



ENERGY AUDIT – FINAL REPORT

SEASIDE PARK BOROUGH HALL

1701 N. OCEAN AVE.

SEASIDE PARK, NJ 08752

ATTN: MS. JULIE L. HORNER-KEIZER

Borough Administrator

CEG PROJECT No. 9C09030

CONCORD ENGINEERING GROUP



520 SOUTH BURNT MILL ROAD

VOORHEES, NJ 08043

TELEPHONE: (856) 427-0200

FACSIMILE: (856) 427-6529

WWW.CEG-INC.NET

CONTACTS:

RAYMOND JOHNSON

Cell: (609) 760-4057

rjohnson@ceg-inc.net

Table of Contents

I. EXECUTIVE SUMMARY 3

II. INTRODUCTION..... 6

III. METHOD OF ANALYSIS..... 8

IV. HISTORIC ENERGY CONSUMPTION/COST 9

 A. Energy Usage / Tariffs 9

 B. Energy Use Intensity (EUI) 12

 C. EPA Energy Benchmarking System 14

V. FACILITY DESCRIPTION 16

VI. MAJOR EQUIPMENT LIST 19

VII. ENERGY CONSERVATION MEASURES 20

VIII. RENEWABLE/DISTRIBUTED ENERGY MEASURES 30

IX. ENERGY PURCHASING AND PROCUREMENT STRATEGY 31

X. INSTALLATION FUNDING OPTIONS..... 34

XI. ADDITIONAL RECOMMENDATIONS..... 35

Appendix A – Detailed Cost Breakdown per ECM

Appendix B – New Jersey Smart Start[®] Program Incentives

Appendix C – Major Equipment List

Appendix D - Portfolio Manager “Statement of Energy Performance”

Appendix E – Investment Grade Lighting Audit

Appendix F – Building Aerial Photo

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I. EXECUTIVE SUMMARY

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

Borough of Seaside Park
Borough Hall
1701 N. Ocean Avenue
Seaside Park, NJ 08752

Municipal Contact: Ms. Julie L. Horner-Keizer, Borough Administrator

Facility Contact: Mr. James Mackie

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

The annual energy costs at this facility are as follows:

Electricity	\$ 9,948
Natural Gas	\$ 300
Total	\$ 10,248

The potential annual energy cost savings for each energy conservation measure (ECM) are shown below in Table 1. Be aware that the ECM's are not additive because of the interrelation of some of the measures. This audit is consistent with an ASHRAE level 2 audit. The cost and savings for each measure is $\pm 20\%$. The evaluations are based on engineering estimations and industry standard calculation methods. More detailed analyses would require engineering simulation models, hard equipment specifications, and contractor bid pricing.

Table 1
Energy Conservation Measures (ECM's)

ECM NO.	DESCRIPTION	COST ^A	ANNUAL SAVINGS ^B	SIMPLE PAYBACK (YEARS)	SIMPLE ROI
1	Upgrade the Lighting	\$1,946	\$1,655	1.17	85.5 %
2	Install Lighting Controls	\$1,320	\$159	8.3	12 %
3	Upgrade WSHP Efficiency	\$14,896	\$1,103	13.5	7.4 %
4	Programmable Thermostats	\$600	\$1,416	0.42	238%

Notes: A. Cost takes into consideration applicable NJ SmartStart™ incentives and maintenance savings.

B. Savings takes into consideration applicable maintenance savings.

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

Table 2
Estimated Energy Savings

ECM NO.	DESCRIPTION	ANNUAL UTILITY REDUCTION		
		ELECT DEMAND (KW)	ELECT CONSUMPTION (KWH)	NAT GAS (THERMS)
1	Upgrade the Lighting	6.99	6,114	-
2	Install Lighting Controls	-	4,975	-
3	Upgrade WSHP Efficiency	5.3	7,178	-
4	Programmable Thermostats	-	8,581	-

Recommendations:

Concord Engineering Group recommends the implementation of all ECM's that provide a calculated simple payback at or under Ten (10) years. The following Energy Conservation Measures are recommended for the Seaside Park Borough Hall:

- **ECM #1:** Upgrade the Lighting
- **ECM #2:** Install Lighting Controls
- **ECM #4:** Programmable Thermostats

In addition to the ECM's, there are maintenance and operational measures that can provide significant energy savings and provide immediate benefit. The ECM's listed above represent investments that can be made to the facility which are justified by the savings seen overtime. However, the maintenance items and small operational improvements below are typically achievable with on site staff or maintenance contractors and in turn have the potential to provide substantial operational savings compared to the costs associated. The following are recommendations which should be considered a priority in achieving an energy efficient building:

1. Chemically clean the condenser and evaporator coils periodically to optimize efficiency. Poorly maintained heat transfer surfaces can reduce efficiency 5-10%.
2. Maintain all weather stripping on entrance doors.
3. Clean all light fixtures to maximize light output.
4. Provide more frequent air filter changes to decrease overall system power usage and maintain better IAQ.

II. INTRODUCTION

This comprehensive energy audit covers the 3,691 square foot Borough Hall building located at 1701 N. Ocean Avenue. The building is used for municipal offices and includes general administrative offices, a senior center and basement storage.

Electrical and natural gas utility information is collected and analyzed for one full year's energy use of the building. The utility information allows for analysis of the building's operational characteristics; calculate energy benchmarks for comparison to industry averages, estimated savings potential, and baseline usage/cost to monitor the effectiveness of implemented measures. A computer spreadsheet is used to calculate benchmarks and to graph utility information (see the utility profiles below).

The Energy Use Intensity (EUI) is established for the building. Energy Use Intensity (EUI) is expressed in British Thermal Units/square foot/year (BTU/ft²/yr), which is used to compare energy consumption to similar building types or to track consumption from year to year in the same building. The EUI is calculated by converting the annual consumption of all energy sources to BTU's and dividing by the area (gross square footage) of the building. Blueprints (where available) are utilized to verify the gross area of the facility. The EUI is a good indicator of the relative potential for energy savings. A low EUI indicates less potential for energy savings, while a high EUI indicates poor building performance therefore a high potential for energy savings.

Existing building architectural and engineering drawings (where available) are utilized for additional background information. The building envelope, lighting systems, HVAC equipment, and controls information gathered from building drawings allow for a more accurate and detailed review of the building. The information is compared to the energy usage profiles developed from utility data. Through the review of the architectural and engineering drawings a building profile can be defined that documents building age, type, usage, major energy consuming equipment or systems, etc.

The preliminary audit information is gathered in preparation for the site survey. The site survey provides critical information in deciphering where energy is spent and opportunities exist within a facility. The entire site is surveyed to inventory the following to gain an understanding of how each facility operates:

- Building envelope (roof, windows, etc.)
- Heating, ventilation, and air conditioning equipment (HVAC)
- Lighting systems and controls
- Facility-specific equipment

The building site visit is performed to survey all major building components and systems. The site visit includes detailed inspection of energy consuming components. Summary of building occupancy schedules, operating and maintenance practices, and energy management programs

provided by the building manager are collected along with the system and components to determine a more accurate impact on energy consumption.

III. METHOD OF ANALYSIS

Post site visit work includes evaluation of the information gathered, researching possible conservation opportunities, organizing the audit into a comprehensive report, and making recommendations on HVAC, lighting and building envelope improvements. Data collected is processed using energy engineering calculations to anticipate energy usage for each of the proposed energy conservation measures (ECM's). The actual building's energy usage is entered directly from the utility bills provided by the owner. The anticipated energy usage is compared to the historical data to determine energy savings for the proposed ECM's.

It is pertinent to note, that the savings noted in this report are not additive. The savings for each recommendation is calculated as standalone energy conservation measures. Implementation of more than one ECM may in some cases affect the savings of each ECM. The savings may in some cases be relatively higher if an individual ECM is implemented in lieu of multiple recommended ECM's. For example implementing reduced operating schedules for inefficient lighting will result in a greater relative savings. Implementing reduced operating schedules for newly installed efficient lighting will result in a lower relative savings, because there is less energy to be saved. If multiple ECM's are recommended to be implemented, the combined savings is calculated and identified appropriately.

ECM's are determined by identifying the building's unique properties and deciphering the most beneficial energy saving measures available that meet the specific needs of the facility. The building construction type, function, operational schedule, existing conditions, and foreseen future plans are critical in the evaluation and final recommendations. Energy savings are calculated base on industry standard methods and engineering estimations. Energy consumption is calculated based on manufacturer's cataloged information when new equipment is proposed.

Cost savings are calculated based on the actual historical energy costs for the facility. Installation costs include labor and equipment to estimate the full up-front investment required to implement a change. Costs are derived from Means Cost Data, industry publications, and local contractors and equipment suppliers. The NJ SmartStart Building® program incentives savings (where applicable) are included for the appropriate ECM's and subtracted from the installed cost. Maintenance savings are calculated where applicable and added to the energy savings for each ECM. The costs and savings are applied and a simple payback and simple return on investment (ROI) is calculated. The simple payback is based on the years that it takes for the savings to pay back the net installation cost (Net Installation divided by Net Savings.) A simple return on investment is calculated as the percentage of the net installation cost that is saved in one year (Net Savings divided by Net Installation.)

A simple life-time calculation is shown for each ECM. The life-time for each ECM is estimated based on the typical life of the equipment being replaced or altered. The energy savings is extrapolated throughout the life-time of the ECM. The total energy savings is calculated as the total life-time multiplied by the yearly savings.

IV. HISTORIC ENERGY CONSUMPTION/COST

A. Energy Usage / Tariffs

Electric

Table 3 and Figure 1 represent the electrical usage for the surveyed facility from March-08 to February-09. JCP&L Electric Utility provides electricity to the facility under the GSS (General Service Secondary) rate. The electric utility measures consumption in kilowatt-hours (KWH) and maximum demand in kilowatts (KW). One KWH usage is equivalent to 1000 watts running for one hour. One KW of electric demand is equivalent to 1000 watts running at any given time. The basic usage charges are shown as generation service and delivery charges along with several non-utility generation charges. Rates used in this report reflect the historical data received for the facility.

Natural Gas

Table 4 and Figure 2 show the natural gas energy usage from February-08 to January-09. New Jersey Natural Gas supplies the natural gas utilizing the GSS rate schedule and delivers the fuel to the burner under the firm transportation rate at the facility. The gas utility measures consumption in cubic feet x 100 (CCF), and converts the quantity into Therms of energy. One Therm is equivalent to 100,000 BTUs of energy. Below is the average unit cost for the utilities at this facility.

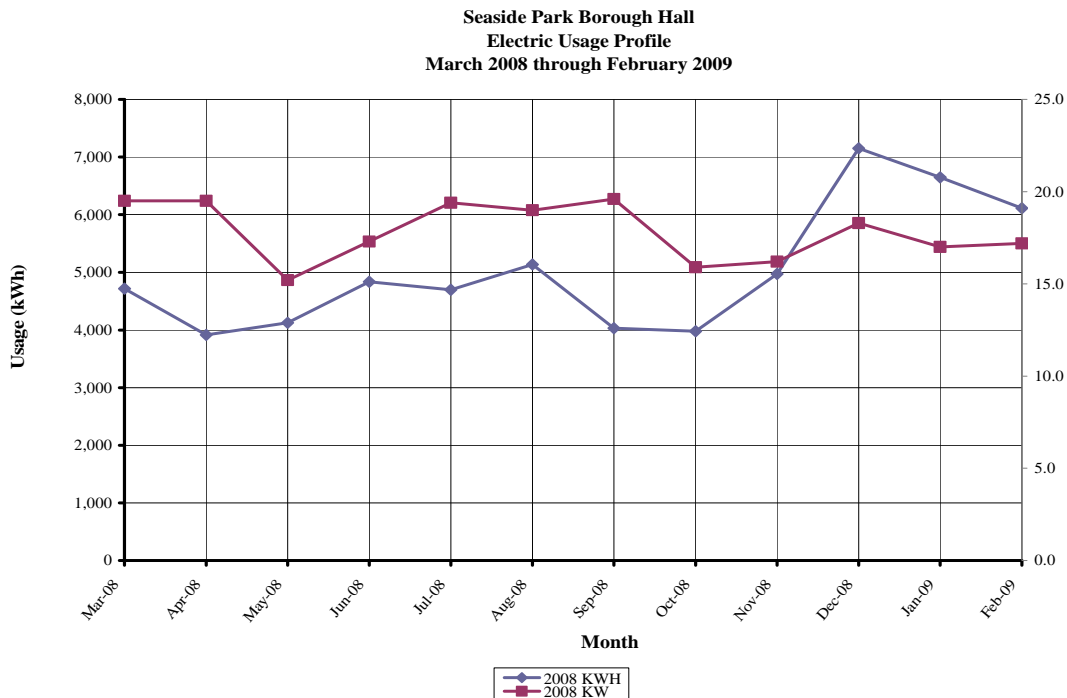
<u>Description</u>	<u>Average</u>
Electricity	16.5¢ / kWh (4.8¢ / kBtu)
*Natural Gas	\$5.62 / therm (5.62¢ / kBtu)

*Note: The Natural Gas cost per Therm includes customer service charges.

**Table 3
Electricity Billing Data**

Utility Provider: JCP&L, General Service Secondary-JC_GS1_01F (Meter # L48568402)			
MONTH OF USE	CONSUMPTION KWH	DEMAND	TOTAL BILL
Mar-08	4,715	19.5	\$680
Apr-08	3,913	19.5	\$579
May-08	4,124	15.2	\$706
Jun-08	4,837	17.3	\$885
Jul-08	4,697	19.4	\$878
Aug-08	5,138	19.0	\$943
Sep-08	4,031	19.6	\$665
Oct-08	3,978	15.9	\$636
Nov-08	4,971	16.2	\$781
Dec-08	7,151	18.3	\$1,141
Jan-09	6,649	17.0	\$1,067
Feb-09	6,113	17.2	\$986
Totals	60,317	19.6 Max	\$9,948
AVERAGE DEMAND 17.8 KW average AVERAGE RATE \$0.165 \$/kWh			

**Figure 1
Electricity Usage Profile**

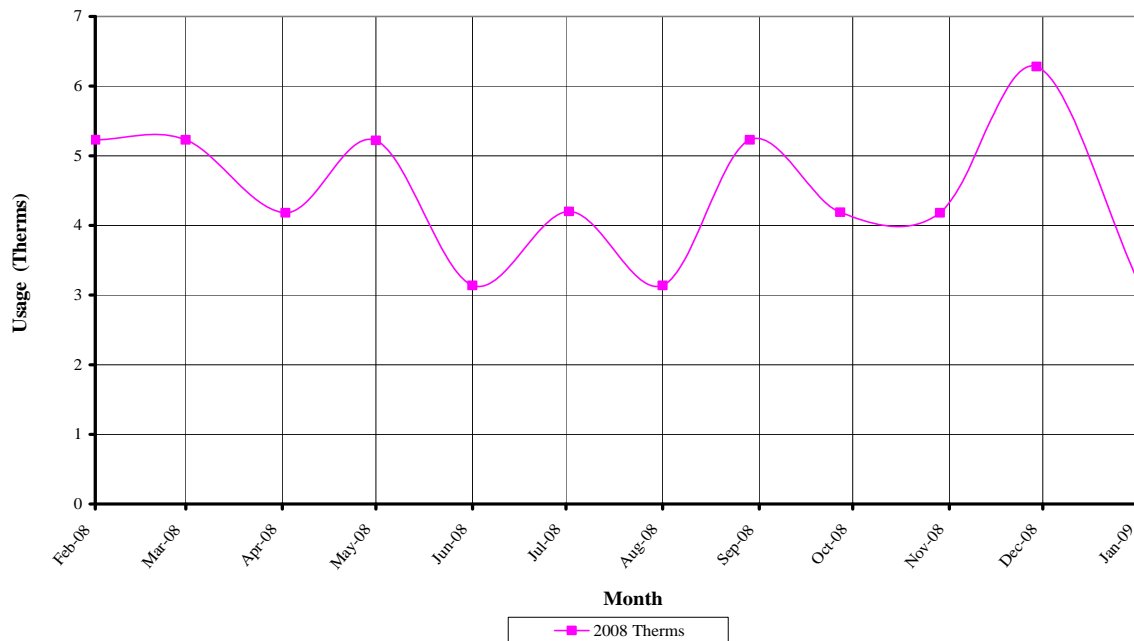


**Table 4
Natural Gas Billing Data**

Utility Provider: NJ Natural Gas - Rate - GSS, (Meter # 00309955)		
MONTH OF USE	CONSUMPTION (THERMS)	TOTAL BILL
Feb-08	5.23	\$22.47
Mar-08	5.23	\$22.47
Apr-08	4.18	\$20.99
May-08	5.22	\$22.45
Jun-08	3.14	\$19.53
Jul-08	4.20	\$21.02
Aug-08	3.14	\$19.53
Sep-08	5.23	\$24.61
Oct-08	4.19	\$31.58
Nov-08	4.18	\$31.58
Dec-08	6.28	\$34.39
Jan-09	3.16	\$29.33
TOTALS	53.38	\$299.95
AVERAGE RATE:	\$5.62	\$/THERM

**Figure 2
Natural Gas Usage Profile**

Seaside Park Borough Hall
Gas Usage Profile
February 2008 through January 2009



B. Energy Use Intensity (EUI)

Energy Use Intensity (EUI) is a measure of a building's annual energy utilization per square foot of building. This calculation is completed by converting all utility usage consumed by a building for one year, to British Thermal Units (BTU) and dividing this number by the building square footage. EUI is a good measure of a building's energy use and is utilized regularly for comparison of energy performance for similar building types. The Oak Ridge National Laboratory (ORNL) Buildings Technology Center under a contract with the U.S. Department of Energy maintains a Benchmarking Building Energy Performance Program. The ORNL website determines how a building's energy use compares with similar facilities throughout the U.S. and in a specific region or state.

Source use differs from site usage when comparing a building's energy consumption with the national average. Site energy use is the energy consumed by the building at the building site only. Source energy use includes the site energy use as well as all of the losses to create and distribute the energy to the building. Source energy represents the total amount of raw fuel that is required to operate the building. It incorporates all transmission, delivery, and production losses, which allows for a complete assessment of energy efficiency in a building. The type of utility purchased has a substantial impact on the source energy use of a building. The EPA has determined that source energy is the most comparable unit for evaluation purposes and overall global impact. Both the site and source EUI ratings for the building are provided to understand and compare the differences in energy use.

The site and source EUI for this facility is calculated as follows. (See Table 5 for details):

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

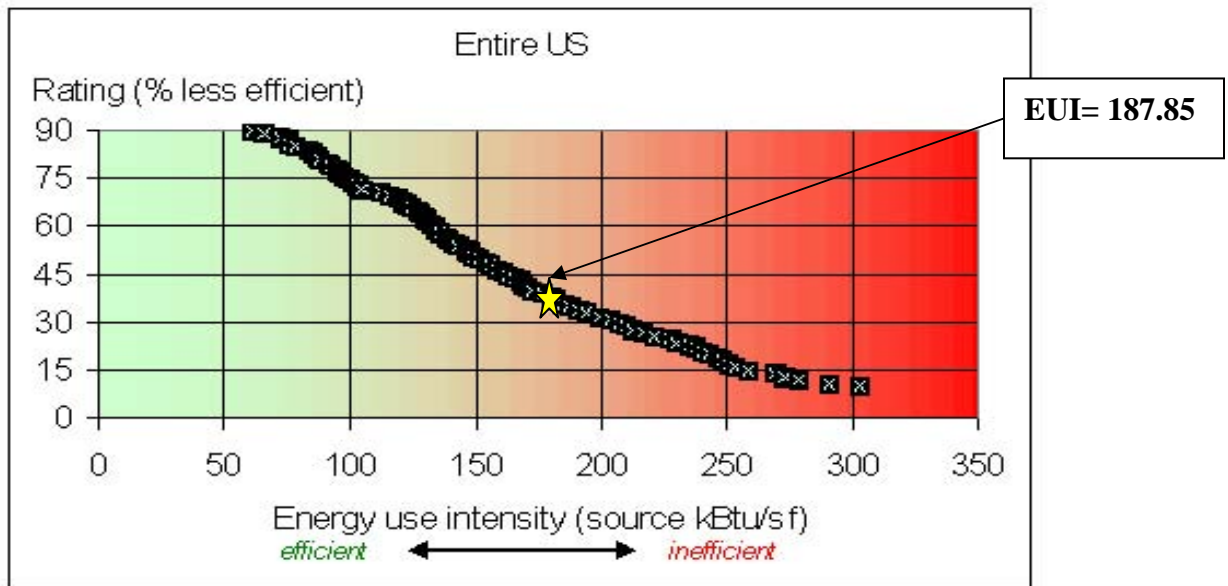
$$\text{Building Source EUI} = \frac{(\text{Electric Usage in kBtu} \times \text{SS Ratio} + \text{Gas Usage in kBtu} \times \text{SS Ratio})}{\text{Building Square Footage}}$$

Table 5
Borough Hall EUI Calculations

ENERGY TYPE	BUILDING USE			SITE ENERGY	SITE-SOURCE	SOURCE ENERGY
	kWh	Therms	Gallons	kBtu	RATIO	kBtu
ELECTRIC	60,317			205,922	3.340	687,780
NATURAL GAS		53.38		5,338	1.047	5,589
FUEL OIL			0.00	0	1.010	0
PROPANE			0.00	0	1.010	0
TOTAL				211,260		693,369
*Site - Source Ratio data is provided by the Energy Star Performance Rating Methodology for Incorporating Source Energy Use document issued Dec 2007.						
BUILDING AREA	3,691			SQUARE FEET		
BUILDING SITE EUI	57.24			kBtu/SF/YR		
BUILDING SOURCE EUI	187.85			kBtu/SF/YR		

Figure 3 below depicts a national EUI grading for the source use of office buildings.

Figure 3
Source Energy Use Intensity Distributions – Offices



C. EPA Energy Benchmarking System

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

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

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

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

User Name:	seasideparkboro
Password:	lgeaceg09014
Security Question:	What is your birth city?
Security Answer:	“Seaside Park Boro”

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

**Table 6
ENERGY STAR Performance Rating**

FACILITY DESCRIPTION	ENERGY PERFORMANCE RATING	NATIONAL AVERAGE
Borough Hall	N/A	N/A

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

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

Due to the square footage of the Borough Hall building being less than 5000 S.F. of floor space, an Energy Star Performance Rating could not be calculated. Despite this, the Portfolio Manager calculates the Building Source Energy Use Intensity (EUI).

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

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

The EUI distribution, Figure 3, is specific for Office Buildings. The Borough Hall has a Building Source EUI of 187.85 rating for this type of facility. The lower the EUI the less energy the facility uses per squarefoot. A low EUI indicates a more efficient building. There maybe some opportunity for improvement making the facility more energy efficient and saving more on the utility costs.

Refer to Appendix D for detailed energy benchmarking report entitled “STATEMENT OF ENERGY PERFORMANCE.”

V. FACILITY DESCRIPTION

The Seaside Park Borough Hall building is 2-story structure, with basement, originally built in 1890 for use as a Coast guard Station. It is a wood frame structure with a masonry foundation, cedar shingle siding, and a steep pitch roof with asphalt shingles. A major renovation was performed in 1995 which included conversion of the original large garage area to offices. During this renovation new windows and spray cellulose insulation was added to the exterior walls and attic. It presently houses the administrative offices for the borough, a senior citizen center, and meeting rooms. The basement is used for storage and mechanical equipment.



Original Coast Guard Station Photo

Heating and Cooling System

The primary heating and cooling system for the building is a geothermal ground source heat pump system. The geothermal system was installed as part of the 1995 renovation to the building. Nine(9) 300 ft. deep wells each contain a 1-1/2" supply and return piping looped together at the bottom to form a closed loop. The nine(9) wells are manifolded together in the basement mechanical room. Two(2) 3/4 hp circulating pumps, one a spare, pump the fluid through the well field and to Three(3) packaged water source heat pump units located in the attic and the basement. The circulating pump operates constantly.

Each heat pump is a Water Furnace SXV model with a nominal capacity of 4 tons with supply and return ductwork. The Heat Pumps units provide heating or cooling depending upon a signal from their respective zone thermostats. The thermostats are digital non-programmable type. Unit efficiencies were premier at the time of installation but presently would only meet minimum efficiency standards.

The energy source is electric for both heating and cooling, which accounts for the relatively stable month-to-month electric use for this facility.

Domestic Hot Water

A gas-fired Hot Water Heater, located in the basement provides hot water for the restrooms and kitchen area. As the only gas-fired piece of equipment, it accounts for the entire gas bill of only \$300 per year.

Lighting System

The following spaces in the basement including pump and supply room are lit via 1x8 surface fixtures containing T12 lamps with magnetic ballasts. Standard switching is utilized and there are no other types of lighting controls present.

The mechanical room in the basement is lit via ceiling mounted compact fluorescent type fixture with electronic ballast. Standard switching is utilized and there are no other types of lighting controls present.

The basement stairs are lit via incandescent type wall fixture. Standard switching is utilized and there are no other types of lighting controls present.

The remaining spaces in the basement which include mechanical room, corridor, police and storage rooms are lit via 1x4 surface type fixtures containing T8 lamps with electronic ballasts. Standard switching is utilized and there are no other types of lighting controls present.

The first floor kitchen is lit via 2-foot by 4-foot lay-in fixture containing T12 lamps and magnetic ballast. Standard switching is utilized and there are no other types of lighting controls present.

The first floor back entrance lobby and stairwell are lit via wall sconces containing compact fluorescent lamps and electronic ballast. Standard switching is utilized and there are no other types of lighting controls present.

The first floor front entrance lobby and corridor are lit via down lights containing incandescent lamps. Standard switching is utilized and there are no other types of lighting controls present.

The first floor men's and women's bathrooms are lit via 2-foot by 4-foot surface fixture containing T12 lamps with magnetic ballasts. Standard switching is utilized and there are no other types of lighting controls present.

The first floor meeting room is lit via 2-foot by 4-foot surface fixtures containing T12 lamps and magnetic ballasts. Standard switching is utilized and there are no other types of lighting controls present.

The main office area is lit via of a multiple of continuous 1-foot by 4-foot surface fixtures (with baffle lens) containing T8 lamps and electronic ballasts. There are also pendant hung fixtures containing compact fluorescent lamps and electronic ballasts. There is a small office adjacent to this space that also has a pendant hung fixture containing compact fluorescent lamps and

electronic ballast. Standard switching is utilized and there are no other types of lighting controls present.

The front entrance stairwell to second floor (existing lighthouse) is lit via ceiling fixtures containing incandescent lamps, one at mid level and top of stairwell. Standard switching is utilized and there are no other types of lighting controls present.

The second floor main lobby, bathroom and mayor's office are lit via 2-foot by 2-foot surface fixtures containing T8 lamps and electronic ballasts. Standard switching is utilized and there are no other types of lighting controls present.

The second floor meeting room is lit via 4-foot by 4-foot surface fixtures containing T8 lamps and electronic ballasts. Standard switching is utilized and there are no other types of lighting controls present.

The second floor mechanical room and dead storage rooms are lit via 1-foot by 4-foot surface fixtures containing T8 lamps and electronic ballasts. Standard switching is utilized and there are no other types of lighting controls present.

The attic space is lit via ceiling fixtures containing compact fluorescent and incandescent lamps. Standard switching is utilized and there are no other types of lighting controls present.

Exit signs in this building contain both LED lamps that consume an estimated 5 watts of electricity per sign and incandescent lamps that consume an estimated 40 watts of electricity per sign.

The exterior lighting is wall mounted fixtures with metal halide lamps. The front and back entrance areas have down lights containing incandescent lamps.

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

VI. MAJOR EQUIPMENT LIST

Following the completion of the field survey a detailed equipment list was created. The equipment within this list is considered major energy consuming equipment whose replacement could yield substantial savings. In addition, the list shows the major equipment in the facility and all pertinent information utilized in energy savings calculations. An approximate age was assigned to the equipment if a manufacturers date was not shown on the equipment's nameplate. The ASHRAE service life for the equipment along with the remaining useful life is also shown in the Appendix.

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

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

VII. ENERGY CONSERVATION MEASURES (ECM)

ECM #1: Upgrade the Lighting

Description:

Upgrade the Fluorescent Lighting

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

CEG recommends replacement of the existing T12 lamps and ballasts with the latest technology T8 lamps and high efficiency electronic ballasts. The new energy efficient, T8 lamps will provide adequate lighting and will save the Owner on electrical costs due to the better performance of the electronic ballasts. In addition to functional cost savings, the fixture replacement will also provide operational cost savings. The operational cost savings will be realized through the decreased number of lamps that will be required to be replaced per year. The expected lamp life of the latest high efficiency T8 lamps is approximately 30,000 burn-hours, requiring fewer lamps to replace per year. Based on the operating hours of this portion of the facility, approximately 2000 hours per year, the Owner will be changing approximately 33% less lamps per year.

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

Energy Savings Calculations:

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

Maintenance Savings are calculated as follows:

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

Maintenance Savings = (54 x 33% reduction x \$2.00) + (\$20 x 18) = \$395

Install Compact Fluorescent Lighting

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

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

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

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

Energy Savings Calculations:

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

Maintenance Savings are calculated as follows:

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

Maintenance Savings = (12 x 75% reduction x \$5) + (\$15 x 9) = \$180

Energy Savings Summary:

ECM #1 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$2,116
NJ Smart Start Equipment Incentive (\$):	(\$170)
Net Installation Cost (\$):	\$1,946
Maintenance Savings (\$ / yr):	\$575
Energy Savings (\$ / yr):	\$1,080
Total Net Savings (\$ / yr):	\$1,655
Simple Payback (yrs):	1.17
Simple Return On Investment (%):	85.5 %
Estimated ECM Lifetime (yr):	15
Simple Lifetime Savings (\$):	\$22,879

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

ECM #2: Install Lighting Controls

Description:

Install Lighting Controls to Reduce the Lighting Use

In some areas the lighting is left on unnecessarily. In many cases the lights are left on because of the inconvenience to manually switch lights off when a room is left or on when a room is first occupied. This is common in storage rooms that are occupied for only short periods and only a few times per day. In some instances lights are left on due to the misconception that it is better to keep the lights on rather than to continuously switch lights on and off. Although increased switching reduces lamp life, the energy savings outweigh the lamp replacement costs. The payback timeframe for when to turn the lights off is approximately two minutes. If the lights are off for at least a two minute interval, then it pays to shut them off.

Lighting controls come in many forms. Sometimes an additional switch is adequate to provide reduced lighting levels when full light output is not needed. Occupancy sensors detect motion and will switch the lights on when the room is occupied. Occupancy sensors can either be mounted in place of a current wall switch, or on the ceiling to cover large areas. Photocell control senses light levels and turn off or reduce lights when there is adequate daylight. Photocells are mostly used outside, but are becoming more popular in energy-efficient interior lighting designs as well.

The U.S. Department of Energy sponsored a study to analyze energy savings achieved through various types of building system controls. The referenced savings is based on the “Advanced Sensors and Controls for Building Applications: Market Assessment and Potential R&D Pathways,” document posted for public use April 2005. The study has found that commercial buildings have the potential to achieve significant energy savings through the use of building controls. The average energy savings are as follows based on the report:

- Energy Management and Control System Savings - 5%-15%.
- Commissioning - 5%-15%.
- Automatic Fault Detection and Diagnostics - 5%-15%.
- Occupancy Sensors for Lighting Control - 20%-28%.
- Photosensor-Based Lighting Control -20%-60%.
- Demand Controlled Ventilation (DCV) -10%-15%.

CEG would recommend the replacement of standard wall switches with sensor wall switches for individual rooms, ceiling mount sensors for large office areas or restrooms, and fixture mount box sensors for some applications. Sensors shall be manufactured by Sensorswitch, Watt Stopper or equivalent. See the “Investment Grade Lighting Audit” Appendix E for details.

Energy Savings Calculations:

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

$Savings = Total\ kilowatts \times Annual\ Average\ Burn\ Hours$

$= 4,975\ kWh/yr. \times 20\% \times \$0.16/kWh$

Annual Savings = \$159 / yr

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

The SmartStart Buildings® incentive is \$20 per control which equates to an installed cost of \$55/unit. Total number of rooms to be retrofitted is 24.

Total cost to install sensors is $\$55 \times 24\ units = \$1,320$.

Total ECM Lifetime Energy Savings = 15 Years (Est.) $\times \$80 / yr. = \$1,200$

Energy Savings Summary:

ECM #2 - ENERGY SAVINGS SUMMARY	
Installation Cost (\$):	\$1,800
NJ Smart Start Equipment Incentive (\$):	(\$480)
Net Installation Cost (\$):	\$1,320
Maintenance Savings (\$ / yr):	\$0
Energy Savings (\$ / yr):	\$159
Total Net Savings (\$ / yr):	\$159
Simple Payback (yrs):	8.3
Simple Return On Investment (%):	12 %
Estimated ECM Lifetime (yr):	15
Simple Lifetime Savings (\$):	\$2,385

ECM #3: WSHP Unit Replacement

Description:

The three 4 ton water source heat pumps are unitary equipment and easy to replace. The unit was made in 1995 by Water Furnace. The unit's efficiency is was 12.8 EER cooling / 4.2 COP Heating when new. Due to the age and wear, the estimated efficiency is 11.5 EER / 3.8 COP today. The life span of the units is 19 years. This units have 6 years left on their lifetime.

This ECM includes replacing the WSHP units with equivalent capacity but greater energy efficiency. The ECM calculations are based on a 4 ton Climatemaster "Tranquility 20" with ECM motor with efficiencies of 20 EER cooling and 4.9 COP heating.

Heating Season Heating Degree Days = 4,888 HDD
 Cooling Season Full Load Cooling Hrs. = 800 hrs/yr.
 Average Cost of Electricity = \$0.165/kWh

Total Rated Cooling Capacity = 12 Tons
 Existing System Efficiency = 11.5 EER / 3.8 COP
 Proposed System Efficiency = 20 EER / 4.2 COP

Energy Savings Calculations:

Cooling Savings Calculation:

$$EnergySavings = \frac{Cooling(Tons) \times 12,000 \left(\frac{Btu}{Ton\ hr} \right)}{1000 \left(\frac{Wh}{kWh} \right)} \times \left(\frac{1}{EER_{OLD}} - \frac{1}{EER_{NEW}} \right) \times Full\ Load\ Hrs.$$

$$EnergySavings = \frac{12 (Tons) \times 12,000 \left(\frac{Btu}{Ton\ hr} \right)}{1000 \left(\frac{Wh}{kWh} \right)} \times \left(\frac{1}{11.5 \left(\frac{Btu}{W} \right)} - \frac{1}{20 \left(\frac{Btu}{W} \right)} \right) \times 800\ hours$$

$$= 4,257\ kWh$$

$$Demand\ Savings = \frac{Energy\ Savings\ (kWh)}{Hrs\ of\ Cooling}$$

$$Demand\ Savings = \frac{4,257\ (kWh)}{800\ Hrs.} = 5.3\ KW$$

$$\text{Cooling Cost Savings} = 4,257 \text{ (kWh)} \times 0.165 \left(\frac{\$}{\text{kWh}} \right) = \$702$$

Heating Savings Calculation:

$$\text{Heat Load} = \frac{\text{Heat Loss} \left(\frac{\text{Btu}}{\text{Hr SF}} \right) \times \text{Area (SF)}}{1000 \left(\frac{\text{Btu}}{\text{kBtu}} \right)}$$

$$\text{Heat Load} = \frac{35 \left(\frac{\text{Btu}}{\text{Hr SF}} \right) \times 3,691 \text{ (SF)}}{1000 \left(\frac{\text{Btu}}{\text{kBtu}} \right)} = 129 \left(\frac{\text{kBtu}}{\text{Hr}} \right)$$

$$\text{Energy Savings} = \frac{\text{Heat Load} \left(\frac{\text{kBtu}}{\text{Hr}} \right) \times \text{Heat Deg Days} \times 24 \text{ Hrs} \times \text{Correction Factor}}{\text{Design Temp Difference} (\text{°F}) \times \text{Fuel Heat Value} \left(\frac{\text{kBtu}}{\text{kWh}} \right)} \times \dots$$

$$\left(\frac{1}{\text{COP}_{\text{OLD}}} - \frac{1}{\text{COP}_{\text{NEW}}} \right)$$

$$\text{Energy Savings} = \frac{129 \left(\frac{\text{kBtu}}{\text{Hr}} \right) \times 4,888 \text{ (HDD)} \times 24 \text{ Hrs} \times 0.6}{65 \text{ (°F)} \times 3.413 \left(\frac{\text{kBtu}}{\text{kWh}} \right)} \times \left(\frac{1}{3.8} - \frac{1}{4.9} \right) \dots$$

$$= 2418 \text{ (kWh)}$$

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

$$\text{Savings} = 2418 \text{ (kWh)} \times 0.165 \left(\frac{\$}{\text{kWh}} \right) = \$399$$

$$\text{Total ECM Savings} = \$704 + \$399 = \$1103$$

Installation cost for the 3 WSHP units is estimated at \$16,000. Note that this estimate includes the demolition of the existing units.

From the NJ Smart Start[®] Program appendix, the rooftop unit replacement falls under the category “Unitary AC” and warrants an incentive based on efficiency (EER) at a certain cooling tonnage. The program incentives are calculated as follows:

$$\begin{aligned} \text{Smart Start}^{\text{®}} \text{ Incentive} &= (\text{Cooling Tons} \times \$/\text{Ton Incentive}) \\ &= (12\text{Tons} \times \$92/\text{Ton}) = \$1104 \end{aligned}$$

Energy Savings Summary:

ECM #3 - ENERGY SAVINGS SUMMARY*	
Installation Cost (\$):	\$16,000
NJ Smart Start Equipment Incentive (\$):	(\$1,104)
Net Installation Cost (\$):	\$14,896
Maintenance Savings (\$ / yr):	\$0
Energy Savings (\$ / yr):	\$1,103
Total Net Savings (\$ / yr):	\$1,103
Simple Payback (yrs):	13.5
Simple Return On Investment (%):	7.4 %
Estimated ECM Lifetime (yr):	19
Simple Lifetime Savings (\$):	\$6,061

ECM#4: Programmable Thermostats

Description:

Three standard, manual wall thermostats for the HVAC units provide local control with adjustable settings. These thermostats are non-programmable also do not have unoccupied setback features.

New programmable thermostats are available that utilize programming schedules for occupied and unoccupied times and can be set to vary space temperature at these respective times. In addition, the programmable thermostats can be used in conjunction with a motion sensor. When the space is not occupied the equipment can operate at the unoccupied set-point. Once the space becomes occupied the motion sensor sends a signal to the thermostat to raise the temperature of the space to the occupied set-point. This control system approach is ideal for facilities with intermittent occupancy.

This energy conservation measure would replace the various HVAC unit thermostats with programmable 7-day thermostats with night time setback control. The recommended thermostat set-points for heating are as follows:

Occupied Heating = 70° F
Unoccupied Heating = 60° F

CEG recommends replacement of the existing remote thermostats with Honeywell RTH7500D 7-day programmable thermostat or equivalent.

Energy Savings Calculations:

The energy savings of a 7-day programmable thermostat was calculated by using Energy Star Life Cycle Cost Estimate software for qualified programmable thermostats. The referenced calculator can be found at www.energystar.gov.

Calculated energy savings for heating only = \$236/Unit x 3 = \$1416

Energy Savings Summary:

ECM #4 - ENERGY SAVINGS SUMMARY*	
Installation Cost (\$):	\$600
NJ Smart Start Equipment Incentive (\$):	(\$0)
Net Installation Cost (\$):	\$600
Maintenance Savings (\$ / yr):	\$0
Energy Savings (\$ / yr):	\$1,416
Total Net Savings (\$ / yr):	\$1,416
Simple Payback (yrs):	0.42
Simple Return On Investment (%):	236 %
Estimated ECM Lifetime (yr):	15
Simple Lifetime Savings (\$):	\$20,640

VIII. RENEWABLE/DISTRIBUTED ENERGY MEASURES

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

Solar energy produces clean energy and reduces a building's carbon footprint. This is accomplished via photovoltaic panels which will be mounted on all south and southwestern facades of the building. Flat roof, as well as sloped areas can be utilized; flat areas will have the panels turned to an optimum solar absorbing angle. (A structural survey of the roof would be necessary before the installation of PV panels is considered). Parking lots can also be utilized for the installation of a solar array. A truss system can be installed that is high enough to park a vehicle under the array, this way no parking lot area is lost. The state of NJ has instituted a program in which one Solar Renewable Energy Certificate (SREC) is given to the Owner for every 1000 kWh of generation. SREC's can be sold anytime on the market at their current market value. The value of the credit varies upon the current need of the power companies. The average value per credit is around \$350, this value was used in our financial calculations. This equates to \$0.35 per kWh generated.

CEG has reviewed the existing roof area of the building being audited for the purposes of determining a potential for a roof mounted photovoltaic system. Due to the limited roof area facing south and the pitch angle, it is our opinion that a roof mounted, PV Solar Panel system is not feasible for the Borough Hall building roof.

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

Wind energy production is another option available through the Renewable Energy Incentive Program. Small wind turbines can be utilized to produce clean energy on a per building basis. Cash incentives are available per kWh of electric usage. CEG has reviewed the applicability of wind energy for Seaside Park and has determined it is not a viable option. Low average wind speeds for the area are not adequate for wind turbine generation. Typical wind turbines start producing energy at 8 mph wind speeds. The nearest wind station to Seaside Park is Toms River with an average 5.4 mph wind speed, making this application impractical.

IX. ENERGY PURCHASING AND PROCUREMENT STRATEGY

Load Profile:

Load Profile analysis was performed to determine the seasonal energy usage of the facility. Irregularities in the load profile will indicate potential problems within the facility. Consequently based on the profile a recommendation will be made to remedy the irregularity in energy usage. For this report, the facility's energy consumption data was gathered in table format and plotted in graph form to create the load profile. Refer to Section IV, Figures 1 and 2 included within this report to reference the respective electricity and natural gas usage load profile for March 2008 through February 2009 for electricity, and February 2008 through January 2009 for natural gas.

Electricity:

Section IV, Figure 1 demonstrates a fairly flat load profile with some exceptions. The summer consumption is relatively flat as compared to summer air conditioner loads only. This facility is cooled (and heated) by a Geothermal System, thus the steady load profile. The peak of the year takes place however in December, due to the fact that the heating is also provided by Geothermal. This base-load shaping is important because a flat consumption profile will yield more competitive pricing when shopping for alternative energy solutions.

Natural Gas:

Section IV, Figure 2 demonstrates a fairly flat load profile (with peaks) throughout the year. It is expected that the largest consumption peak is demonstrated in the winter month, December. This is typical as natural gas's highest consumption peak should take place during the heating months. Heating loads carry a much higher average cost because of the higher demand for natural gas during the winter season. This facility utilizes Geothermal Heating System supplied by natural gas, thus the steady load profile throughout the year. This base-load shaping is important because a flat consumption profile will yield more competitive pricing when shopping for alternative energy solutions.

Tariff Analysis:

Electricity:

This facility receives electrical service through Jersey Central Power & Light (JCP&L) on a GSS (General Service Secondary) rate. Service classification GS is available for general service purposes on secondary voltages not included under Service Classifications RS, RT, RGT or GST. This is a single or three phase service at secondary voltages. For electric supply (generation), the customer will use the utilities Basic Generation Service (BGS) or a Third Party Supplier (TPS). If they use the utility BGS then they will pay according to the BGS default service. The Delivery Service includes the following charges: Customer Charge, Supplemental Customer Charge, Distribution Charge (kW Demand), kWh Charge, Non-utility Generation Charge, TEFA, SBC, SCC, Standby Fee and RGGI

Natural Gas:

The Borough receives natural gas Delivery Service through New Jersey Natural Gas Company on a GSS (General Service Small) or GSL (General Service Large) tariff rate schedule. Borough Hall utilizes the GSS rate schedule, and it is available to any Customer in the entire territory served by the Company who use is *less* than 5,000 therms annually and uses gas for all purposes other than residential and interruptible service. Where the customer uses the Cooling, Air Conditioning and Pool Heating Service (CAC) under Special Provision 1 applicable to customers purchasing gas supply under Rider “A”, the Company will, upon application of the Customer, meter the space heating and the “CAC” separately.

This service is considered a “firm” service, where the customer may either purchase gas from Company’s Rider “A”, for Basic Gas Supply Service (BGSS) or from a Marketer or Broker.

The basic charges under this tariff are for: Customer Charge, Demand Charge, Delivery Charge and if the customer elects, the BGSS Supply Charge.

The customer can elect to have the Commodity Charge serviced through the utility or by a Third Party Supplier (TPS). It is pertinent to note, should the TPS not deliver, and the customer will receive replacement service from the utility which carries an extremely high penalty cost of service.

Imbalances can occur when Third Party Suppliers are used to supply natural gas, full-delivery is not made, and when a new supplier is contracted or the customer returns to the utility. It is important when utilizing a Third Party Supplier, that an experienced regional supplier is used. Otherwise, under delivery can occur, jeopardizing economics and scheduling.

Recommendations:

CEG recommends a global approach that will be consistent with all facilities within The Borough of Seaside Park. CEG’s observations are seen in both commodities. The average price “to compare” per kWh (kilowatt hour) for all buildings is \$.1387/kWh (kWh is the common unit of electric measure). The average price per decatherm for natural gas is \$11.16/dth (dth is the common unit of measure). Energy commodities are among the most volatile of all commodities, however at this point and time, energy is extremely competitive. Seaside Park could realize significant savings if it were to take advantage of these current market prices quickly, before energy increases. Based on last year’s historical consumption (January –December 2008) and current fixed electric rates, the Borough could see an improvement of 20%. (Note: Savings were calculated using The Borough of Seaside Parks Average Annual Consumption of 322,744 kWh and an Average fixed one-year commodity contract). CEG recommends aggregating the entire electric load to gain the most optimal energy costs. CEG recommends advisement for alternative sourcing and supply of energy on a “managed approach”.

CEG’s other recommendation coincides with the natural gas cost. CEG recognized that the Borough could also see improvement in its natural gas costs by a factor of over 20%. And CEG recommends further advisement on these prices. The Borough should consider procuring energy

(natural gas) on its own. CEG recommends alternative sourcing strategies through energy advisement.

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

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

X. INSTALLATION FUNDING OPTIONS

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

- i. *Energy Savings Improvement Program (ESIP)* – Public Law 2009, Chapter 4 authorizes government entities to make energy related improvements to their facilities and pay for the costs using the value of energy savings that result from the improvements. The “Energy Savings Improvement Program (ESIP)” law provides a flexible approach that can allow all government agencies in New Jersey to improve and reduce energy usage with minimal expenditure of new financial resources.
- ii. *Municipal Bonds* – Municipal bonds are a bond issued by a city or other local government, or their agencies. Potential issuers of municipal bonds include cities, counties, redevelopment agencies, school districts, publicly owned airports and seaports, and any other governmental entity (or group of governments) below the state level. Municipal bonds may be general obligations of the issuer or secured by specified revenues. Interest income received by holders of municipal bonds is often exempt from the federal income tax and from the income tax of the state in which they are issued, although municipal bonds issued for certain purposes may not be tax exempt.
- iii. *Power Purchase Agreement* – Public Law 2008, Chapter 3 authorizes contractor of up to fifteen (15) years for contracts commonly known as “power purchase agreements.” These are programs where the contracting unit (Owner) procures a contract for, in most cases, a third party to install, maintain, and own a renewable energy system. These renewable energy systems are typically solar panels, windmills or other systems that create renewable energy. In exchange for the third party’s work of installing, maintaining and owning the renewable energy system, the contracting unit (Owner) agrees to purchase the power generated by the renewable energy system from the third party at agreed upon energy rates.

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

XI. ADDITIONAL RECOMMENDATIONS

The following recommendations include no cost/low cost measures, Operation & Maintenance (O&M) items, and water conservation measures with attractive paybacks. These measures are not eligible for the Smart Start Buildings incentives from the office of Clean Energy but save energy none the less.

- A. Chemically clean the condenser and evaporator coils periodically to optimize efficiency. Poorly maintained heat transfer surfaces can reduce efficiency 5-10%.
- B. Maintain all weather stripping on windows and doors.
- C. Clean all light fixtures to maximize light output.
- D. Provide more frequent air filter changes to decrease overall fan horsepower requirements and maintain better IAQ.
- E. Confirm that outside air economizers on the rooftop units that serve the Office Areas are functioning properly to take advantage of free cooling.

In addition to the recommendations above, implementing Retro-Commissioning would be beneficial for this facility. Retro-Commissioning is a means to verify your current equipment is operating at its designed efficiency, capacity, airflow, and overall performance. Retro-Commissioning provides valuable insight into systems or components not performing correctly or efficiently. The commissioning process defines the original system design parameters and recommends revisions to the current system operating characteristics.

APPENDIX

Seaside Park Borough Hall

CONSTRUCTION COST AND REBATES					
<u>ECM # 1 - UPGRADE THE LIGHTING</u>					
	<u>Qty</u>	<u>Unit Cost \$</u>	<u>Material \$</u>	<u>Labor \$</u>	<u>Total \$</u>
New T-8 & CFL Lamps & Ballasts	1	\$571	\$571	\$1,546	\$2,117
Total Cost					\$2,117
Utility Incentive					-\$580
Total Net Cost					\$1,537
<u>ECM # 2 - INSTALL LIGHTING CONTROLS</u>					
	<u>Qty</u>	<u>Unit Cost \$</u>	<u>Material \$</u>	<u>Labor \$</u>	<u>Total \$</u>
Occupancy Sensors	24	\$75	\$1,800	\$0	\$1,800
Total Cost					\$1,800
Utility Incentive					-\$480
Total Net Cost					\$1,320
<u>ECM # 3 - WSHP UNIT REPLACEMENT</u>					
	<u>Qty</u>	<u>Unit Cost \$</u>	<u>Material \$</u>	<u>Labor \$</u>	<u>Total \$</u>
Demo Existing WSHP	3	\$250	\$0	\$750	\$1,000
New 4 Ton WSHP	3	\$4,000	\$12,000	\$3,000	\$15,000
Total Cost					\$16,000
Utility Incentive					-\$1,104
Total Net Cost					\$14,896
<u>ECM # 4 - PROGRAMMABLE THERMOSTAT</u>					
	<u>Qty</u>	<u>Unit Cost \$</u>	<u>Material \$</u>	<u>Labor \$</u>	<u>Total \$</u>
Programmable Thermostat	3	\$100	\$300	\$300	\$600
Total Cost					\$600
Utility Incentive					\$0
Total Net Cost					\$600

Concord Engineering Group, Inc.



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

SmartStart Building Incentives

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

Electric Chillers

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

Gas Cooling

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

Desiccant Systems

	\$1.00 per cfm – gas or electric
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Electric Unitary HVAC

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

Ground Source Heat Pumps

Closed Loop & Open Loop	\$370 per ton
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Gas Heating

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

Variable Frequency Drives

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

Natural Gas Water Heating

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

Premium Motors

Three-Phase Motors	\$45 - \$700 per motor
--------------------	------------------------

Prescriptive Lighting

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

Lighting Controls – Occupancy Sensors

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

Lighting Controls – HID or Fluorescent Hi-Bay Controls

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

Other Equipment Incentives

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

Seaside Park Borough Hall

EQUIPMENT LIST									
TAG	MAKE	MODEL	TYPE	CAPACITY	EFFICIENCY	SERVES	LOCATION	REMAINING USEFUL LIFE	NOTES
WSHP-7	WATER FURNACE	SXV048 BOOCRT	VERTICAL GROUND SOURCE HEAT PUMP	4 TONS	12.8 EER, 4.2 COP	1ST FLOOR	BASEMENT	6	
WSHP-8	WATER FURNACE	SXV048 BOOCRT	VERTICAL GROUND SOURCE HEAT PUMP	4 TONS	12.8 EER, 4.2 COP	2ND FLOOR OFFICES	2ND FLOOR ATTIC	6	
WSHP-9	WATER FURNACE	SXV048 BOOCRT	VERTICAL GROUND SOURCE HEAT PUMP	4 TONS	12.8 EER, 4.2 COP	1ST FLOOR NORTH OFFICES	2ND FLOOR ATTIC	6	
CP-3 & 4	TACO	FE1207E	HORIZONTAL BASE MOUNTED PUMP (2)	27 GPM@35 FT.HD., 3/4 HP MOTOR	75%	ENTIRE BUILDING	BASEMENT	7	
DHW-1	AO SMITH	FSG30-202	GAS FIRED WITH STORAGE	30 MBH, 30 GALLON	83%	ENTIRE BUILDING	BASEMENT	10	FLUE INTO MASONRY CHIMNEY



STATEMENT OF ENERGY PERFORMANCE

Seaside Park Borough Hall

Building ID: 1830855

For 12-month Period Ending: February 28, 2009¹

Date SEP becomes ineligible: N/A

Date SEP Generated: August 18, 2009

Facility

Seaside Park Borough Hall
1701 N. Ocean Avenue
Seaside Park, NJ 08752

Facility Owner

N/A

Primary Contact for this Facility

N/A

Year Built: 1890**Gross Floor Area (ft²):** 3,691**Energy Performance Rating² (1-100)** N/A**Site Energy Use Summary³**

Natural Gas (kBtu) ⁴	5,293
Electricity (kBtu)	202,822
Total Energy (kBtu)	208,115

Energy Intensity⁵

Site (kBtu/ft ² /yr)	57
Source (kBtu/ft ² /yr)	187

Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO ₂ e/year)	31
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Electric Distribution Utility

Jersey Central Power & Lt Co

National Average Comparison

National Average Site EUI	77
National Average Source EUI	182
% Difference from National Average Source EUI	3%
Building Type	Office

Stamp of Certifying Professional

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

Meets Industry Standards⁶ for Indoor Environmental Conditions:

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

Certifying Professional

N/A

Notes:

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
5. Values represent energy intensity, annualized to a 12-month period.
6. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

ENERGY STAR® Data Checklist for Commercial Buildings

In order for a building to qualify for the ENERGY STAR, a Professional Engineer (PE) must validate the accuracy of the data underlying the building's energy performance rating. This checklist is designed to provide an at-a-glance summary of a property's physical and operating characteristics, as well as its total energy consumption, to assist the PE in double-checking the information that the building owner or operator has entered into Portfolio Manager.

Please complete and sign this checklist and include it with the stamped, signed Statement of Energy Performance.

NOTE: You must check each box to indicate that each value is correct, OR include a note.

CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	<input checked="" type="checkbox"/>
Building Name	Seaside Park Borough Hall	Is this the official building name to be displayed in the ENERGY STAR Registry of Labeled Buildings?		<input type="checkbox"/>
Type	Office	Is this an accurate description of the space in question?		<input type="checkbox"/>
Location	1701 N. Ocean Avenue, Seaside Park, NJ 08752	Is this address accurate and complete? Correct weather normalization requires an accurate zip code.		<input type="checkbox"/>
Single Structure	Single Facility	Does this SEP represent a single structure? SEPs cannot be submitted for multiple-building campuses (with the exception of acute care or children's hospitals) nor can they be submitted as representing only a portion of a building		<input type="checkbox"/>
Seaside Park Borough Hall (Office)				
CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	<input checked="" type="checkbox"/>
Gross Floor Area	3,691 Sq. Ft.	Does this square footage include all supporting functions such as kitchens and break rooms used by staff, storage areas, administrative areas, elevators, stairwells, atria, vent shafts, etc. Also note that existing atriums should only include the base floor area that it occupies. Interstitial (plenum) space between floors should not be included in the total. Finally gross floor area is not the same as leasable space. Leasable space is a subset of gross floor area.		<input type="checkbox"/>
Weekly operating hours	55 Hours	Is this the total number of hours per week that the Office space is 75% occupied? This number should exclude hours when the facility is occupied only by maintenance, security, or other support personnel. For facilities with a schedule that varies during the year, "operating hours/week" refers to the total weekly hours for the schedule most often followed.		<input type="checkbox"/>
Workers on Main Shift	13	Is this the number of employees present during the main shift? Note this is not the total number of employees or visitors who are in a building during an entire 24 hour period. For example, if there are two daily 8 hour shifts of 100 workers each, the Workers on Main Shift value is 100. The normal worker density ranges between 0.3 and 10 workers per 1000 square feet (92.8 square meters)		<input type="checkbox"/>
Number of PCs	10	Is this the number of personal computers in the Office?		<input type="checkbox"/>
Percent Cooled	50% or more	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		<input type="checkbox"/>
Percent Heated	50% or more	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		<input type="checkbox"/>

ENERGY STAR® Data Checklist for Commercial Buildings

Energy Consumption

Power Generation Plant or Distribution Utility: Jersey Central Power & Lt Co

Fuel Type: Electricity		
Meter: Electric (kWh (thousand Watt-hours)) Space(s): Entire Facility		
Start Date	End Date	Energy Use (kWh (thousand Watt-hours))
01/05/2009	02/04/2009	6,649.00
12/05/2008	01/04/2009	7,151.00
11/05/2008	12/04/2008	4,971.00
10/05/2008	11/04/2008	3,978.00
09/05/2008	10/04/2008	4,031.00
08/05/2008	09/04/2008	5,138.00
07/05/2008	08/04/2008	4,697.00
06/05/2008	07/04/2008	4,837.00
05/05/2008	06/04/2008	4,124.00
04/05/2008	05/04/2008	3,913.00
03/05/2008	04/04/2008	4,715.00
Electric Consumption (kWh (thousand Watt-hours))		54,204.00
Electric Consumption (kBtu)		184,944.05
Total Electricity Consumption (kBtu)		184,944.05
Is this the total Electricity consumption at this building including all Electricity meters?		<input type="checkbox"/>

Fuel Type: Natural Gas		
Meter: Gas (therms) Space(s): Entire Facility		
Start Date	End Date	Energy Use (therms)
01/05/2009	02/04/2009	6.28
12/05/2008	01/04/2009	4.18
11/05/2008	12/04/2008	4.19
10/05/2008	11/04/2008	5.23
09/05/2008	10/04/2008	3.14
08/05/2008	09/04/2008	4.20
07/05/2008	08/04/2008	3.14
06/05/2008	07/04/2008	5.22
05/05/2008	06/04/2008	4.18
04/05/2008	05/04/2008	5.23

03/05/2008	04/04/2008	5.23
Gas Consumption (therms)		50.22
Gas Consumption (kBtu)		5,022.00
Total Natural Gas Consumption (kBtu)		5,022.00
Is this the total Natural Gas consumption at this building including all Natural Gas meters?		<input type="checkbox"/>

Additional Fuels	
Do the fuel consumption totals shown above represent the total energy use of this building? Please confirm there are no additional fuels (district energy, generator fuel oil) used in this facility.	<input type="checkbox"/>

Certifying Professional

(When applying for the ENERGY STAR, this must be the same PE that signed and stamped the SEP.)

Name: _____ Date: _____

Signature: _____

Signature is required when applying for the ENERGY STAR.

FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

Facility
Seaside Park Borough Hall
1701 N. Ocean Avenue
Seaside Park, NJ 08752

Facility Owner
N/A

Primary Contact for this Facility
N/A

General Information

Seaside Park Borough Hall	
Gross Floor Area Excluding Parking: (ft ²)	3,691
Year Built	1890
For 12-month Evaluation Period Ending Date:	February 28, 2009

Facility Space Use Summary

Seaside Park Borough Hall	
Space Type	Office
Gross Floor Area(ft ²)	3,691
Weekly operating hours	55
Workers on Main Shift	13
Number of PCs	10
Percent Cooled	50% or more
Percent Heated	50% or more

Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 02/28/2009)	Baseline (Ending Date 02/28/2009)	Rating of 75	Target	National Average
Energy Performance Rating	N/A	N/A	75	N/A	N/A
Energy Intensity					
Site (kBtu/ft ²)	57	57	34	N/A	77
Source (kBtu/ft ²)	187	187	111	N/A	182
Energy Cost					
\$/year	\$ 10,102.54	\$ 10,102.54	\$ 6,001.98	N/A	\$ 13,644.90
\$/ft ² /year	\$ 2.74	\$ 2.74	\$ 1.63	N/A	\$ 3.70
Greenhouse Gas Emissions					
MtCO ₂ e/year	31	31	18	N/A	42
kgCO ₂ e/ft ² /year	8	8	5	N/A	11

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

Notes:

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

INVESTMENT GRADE LIGHTING AUDIT

CONCORD ENERGY SERVICES

CEG Project #: BS09-014
Project Name : Seaside Park Borough Hall
Address: 1701 N. Ocean Avenue
City, State: Seaside Park, NJ. 08752
Building SF: 3691

kWh Cost: 0.165
Burn Hrs: 8760

Existing Lighting Fixture Type	Room Name	Lighting Fixture Description	Existing Fixtures				Proposed Fixtures										Fixtures Retrofitted				Unit Installation Cost						Rebate Estimate	Simple Payback		
			Lamps per Fixture	Voltage	Watts	Qty of Fixtures	Total Watts	New Lighting Fixture Type	Existing/Replace	Description	Lamps per Fixture	Watts	Qty of Fixtures	Total Watts	Wattage Reduction	Average Burn Hours	Ave \$/kwh	Energy Savings, kWh	Energy Savings, \$	Qty	Material Each	Labor Each	Total Each	Total Materials	Total Labor	Total All				
Basement																														
A	Pump Room	2L-T8-86W 8' Industrial Fixture	2	120	172	1	172	NA	Existing to Remain	0	0	0	1	0	172	1000	\$0.17	172	\$28.38	0	0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0.0
A	Supplies Room	2L-T8-86W 8' Industrial Fixture	2	120	172	1	172	NA	Existing to Remain	0	0	0	1	0	172	1000	\$0.17	172	\$28.38	0	0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0.0
B	Mechanical Room	2L-T12-34w-1'x4' Surface mtd. Fixture	2	120	77	1	77	NB	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	48	1	48	29	1500	\$0.17	44	\$7.18	1	22.88	60	\$82.88	\$22.88	\$60.00	\$82.88	\$10.00	10.2		
C	Mechanical Room	1L-32w CFL Ceiling Fixture	1	120	35	1	35	NC	Existing to Remain	0	0	0	1	0	35	1500	\$0.17	53	\$8.66	0	0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0.0	
D	Stairs	1L-60w A-lamp Ceiling Fixture	1	120	60	1	60	ND	Relamp	18w Edison-base CFL	1	18	1	18	42	2000	\$0.17	84	\$13.86	1	9.8	37.5	\$47.30	\$9.80	\$37.50	\$47.30	\$0.00	3.4		
B	Corridor	2L-T12-34w-1'x4' Surface mtd. Fixture	2	120	77	5	385	NB	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	48	5	240	145	1500	\$0.17	218	\$35.89	5	22.88	60	\$82.88	\$114.40	\$300.00	\$414.40	\$50.00	10.2		
B	Police Storage Room	2L-T12-34w-1'x4' Surface mtd. Fixture	2	120	77	1	77	NB	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	48	1	48	29	1500	\$0.17	44	\$7.18	1	22.88	60	\$82.88	\$22.88	\$60.00	\$82.88	\$10.00	10.2		
B	Storage Room	2L-T12-34w-1'x4' Surface mtd. Fixture	2	120	77	1	77	NB	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	2	48	1	48	29	1500	\$0.17	44	\$7.18	1	22.88	60	\$82.88	\$22.88	\$60.00	\$82.88	\$10.00	10.2		
Total Basement						12	1055						12	402	653			829	\$136.70	1			\$193	\$518	\$710	\$80	4.6			
First Floor																														
E	Kitchen	4L-T12-34W 2'x4' Recessed Troffer	4	120	154	1	154	NE	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	4	96	1	96	58	3500	\$0.17	203	\$33.50	1	27.88	60	\$87.88	\$27.88	\$60.00	\$87.88	\$10.00	2.3		
F	Main Lobby (Back Entrance)	1L-20 CFL Wall Sconce	1	120	23	5	115	NF	Existing to Remain	0	0	0	5	0	115	8760	\$0.17	1,007	\$166.22	0	0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0.0		
G	Main Lobby (Front Entrance)	1L-150W Par Down Light	1	120	150	7	1050	NG	Relamp, Reballast	32w Edison-base CFL	1	35	7	245	805	3500	\$0.17	2,818	\$464.89	7	9.8	37.5	\$47.30	\$68.60	\$262.50	\$331.10	\$0.00	0.7		
H	Mens Room	4L-T12-34W 2'x4' Surface Fixture	4	120	154	1	154	NH	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	4	96	1	96	58	3500	\$0.17	203	\$33.50	1	27.88	60	\$87.88	\$27.88	\$60.00	\$87.88	\$10.00	2.3		
H	Womens Room	4L-T12-34W 2'x4' Surface Fixture	4	120	154	1	154	NH	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	4	96	1	96	58	3500	\$0.17	203	\$33.50	1	27.88	60	\$87.88	\$27.88	\$60.00	\$87.88	\$10.00	2.3		
H	Meeting Room	4L-T12-34W 2'x4' Surface Fixture	4	120	154	6	924	NH	Relamp, Reballast	32w-T8 energy saver w/ electronic T8 High Efficiency ballast	4	96	6	576	348	3500	\$0.17	1,218	\$200.97	6	27.88	60	\$87.88	\$167.28	\$360.00	\$527.28	\$60.00	2.3		
I	Office/Reception Area	2L-T8-32W 48" Recessed Fixture w/ Dimmable Ballast	2	120	48	29	1392	NI	Existing to Remain	0	0	0	29	0	1392	8760	\$0.17	12,194	\$2,012.00	0	0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0.0		
J	Office/Reception Area	3L-18W CFL Pendant Mid. Light fixture	3	120	120	6	720	NJ	Existing to Remain	0	0	0	6	0	720	8760	\$0.17	6,307	\$1,040.69	0	0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0.0		
J	Office	3L-18W CFL Pendant Mid. Light fixture	3	120	120	1	120	NJ	Existing to Remain	0	0	0	1	0	120	8760	\$0.17	1,051	\$173.45	0	0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0.0		
O	Exterior Canopy fixture	1L-100W Par Down Light	1	120	100	2	200	NO	Relamp, Reballast	32w Edison-base CFL	1	35	2	70	130	8760	\$0.17	1,139	\$187.90	2	9.8	37.5	\$47.30	\$19.60	\$75.00	\$94.60	\$0.00	0.5		
P	Exterior Lighting	1L-70W MH Wall Fixture	1	120	70	3	210	NP	Existing to Remain	0	0	0	3	0	210	8760	\$0.17	1,840	\$303.53	0	0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0.0		
Total First Floor						62	5193						62	1179	4014			28,183	\$4,650.13	8			\$339	\$878	\$1,217	\$90	0.2			

Existing Lighting Fixture Type	Room Name	Existing Fixtures							Proposed Fixtures							Fixtures Retrofitted					Unit Installation Cost					Rebate Estimate	Simple Payback	
		Lighting Fixture Description	Lamps per Fixture	Voltage	Watts	Qty of Fixtures	Total Watts	New Lighting Fixture Type	Existing/Replace	Description	Lamps per Fixture	Watts	Qty of Fixtures	Total Watts	Wattage Reduction	Average Burn Hours	Ave \$/kwh	Energy Savings, kWh	Energy Savings, \$	Qty	Material Each	Labor Each	Total Each	Total Materials	Total Labor			Total All
Second Floor																												
K	Second Floor Main Area	3L-T8-U-31W 2'x2' Surface Fixture	3	120	96	10	960	NK	Existing to Remain	0	0	0	10	0	960	8760	\$0.17	8,410	\$1,387.58	0	0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0.0
K	Mayor's Office	3L-T8-U-31W 2'x2' Surface Fixture	3	120	96	2	192	NK	Existing to Remain	0	0	0	2	0	192	8760	\$0.17	1,682	\$277.52	0	0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0.0
L	Meeting Room	8L-T8-32W 4'x4' Surface Fixture	8	120	256	2	512	NL	Existing to Remain	0	0	0	2	0	512	8760	\$0.17	4,485	\$740.04	0	0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0.0
K	Bathroom	3L-T8-U-31W 2'x2' Surface Fixture	3	120	96	1	96	NK	Existing to Remain	0	0	0	1	0	96	8760	\$0.17	841	\$138.76	0	0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0.0
M	Dead Storage (Main Area)	2L-T8-32W 48" Surface fixture	2	120	48	1	48	NM	Existing to Remain	0	0	0	1	0	48	8760	\$0.17	420	\$69.38	0	0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0.0
M	Dead Storage (Main Area)	2L-T8-32W 48" Surface fixture	2	120	48	1	48	NM	Existing to Remain	0	0	0	1	0	48	8760	\$0.17	420	\$69.38	0	0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0.0
C	Attic Space	1L-32w CFL Ceiling Fixture	1	120	35	3	105	NC	Existing to Remain	0	0	0	3	0	105	8760	\$0.17	920	\$151.77	0	0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0.0
D	Attic Space	1L-60w A-lamp Ceiling Fixture	1	120	60	2	120	ND	Relamp	18w Edison-base CFL	1	18	2	36	84	1200	\$0.17	101	\$16.63	2	9.8	37.5	\$47.30	\$19.60	\$75.00	\$94.60	\$0.00	5.7
N	Mechanical Room	2L-T8-32W 1'x4' Surface Fixture	2	120	48	1	48	NN	Existing to Remain	0	0	0	1	0	48	8760	\$0.17	420	\$69.38	0	0	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0.0
G	1st Flr. Stairwell landing	1L-150W Par Down Light	1	120	150	1	150	NG	Relamp, Reballast	32w Edison-base CFL	1	35	1	35	115	1000	\$0.17	115	\$18.98	1	9.8	37.5	\$47.30	\$9.80	\$37.50	\$47.30	\$0.00	2.5
G	2nd Flr. Stairwell (Lighthouse fixture)	1L-150W Par Down Light	1	120	150	1	150	NG	Relamp, Reballast	32w Edison-base CFL	1	35	1	35	115	1000	\$0.17	115	\$18.98	1	9.8	37.5	\$47.30	\$9.80	\$37.50	\$47.30	\$0.00	2.5
Total Second Floor						25	2429					25	106	2323			17,930	\$2,958.39	0				\$39	\$150	\$189	\$0	0.1	

APPENDIX F



Seaside Park Borough Hall
1701 N. Ocean Ave.
Seaside Park, NJ 08752

↑ NORTH