	14	Radio press box	4	1040	4L4' T8/ELEC	1	110		4L4' T8/ELEC LO	1	99	0.011	11	$35.00	$1.94	18.0			0	$0.00	$0.00		$0.00	$0.00	11	$35.00	$1.94	18.0
71	14	Press area	4	1040	4L4' T8/ELEC	10	1100		4L4' T8/ELEC LO	10	990	0.11	114	$350.00	$19.45	18.0			0	$0.00	$0.00		$0.00	$0.00	114	$350.00	$19.45	18.0
72	9	Suite 210	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
73	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
74	11	Conference Room	8	2080	(2) FO17T8/ELEC	12	408		No Upgrades	12	408	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
75	6	Bathroom	3	780	2L4' T8/ELEC	5	305		2L4' T8/ELEC LO	5	275	0.03	23	$125.00	$3.98	31.4			0	$0.00	$0.00		$0.00	$0.00	23	$125.00	$3.98	31.4
76	13		3	780	26W CF/SI	3	84		No Upgrade	3	84	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
77	4	Building Maintenance	1	260	2L4' T8/ELEC	3	183		2L4' T8/ELEC LO	3	165	0.018	5	$75.00	$0.80	94.3			0	$0.00	$0.00		$0.00	$0.00	5	$75.00	$0.80	94.3
78	3	Hallway	10	2600	4L4' T8/ELEC	5	550		4L4' T8/ELEC LO	5	495	0.055	143	$175.00	$24.31	7.2			0	$0.00	$0.00		$0.00	$0.00	143	$175.00	$24.31	7.2
79	4	Promo Storage	1	260	2L4' T8/ELEC	6	366		2L4' T8/ELEC LO	6	330	0.036	9	$150.00	$1.59	94.3			0	$0.00	$0.00		$0.00	$0.00	9	$150.00	$1.59	94.3
80	3	Locker Room	8	2080	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	46	$70.00	$7.78	9.0			0	$0.00	$0.00		$0.00	$0.00	46	$70.00	$7.78	9.0
81	3	Bathroom	3	780	4L4' T8/ELEC	1	110		4L4' T8/ELEC LO	1	99	0.011	9	$35.00	$1.46	24.0			0	$0.00	$0.00		$0.00	$0.00	9	$35.00	$1.46	24.0
82	3	Locker Room	8	2080	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	46	$70.00	$7.78	9.0			0	$0.00	$0.00		$0.00	$0.00	46	$70.00	$7.78	9.0
83	3	Bathroom	3	780	4L4' T8/ELEC	1	110		4L4' T8/ELEC LO	1	99	0.011	9	$35.00	$1.46	24.0			0	$0.00	$0.00		$0.00	$0.00	9	$35.00	$1.46	24.0
84	16	Food Court (outfield)	2	520	150W Quartz Halo	8	1200		No Upgrade	8	1200	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
85	2	Women's Rest Room	2	520	2L4' T8/ELEC	8	488		2L4' T8/ELEC LO	8	440	0.048	25	$200.00	$4.24	47.1			0	$0.00	$0.00		$0.00	$0.00	25	$200.00	$4.24	47.1
86	2	Men's Rest Room	2	520	2L4' T8/ELEC	10	610		2L4' T8/ELEC LO	10	550	0.06	31	$250.00	$5.30	47.1			0	$0.00	$0.00		$0.00	$0.00	31	$250.00	$5.30	47.1
87	3	Vender Commissary	2	520	4L4' T8/ELEC	5	550		4L4' T8/ELEC LO	5	495	0.055	29	$175.00	$4.86	36.0			0	$0.00	$0.00		$0.00	$0.00	29	$175.00	$4.86	36.0
88	3	Lobby	10	2600	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	57	$70.00	$9.72	7.2			0	$0.00	$0.00		$0.00	$0.00	57	$70.00	$9.72	7.2
89	7	Stairwell/Tunnel	8	2080	2L4' T8/ELEC	11	671		2L4' T8/ELEC LO	11	605	0.066	137	$275.00	$23.34	11.8			0	$0.00	$0.00		$0.00	$0.00	137	$275.00	$23.34	11.8
90	7	Dugout	2	520	2L4' T8/ELEC	4	244		2L4' T8/ELEC LO	4	220	0.024	12	$100.00	$2.12	47.1			0	$0.00	$0.00		$0.00	$0.00	12	$100.00	$2.12	47.1
91	3	Hallway	10	2600	4L4' T8/ELEC	6	660		4L4' T8/ELEC LO	6	594	0.066	172	$210.00	$29.17	7.2			0	$0.00	$0.00		$0.00	$0.00	172	$210.00	$29.17	7.2
92	3	Commisssary	2	520	4L4' T8/ELEC	7	770		4L4' T8/ELEC LO	7	693	0.077	40	$245.00	$6.81	36.0			0	$0.00	$0.00		$0.00	$0.00	40	$245.00	$6.81	36.0
93	3	Concession Area	2	520	4L4' T8/ELEC	18	1980		4L4' T8/ELEC LO	18	1782	0.198	103	$630.00	$17.50	36.0			0	$0.00	$0.00		$0.00	$0.00	103	$630.00	$17.50	36.0

					Existing				Proposed				Lighting				Controls		Occupancy Sensors (ONLY)				SmartStart Rebate		Lighting & Occupancy Sensors			
Seq. #	Upgrade Code	Room/Area	Hrs/ Work Day	Hrs/ Year	Fixture	Qty.	Watts	Foot Candles	Fixture	Qty.	Watts	kW Reduction	Energy Savings, kWh	Cost ($)	Savings ($)	Payback (yrs)	Type	Qty.	Energy Savings, kWh	Cost ($)	Savings ($)	Payback (yrs)	Lighting	Sensors	Energy Savings, kWh	Post-Rebate Cost ($)	Savings ($)	Payback (yrs)
94	3	Family Waiting area	1	260	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	6	$70.00	$0.97	72.0			0	$0.00	$0.00		$0.00	$0.00	6	$70.00	$0.97	72.0
95	18	Batting Cages	6	1560	250W MH/BALLAS	12	3432		No Upgrade	12	3432	0	0		$0.00				0	$0.00	$0.00		$0.00	$0.00	0		$0.00	
96	19		6	1560	26W CF/SI	1	28		No Upgrade	1	26	0.002	3		$0.53				0	$0.00	$0.00		$0.00	$0.00	3		$0.53	
97	3	Aux. Room	1	260	4L4' T8/ELEC	4	440		4L4' T8/ELEC LO	4	396	0.044	11	$140.00	$1.94	72.0			0	$0.00	$0.00		$0.00	$0.00	11	$140.00	$1.94	72.0
98	3	Office	1	260	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	6	$70.00	$0.97	72.0			0	$0.00	$0.00		$0.00	$0.00	6	$70.00	$0.97	72.0
99	3	Home Clubhouse	4	1040	4L4' T8/ELEC	25	2750		4L4' T8/ELEC LO	25	2475	0.275	286	$875.00	$48.62	18.0			0	$0.00	$0.00		$0.00	$0.00	286	$875.00	$48.62	18.0
100	5	Showers	1	260	100W MH/BALLAS	6	720		No Upgrade	6	720	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
101	6	Bathroom	2	520	2L4' T8/ELEC	8	488		2L4' T8/ELEC LO	8	440	0.048	25	$200.00	$4.24	47.1			0	$0.00	$0.00		$0.00	$0.00	25	$200.00	$4.24	47.1
102	3	Trainer	3	780	4L4' T8/ELEC	6	660		4L4' T8/ELEC LO	6	594	0.066	51	$210.00	$8.75	24.0			0	$0.00	$0.00		$0.00	$0.00	51	$210.00	$8.75	24.0
103	3	Office	3	780	4L4' T8/ELEC	3	330		4L4' T8/ELEC LO	3	297	0.033	26	$105.00	$4.38	24.0			0	$0.00	$0.00		$0.00	$0.00	26	$105.00	$4.38	24.0
104	3	Weight Room	3	780	4L4' T8/ELEC	6	660		4L4' T8/ELEC LO	6	594	0.066	51	$210.00	$8.75	24.0			0	$0.00	$0.00		$0.00	$0.00	51	$210.00	$8.75	24.0
105	3	Laundry	3	780	4L4' T8/ELEC	5	550		4L4' T8/ELEC LO	5	495	0.055	43	$175.00	$7.29	24.0			0	$0.00	$0.00		$0.00	$0.00	43	$175.00	$7.29	24.0
106	2	Janitors Closet	1	260	2L4' T8/ELEC	1	61		2L4' T8/ELEC LO	1	55	0.006	2	$25.00	$0.27	94.3			0	$0.00	$0.00		$0.00	$0.00	2	$25.00	$0.27	94.3
107	2	Equipment Storage	1	260	2L4' T8/ELEC	3	183		2L4' T8/ELEC LO	3	165	0.018	5	$75.00	$0.80	94.3			0	$0.00	$0.00		$0.00	$0.00	5	$75.00	$0.80	94.3
108	3	Manager's Office	3	780	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	17	$70.00	$2.92	24.0			0	$0.00	$0.00		$0.00	$0.00	17	$70.00	$2.92	24.0
109	2	Bathroom	1	260	2L4' T8/ELEC	2	122		2L4' T8/ELEC LO	2	110	0.012	3	$50.00	$0.53	94.3			0	$0.00	$0.00		$0.00	$0.00	3	$50.00	$0.53	94.3
110	5		1	260	100W MH/BALLAS	2	240		No Upgrade	2	240	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
111	3	Coaches Clubhouse	4	1040	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	23	$70.00	$3.89	18.0			0	$0.00	$0.00		$0.00	$0.00	23	$70.00	$3.89	18.0
112	7	Stairwell	10	2600	2L4' T8/ELEC	5	305		2L4' T8/ELEC LO	5	275	0.03	78	$125.00	$13.26	9.4			0	$0.00	$0.00		$0.00	$0.00	78	$125.00	$13.26	9.4
113	4	Storage	1	260	2L4' T8/ELEC	2	122		2L4' T8/ELEC LO	2	110	0.012	3	$50.00	$0.53	94.3			0	$0.00	$0.00		$0.00	$0.00	3	$50.00	$0.53	94.3
114	8	Party Deck/ patio	2	520	100W MH/BALLAS	18	2160		No Upgrade	18	2160	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
115	9	Suite 201	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
116	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
117	9	Suite202	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
118	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
119	9	Suite203	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
120	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
121	9	Suite 204	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
122	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
123	9	Suite 205	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
124	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
125	9	Suite 206	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
126	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
127	9	Suite 207	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
128	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
129	9	Suite 208	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
130	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
131	9	Suite 209	2	520	2L8' T8/ELEC	2	236		2L8' T8/ELEC LO	2	206	0.03	16	$50.00	$2.65	18.9			0	$0.00	$0.00		$0.00	$0.00	16	$50.00	$2.65	18.9
132	8		2	520	100W MH/BALLAS	1	120		No Upgrade	1	120	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
133	15	Entrance Gate	2	520	150W MH/BALLAS	4	780		No Upgrade	4	780	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
134	7	Stairwell	10	2600	2L4' T8/ELEC	6	366		2L4' T8/ELEC LO	6	330	0.036	94	$150.00	$15.91	9.4			0	$0.00	$0.00		$0.00	$0.00	94	$150.00	$15.91	9.4
135	15	Entrance Gate	2	520	150W MH/BALLAS	4	780		No Upgrade	4	780	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
136	3	Lobby	10	2600	4L4' T8/ELEC	8	880		4L4' T8/ELEC LO	8	792	0.088	229	$280.00	$38.90	7.2			0	$0.00	$0.00		$0.00	$0.00	229	$280.00	$38.90	7.2
137	11	Hallway	10	2600	(2) FO17T8/ELEC	6	204		No Upgrades	6	204	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
138	3	Office	10	2600	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	57	$70.00	$9.72	7.2			0	$0.00	$0.00		$0.00	$0.00	57	$70.00	$9.72	7.2
139	3	Office	10	2600	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	57	$70.00	$9.72	7.2			0	$0.00	$0.00		$0.00	$0.00	57	$70.00	$9.72	7.2
140	3	Server Room	1	260	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	6	$70.00	$0.97	72.0			0	$0.00	$0.00		$0.00	$0.00	6	$70.00	$0.97	72.0
141	3	Box Office	10	2600	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	57	$70.00	$9.72	7.2			0	$0.00	$0.00		$0.00	$0.00	57	$70.00	$9.72	7.2
142	3	Storage	1	260	4L4' T8/ELEC	1	110		4L4' T8/ELEC LO	1	99	0.011	3	$35.00	$0.49	72.0			0	$0.00	$0.00		$0.00	$0.00	3	$35.00	$0.49	72.0
143	3	Kichenette	10	2600	4L4' T8/ELEC	3	330		4L4' T8/ELEC LO	3	297	0.033	86	$105.00	$14.59	7.2			0	$0.00	$0.00		$0.00	$0.00	86	$105.00	$14.59	7.2
144	3	Office Area	10	2600	4L4' T8/ELEC	12	1320		4L4' T8/ELEC LO	12	1188	0.132	343	$420.00	$58.34	7.2			0	$0.00	$0.00		$0.00	$0.00	343	$420.00	$58.34	7.2
145	3	Office	10	2600	4L4' T8/ELEC	3	330		4L4' T8/ELEC LO	3	297	0.033	86	$105.00	$14.59	7.2	OSW	1	215	$200.00	$36.47	5.5	$0.00	$20.00	279	$285.00	$47.40	6.0
146	3	Office	10	2600	4L4' T8/ELEC	3	330		4L4' T8/ELEC LO	3	297	0.033	86	$105.00	$14.59	7.2	OSW	1	215	$200.00	$36.47	5.5	$0.00	$20.00	279	$285.00	$47.40	6.0
147	3	Office	10	2600	4L4' T8/ELEC	3	330		4L4' T8/ELEC LO	3	297	0.033	86	$105.00	$14.59	7.2	OSW	1	215	$200.00	$36.47	5.5	$0.00	$20.00	279	$285.00	$47.40	6.0
148	3	Bathroom	1	260	4L4' T8/ELEC	1	110		4L4' T8/ELEC LO	1	99	0.011	3	$35.00	$0.49	72.0			0	$0.00	$0.00		$0.00	$0.00	3	$35.00	$0.49	72.0
149	3	Bathroom	1	260	4L4' T8/ELEC	1	110		4L4' T8/ELEC LO	1	99	0.011	3	$35.00	$0.49	72.0			0	$0.00	$0.00		$0.00	$0.00	3	$35.00	$0.49	72.0
150	4	Electrical Closet	1	260	2L4' T8/ELEC	1	61		2L4' T8/ELEC LO	1	55	0.006	2	$25.00	$0.27	94.3			0	$0.00	$0.00		$0.00	$0.00	2	$25.00	$0.27	94.3
151	4	Janitors Closet	1	260	2L4' T8/ELEC	1	61		2L4' T8/ELEC LO	1	55	0.006	2	$25.00	$0.27	94.3			0	$0.00	$0.00		$0.00	$0.00	2	$25.00	$0.27	94.3
152	11	Conference Room	8	2080	(2) FO17T8/ELEC	6	204		No Upgrades	6	204	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
153	3	Office	10	2600	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	57	$70.00	$9.72	7.2	OSW	1	143	$200.00	$24.31	8.2	$0.00	$20.00	186	$250.00	$31.60	7.9
154	3	Office	10	2600	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	57	$70.00	$9.72	7.2	OSW	1	143	$200.00	$24.31	8.2	$0.00	$20.00	186	$250.00	$31.60	7.9
155	3	Office	10	2600	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	57	$70.00	$9.72	7.2	OSW	1	143	$200.00	$24.31	8.2	$0.00	$20.00	186	$250.00	$31.60	7.9
156	4	Storage	1	260	2L4' T8/ELEC	4	244		2L4' T8/ELEC LO	4	220	0.024	6	$100.00	$1.06	94.3			0	$0.00	$0.00		$0.00	$0.00	6	$100.00	$1.06	94.3
157	3	Store	6	1560	4L4' T8/ELEC	18	1980		4L4' T8/ELEC LO	18	1782	0.198	309	$630.00	$52.51	12.0			0	$0.00	$0.00		$0.00	$0.00	309	$630.00	$52.51	12.0
158	21		6	1560	2L8' T8/ELEC	4	472		No Upgrade	4	472	0	0		$0.00				0	$0.00	$0.00		$0.00	$0.00	0		$0.00	
159	22		6	1560	100W MH/BALLAS	4	480		No Upgrade	4	480	0	0		$0.00				0	$0.00	$0.00		$0.00	$0.00	0		$0.00	
160	23		6	1560	LED	65	130		No Upgrade	65	130	0	0		$0.00				0	$0.00	$0.00		$0.00	$0.00	0		$0.00	
161	3	Security	1	260	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	6	$70.00	$0.97	72.0			0	$0.00	$0.00		$0.00	$0.00	6	$70.00	$0.97	72.0
162	3	1st Aid	1	260	4L4' T8/ELEC	2	220		4L4' T8/ELEC LO	2	198	0.022	6	$70.00	$0.97	72.0			0	$0.00	$0.00		$0.00	$0.00	6	$70.00	$0.97	72.0
163	4	Storage	1	260	2L4' T8/ELEC	2	122		2L4' T8/ELEC LO	2	110	0.012	3	$50.00	$0.53	94.3			0	$0.00	$0.00		$0.00	$0.00	3	$50.00	$0.53	94.3
164	13	Under Overhangs	2	520	26W CF/SI	12	336		No Upgrade	12	336	0	0	$0.00	$0.00				0	$0.00	$0.00		$0.00	$0.00	0	$0.00	$0.00	
165	4	Storage	1	260	2L4' T8/ELEC	1	61		2L4' T8/ELEC LO	1	55	0.006	2	$25.00	$0.27	94.3			0	$0.00	$0.00		$0.00	$0.00	2	$25.00	$0.27	94.3
166	23	Exit Signs	24	6240	LED	42	84		No Upgrade	42	84	0	0		$0.00				0	$0.00	$0.00		$0.00	$0.00	0		$0.00	
167	24	Field Lights	2	520	1500W MH/Ballas	60	97500		"	60	97500	0	0		$0.00				0	$0.00	$0.00		$0.00	$0.00	0		$0.00	
168	25	Field Lights	2	520	1500W MH/Ballas	8	13000		"	8	13000	0	0		$0.00				0	$0.00	$0.00		$0.00	$0.00	0		$0.00	
169	26	Field Lights	2	520	1500W MH/Ballas	11	17875		"	11	17875	0	0		$0.00				0	$0.00	$0.00		$0.00	$0.00	0		$0.00	

Appendix B: Third Party Energy Suppliers (ESCOs)

JCP&L SERVICE TERRITORY
Last Updated: 08/26/10

***CUSTOMER CLASS - R – RESIDENTIAL C – COMMERCIAL I –INDUSTRIAL**
*****GREEN POWER MARKETER**

Supplier	Telephone & Web Site	*Customer Class
Champion Energy Services, LLC 72 Avenue L Newark, NJ 07105	(877) 653-5090 www.championenergyservices.com	**C/I** **ACTIVE**
Community Energy, Inc.*** 51 Sandbrook Headquarters Road Stockton, NJ 08559	(877) NJWIND-1 (877) 659–4631 www.CommunityEnergyInc.com	**R/C/I** **ACTIVE**
Constellation NewEnergy, Inc. 900A Lake Street, Suite 2 Ramsey, NJ 07446	(888) 635-0827 www.newenergy.com	**C/I** **ACTIVE**
Constellation Energy 900A Lake Street, Suite 2 Ramsey, NJ 07446	(877) 997-9995 www.home.newenergy.com	**R** **ACTIVE**
Direct Energy Business, LLC 120 Wood Avenue Suite 611 Iselin, NJ 08830	(888) 925-9115 www.directenergybusiness.com	**C/I** **ACTIVE**
Direct Energy Services, LLC 120 Wood Avenue Suite 611 Iselin, NJ 08830	(866) 547-2722 www.directenergy.com	**C/I** **ACTIVE**
Dominion Retail, Inc. **d/b/a Dominion Energy Solutions** 395 Route 70, Suite 125 Lakewood, NJ 08701	(866) 645-9802 www.dom.com/products	**R/C/I** **ACTIVE**
FirstEnergy Solutions Corp. 300 Madison Avenue Morristown, NJ 07962	(800) 977-0500 www.fes.com	**C/I** **ACTIVE**

Gateway Energy Services Corp. 44 Whispering Pines Lane Lakewood, NJ 08701	(800) 805-8586 www.gesc.com	**R/C/I** **ACTIVE**
GDF SUEZ Energy Resources NA, Inc. 333 Thornall Street Sixth Floor Edison, NJ 08837	(866) 999-8374 www.gdfsuezenergyresources.com	**C/I** **ACTIVE**
Gexa Energy New Jersey LLC 651 Jernee Mill Road Sayreville, NJ 08872	(866) 961-9399 www.gexaenergy.com	**C/I** **ACTIVE**
Glacial Energy of New Jersey, Inc. 75 Route 15 Building E Lafayette, NJ 07848	(888) 452-2425 www.glacialenergy.com	**C/I** **ACTIVE**
Green Mountain Energy Company*** 3000 Atrium Way Mount Laurel, NJ 08054	(800) 810-7300 www.greenmountain.com	**R/C/I** **ACTIVE**
Hess Corporation 1 Hess Plaza Woodbridge, NJ 07095	(800) 437-7872 www.hess.com	**C/I** **ACTIVE**
Integrys Energy Services, Inc. 99 Wood Ave, South, Suite 802 Iselin, NJ 08830	(877) 763-9977 www.integrysenergy.com	**C/I** **ACTIVE**
Liberty Power Delaware, LLC 3000 Atrium Way Suite 273 Mt. Laurel, NJ 08054	(866) 769-3799 www.libertypowercorp.com	**C/I** **ACTIVE**
Liberty Power Holdings, LLC 3000 Atrium Way Suite 273 Mt. Laurel, NJ 08054	(866) 769-3799 www.libertypowercorp.com	**C/I** **ACTIVE**
Linde Energy Services 575 Mountain Avenue Murray Hill, NJ 07974	(800) 247-2644	**C/I**

	www.linde.com	**ACTIVE**
Palmco Power NJ, LLC One Greentree Centre 10000 Lincoln Drive East, Suite 201 Marlton, NJ 08053	(877) 726-5862 www.PalmcoEnergy.com	**C/I** **ACTIVE**
Pepco Energy Services, Inc. 112 Main St. Lebanon, NJ 08833	(800) ENERGY-9 (363-7499) www.pepco-services.com	**C/I** **ACTIVE**
PPL EnergyPlus, LLC 811 Church Road Cherry Hill, NJ 08002	(800) 281-2000 www.pplenergyplus.com	**C/I** **ACTIVE**
Sempra Energy Solutions The Mac-Cali Building 581 Main Street, 8th Floor Woodbridge, NJ 07095	(877) 273-6772 www.semprasolutions.com	**C/I** **ACTIVE**
South Jersey Energy Company 1 South Jersey Plaza Route 54 Folsom, NJ 08037	(800) 800-266-6020 www.southjerseyenergy.com	**R/C/I** **ACTIVE**
Sterling Planet, Inc.*** 58 Otto Avenue Beverly, NJ 08010	(877) 457-2306 www.sterlingplanet.com	**R/C/I** **ACTIVE**
UGI Energy Services, Inc. 224 Strawbridge Drive Suite 107 Moorestown, NJ 08057	(856) 273-9995 www.ugienergyservices.com	**C/I** **ACTIVE**
Verde Energy USA, Inc. 50 East Palisades Avenue Englewood, NJ 07631	(800) 388-3862 www.lowcostpower.com	**R/C/I** **ACTIVE**
Viridian Energy 2001 Route 46, Waterview Plaza Suite 310 Parsippany, NJ 07054	(866) 663-2508 www.viridian.com	**R/C/I** **ACTIVE**

NJ NATURAL GAS CO. SERVICE TERRITORY
Last Updated: 08/26/10

*CUSTOMER CLASS - R – RESIDENTIAL C – COMMERCIAL I – INDUSTRIAL

Supplier	Telephone & Web Site	*Customer Class
Colonial Energy, Inc. 3975 Fair Ridge Dr. Suite T 10 N Fairfax, Va. 22033	845-429-3229 www.colonialgroupinc.com	C/I ACTIVE
Cooperative Industries 412-420 Washington Avenue Belleville, NJ 07109	800-6-BUYGAS (6-289427) www.cooperativenet.com	C/I ACTIVE
Direct Energy Services, LLP 120 Wood Avenue, Suite 611 Iselin, NJ 08830	866-547-2722 www.directenergy.com	R/C/I INACTIVE
Dominion Retail, Inc. **d/b/a Dominion Energy Solutions** 395 Route 70, Suite 125 Lakewood, NJ 08701	866-275-4240 www.dom.com/products	R/C/I ACTIVE
Gateway Energy Services Corp. 44 Whispering Pines Lane Lakewood, NJ 08701	800-805-8586 www.gesc.com	R/C/I ACTIVE
UGI Energy Services, Inc. **d/b/a/ GASMARK** 224 Strawbridge Drive, Suite 107 Moorestown, NJ 08057	856-273-9995 www.ugienergyservices.com	C/I ACTIVE
Hess Energy, Inc. One Hess Plaza Woodbridge, NJ 07095	800-437-7872 www.hess.com	C/I ACTIVE
Intelligent Energy 2050 Center Avenue, Suite 500 Fort Lee, NJ 07024	800-724-1880 www.intelligentenergy.org	R/C/I ACTIVE
Metromedia Energy, Inc. 6 Industrial Way Eatontown, NJ 07724	877-750-7046 www.metromediaenergy.com	C/I ACTIVE
MxEnergy, Inc. 510 Thornall Street, Suite 270Edison, NJ 08837	800-375-1277	R/C/I

	www.mxenergy.com	**ACTIVE**
NATGASCO (Mitchell Supreme) 532 Freeman Street Orange, NJ 07050	800-840-4GAS www.natgasco.com	**C** **ACTIVE**
NJ Gas & Electric 1 Bridge Plaza, Fl. 2 Fort Lee, NJ 07024	866-568-0290 www.NJGandE.com	**R/C** **ACTIVE**
Palmco Energy NJ, LLC One Greentree Centre 10000 Lincoln Drive East Suite 201 Marlton, NJ 08053	877-726-5862 www.PalmcoEnergy.com	**C/I** **ACTIVE**
Pepco Energy Services, Inc. 112 Main Street Lebanon, NJ 08833	800-363-7499 www.pepco-services.com	**C/I** **ACTIVE**
PPL EnergyPlus, LLC 811 Church Road - Office 105 Cherry Hill, NJ 08002	800-281-2000 www.pplenergyplus.com	**C/I** **ACTIVE**
South Jersey Energy Company 1 South Jersey Plaza, Route 54 Folsom, NJ 08037	800-266-6020 www.southjerseyenergy.com	**R/C/I** **ACTIVE**
Sprague Energy Corp. 12 Ridge Road Chatham Township, NJ 07928	800-225-1560 www.spragueenergy.com	**C/I** **ACTIVE**
Woodruff Energy 73 Water Street Bridgeton, NJ 08302	800-557-1121 www.woodruffenergy.com	**R/C/I** **ACTIVE**