LOCAL GOVERNMENT ENERGY AUDIT PROGRAM: ENERGY AUDIT REPORT

PREPARED FOR: **SOUTH BRUNSWICK MUNICIPAL BUILDING**
540 Ridge Rd.
Monmouth Junction, NJ 07928

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I. EXECUTIVE SUMMARY

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

Township of South Brunswick
Municipal Building
540 Ridge Rd.
Monmouth Junction, NJ 08852

Municipal Contact Person: Ronald Schmalz

This audit is 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	$233,558
Natural Gas	$23,735
Total	$257,293

The potential annual energy cost savings for each energy conservation measure (ECM) and renewable energy measure (REM) are shown below in Table 1. Be aware that the ECM's and REM'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 ± 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
Financial Summary Table

ENERGY CONSERVATION MEASURES (ECM's)					
ECM NO.	**DESCRIPTION**	**NET INSTALLATION COST[A]**	**ANNUAL SAVINGS[B]**	**SIMPLE PAYBACK (Yrs)**	**SIMPLE LIFETIME ROI**
ECM #1	Heat Pump and Split A/C Indoor Unit Replacement	$19,440	$2,806	6.9	116.5%
ECM #2	Domestic Hot Water Heater Replacement	$20,340	$2,164	9.4	59.6%
ECM #3	Premium Effeciency Motors	$1,732	$386	4.5	234.3%
ECM #4	Lighting Upgrade	$800	$799	1.0	1398.1%
ECM #5	Lighting Control	$3,240	$1,731	1.9	701.4%
RENEWABLE ENERGY MEASURES (REM's)					
ECM NO.	**DESCRIPTION**	**NET INSTALLATION COST**	**ANNUAL SAVINGS**	**SIMPLE PAYBACK (Yrs)**	**SIMPLE LIFETIME ROI**
REM #1	123.3 KW PV Array	$1,109,520	$71,798	15.5	61.8%

Notes: A. Cost takes into consideration applicable NJ Smart StartTM incentives.
B. Savings takes into consideration applicable maintenance savings.

The estimated demand and energy savings for each ECM and REM is shown below in Table 2. The descriptions in this table correspond to the ECM's and REM's listed in Table 1.

Table 2
Estimated Energy Savings Summary Table

ENERGY CONSERVATION MEASURES (ECM's)				
ECM NO.	DESCRIPTION	ANNUAL UTILITY REDUCTION		
		ELECTRIC DEMAND (KW)	ELECTRIC CONSUMPTION (KWH)	NATURAL GAS (THERMS)
ECM #1	Heat Pump and Split A/C Indoor Unit Replacement	37.0	18218.0	0.0
ECM #2	Hot Water Heater Replacement	30.0	31200.0	-1688.0
ECM #3	High Effeciency Motors on Pumps	0.0	2506.0	0.0
ECM #4	Lighting Upgrade	1.5	5188.0	0.0
ECM #5	Lighting Control	0.0	11242.0	0.0
RENEWABLE ENERGY MEASURES (REM's)				
ECM NO.	DESCRIPTION	ANNUAL UTILITY REDUCTION		
		ELECTRIC DEMAND (KW)	ELECTRIC CONSUMPTION	NATURAL GAS (THERMS)
REM #1	123.3 KW PV Array	123.3	142456.0	0.0

Concord Engineering Group (CEG) recommends proceeding with 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 facility:

- **ECM #1:** Heat Pump and Indoor A/C Unit Air Handler Replacement
- **ECM #2:** Domestic Hot Water Heater Replacement
- **ECM #3:** High Efficiency Pumps on Motors
- **ECM #4:** Lighting Upgrade
- **ECM #5:** Lighting Control

In addition to the ECMs, there are maintenance and operational measures that can provide significant energy savings and provide immediate benefit. The ECMs 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.
5. Engage a factory authorized service representative to investigate the current operation and settings on the Hydrotherm boilers to ensure that the boiler's optimal operating conditions are being met. Also, arrange for on-site training from the factory representative for proper operation and maintenance of the boilers that are installed at the facility.
6. Have the heating hot water system water quality checked, and if necessary, install a water treatment system

Additionally, based on the review of the facility's energy bills and discussions with the municipality, the energy audit team recommends Retro-Commissioning of this facility to meet the following objectives:

- Bring existing HVAC equipment to its proper operational state including air and water distribution systems
- Reduce energy use and energy costs
- Improve indoor air quality
- Verify the installation and performance of identified system upgrades

- Address overall building energy use and demand and identify areas of highest energy use and demand
- Identify the location of the most comfort problems or trouble spots in the building
- Review current O&M practices

Through the implementation of a Retro-Commissioning Plan, the Township will be able to continue with their vision of reducing energy usage and operating efficient facilities. CEG believes the Retro-Commissioning process will help regulate the electrical energy consumption in the portions of the facility that are not on 24/7 operation. By returning the HVAC equipment to design parameters and original control sequences the equipment will be able to maintain a better conditioned environment and eventually provide energy savings that the Owner will benefit from.

All in all, incentives provide financial motivation and much needed support for the implementation of energy conservation measures. Along with the NJ Smart Start program, the Pay for Performance Program incentives and Direct Install Program, sponsored by NJ Clean Energy Program, are applicable for this facility. CEG recommends the Owner review the possibility of utilizing one of these two programs to implement the recommended energy conservation measures noted within this report. Utilizing the available funding options will help limit the impact the implementation of the energy conservation measures have on the Township's annual budget. These programs are further detailed on the New Jersey Clean Energy Program's website www.njcleanenergy.com and can be discussed further pending your interest.

As a final note, the audit of the facility indicated the Township is moving forward in the right direction as far as existing operations and maintenance practices to reduce energy consumption.

II. INTRODUCTION

The comprehensive energy audit covers the 84,460 square foot Municipal Building, which includes the following spaces: the Main Building, West Wing and Police Station.

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 Index (EUI) is established for the building. Energy Use Index (EUI) is expressed in British Thermal Units/square foot/year (BTU/ft^2/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 (ECMs). 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 ECMs.

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 ECMs. 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.

ECMs 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 costs 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 Smart Start 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 life-time for each ECM is estimated based on the typical life of the equipment being replaced or altered. The costs and savings are applied and a simple payback, simple lifetime savings, and simple return on investment are calculated. See below for calculation methods:

ECM Calculation Equations:

$$Simple\ Payback = \left(\frac{Net\ Cost}{Yearly\ Savings} \right)$$

$$Simple\ Lifetime\ Savings = \left(Yearly\ Savings \times ECM\ Lifetime \right)$$

$$Simple\ Lifetime\ ROI = \frac{(Simple\ Lifetime\ Savings - Net\ Cost)}{Net\ Cost}$$

$$Lifetime\ Ma\,\mathrm{int}\,enance\ Savings = \left(Yearly\ Ma\,\mathrm{int}\,enance\ Savings \times ECM\ Lifetime \right)$$

$$Internal\ Rate\ of\ \mathrm{Re}\,turn = \sum_{n=0}^{N} \left(\frac{Cash\ Flow\ of\ Period}{(1 + IRR)^n} \right)$$

$$Net\ \mathrm{Pr}\,esent\ Value = \sum_{n=0}^{N} \left(\frac{Cash\ Flow\ of\ Period}{(1 + DR)^n} \right)$$

Net Present Value calculations based on Interest Rate of 3%.

IV. HISTORIC ENERGY CONSUMPTION/COST

A. Energy Usage / Tariffs

The energy usage for the facility has been tabulated and plotted in graph form as depicted within this section. Each energy source has been identified and monthly consumption and cost noted per the information provided by the Owner.

The electric usage profile represents the actual electrical usage for the facility. PSE&G provides electricity to the facility under their LPLS rate structure. The electric utility measures consumption in kilowatt-hours (KWH) and maximum demand in kilowatts (KW). One KWH usage is equivalent to 1000 watts running for one hour. One KW of electric demand is equivalent to 1000 watts running at any given time. The basic usage charges are shown as generation service and delivery charges along with several non-utility generation charges. Rates used in this report reflect the historical data received for the facility.

The gas usage profile shows the actual natural gas energy usage for the facility. PSE&G provides natural gas to the facility under the GSG and GSGH rate structures. 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.

The overall cost for utilities is calculated by dividing the total cost by the total usage. Based on the utility history provided, the average cost for utilities at this facility is as follows:

Description	Average
Electricity	15.4¢ / kWh
Natural Gas	$1.22 / Therm

Table 3
Electricity Billing Data

ELECTRIC USAGE SUMMARY

Utility Provider: PSE&G
Rate: LPLS
Meter No: 778016961; 77801025
Customer ID No: 6284523416
Third Party Utility N/A
TPS Meter / Acct No: N/A

MONTH OF USE	CONSUMPTION KWH	DEMAND	TOTAL BILL
Oct-08	108,560	320.4	$15,786
Nov-08	134,920	327.6	$18,157
Dec-08	126,800	340.2	$16,692
Jan-09	126,800	340.2	$16,692
Feb-09	129,800	334.0	$18,707
Mar-09	116,040	321.6	$16,954
Apr-09	136,400	315.2	$18,978
May-09	127,240	322.0	$18,030
Jun-09	109,920	314.0	$20,598
Jul-09	139,160	340.4	$25,426
Aug-09	131,280	347.6	$24,430
Sep-09	127,400	317.6	$23,108
Totals	**1,514,320**	**347.6 Max**	**$233,558**

AVERAGE DEMAND 328.4 KW average

AVERAGE RATE $0.154 $/kWh

Figure 1
Electricity Usage Profile

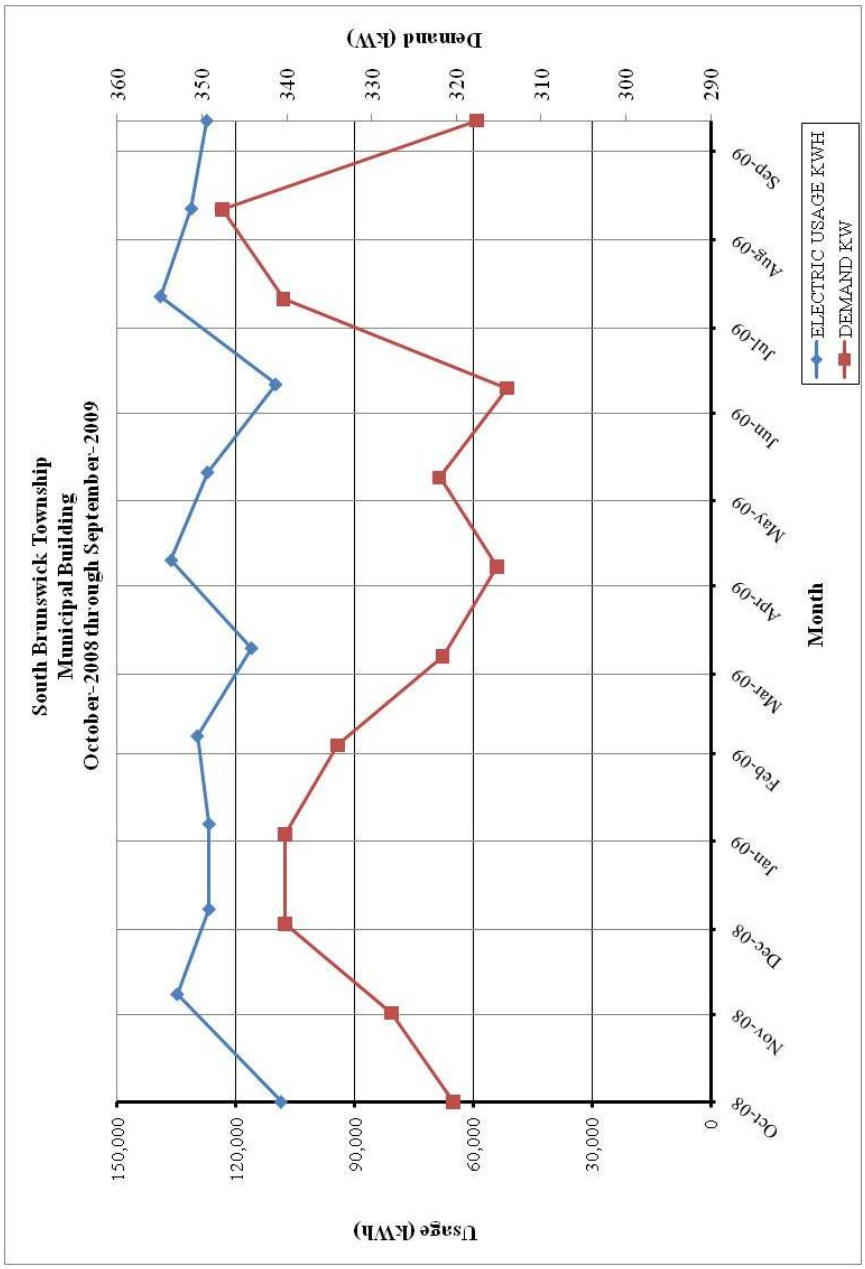


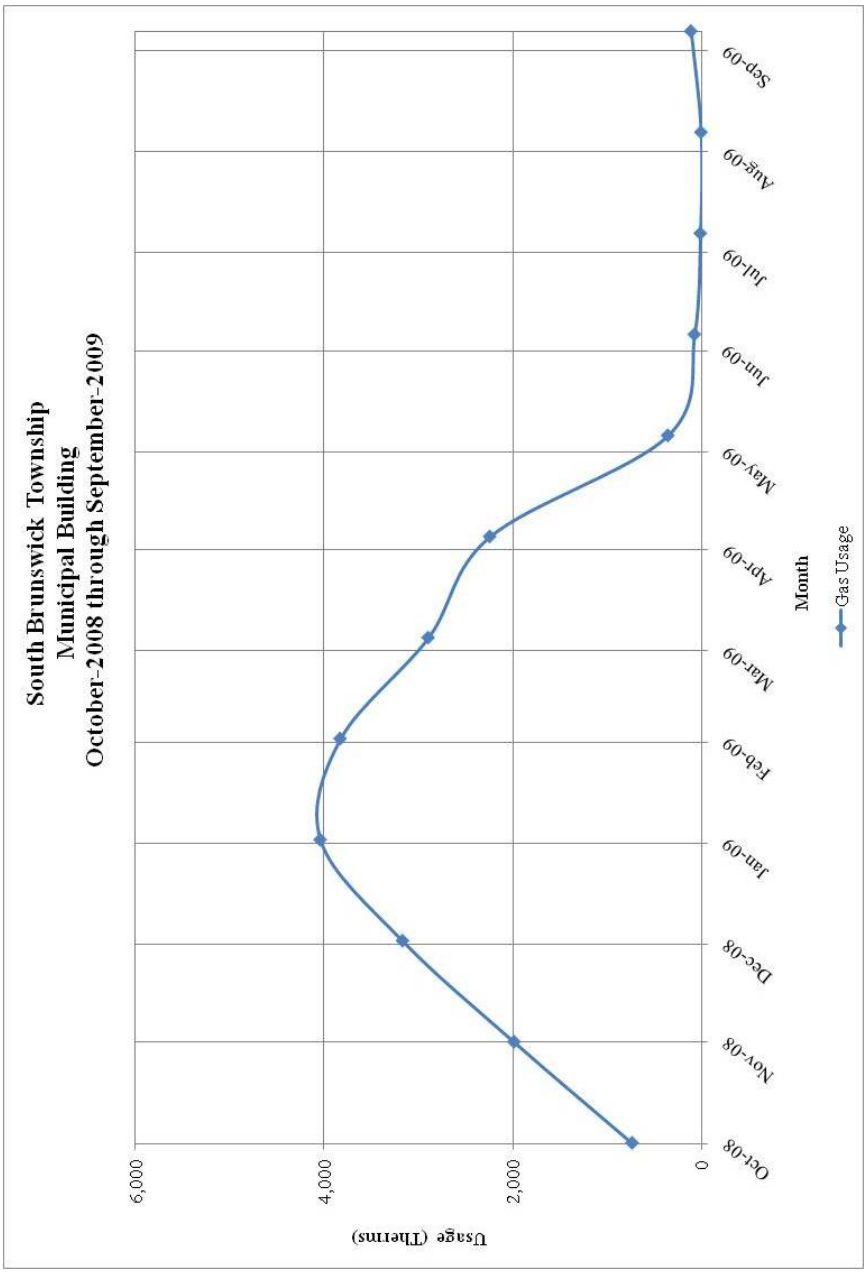
Table 4
Natural Gas Billing Data

NATURAL GAS USAGE SUMMARY	
Utility Provider:	PSE&G
Rate:	LVG - BGSS Commodity
Meter No:	2606146, 2284107, 2284106
Point of Delivery ID:	6280050114
Third Party Utility Provider:	N/A
TPS Meter No:	N/A

MONTH OF USE	CONSUMPTION (THERMS)	TOTAL BILL
Oct-08	731.78	$993.98
Nov-08	1,983.24	$2,656.54
Dec-08	3,165.53	$4,369.66
Jan-09	4,038.63	$5,306.73
Feb-09	3,826.71	$4,501.08
Mar-09	2,894.36	$3,168.39
Apr-09	2,241.25	$2,114.51
May-09	353.02	$341.50
Jun-09	70.88	$93.31
Jul-09	8.34	$38.16
Aug-09	1.04	$31.28
Sep-09	108.83	$119.98
TOTALS	**19,423.61**	**$23,735.12**

AVERAGE RATE:	**$1.222**	**$/THERM**

Figure 2
Natural Gas Usage Profile



B. Energy Use Index (EUI)

Energy Use Index (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:

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

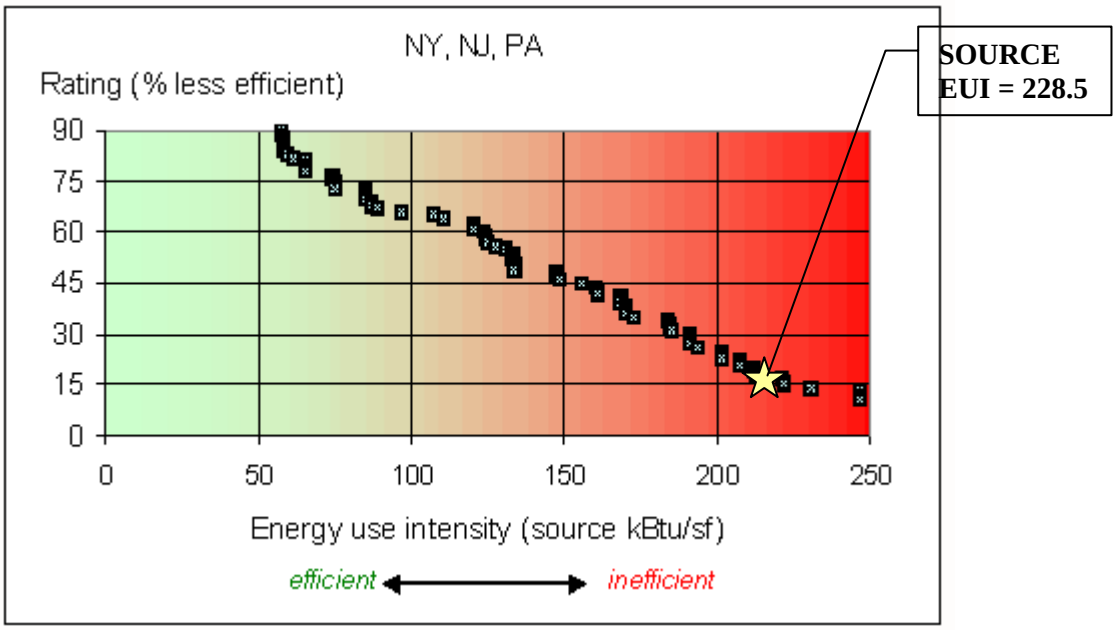
$$Building\ \ Source\ EUI = \frac{(Electric\ Usage\ in\ kBtu\ \ X\ \ SS\ \ Ratio + Gas\ Usage\ in\ kBtu\ \ X\ \ SS\ \ Ratio)}{Building\ \ Square\ \ Footage}$$

Table 5
Facility Energy Use Index (EUI) Calculation

ENERGY USE INTENSITY CALCULATION						
ENERGY TYPE	**BUILDING USE**			**SITE ENERGY**	**SITE-SOURCE RATIO**	**SOURCE ENERGY**
	kWh	**Therms**	**Gallons**	**kBtu**		**kBtu**
ELECTRIC	1514320.0			5,169,888	3.340	17,267,428
NATURAL GAS		19423.6		1,942,361	1.047	2,033,652
FUEL OIL			0.0	0	1.010	0
PROPANE			0.0	0	1.010	0
TOTAL				7,112,250		19,301,080
*Site - Source Ratio data is provided by the Energy Star Performance Rating Methodology for Incorporating Source Energy Use document issued Dec 2007.						
BUILDING AREA			84,460	SQUARE FEET		
BUILDING SITE EUI			*84.21*	kBtu/SF/YR		
BUILDING SOURCE EUI			*228.52*	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



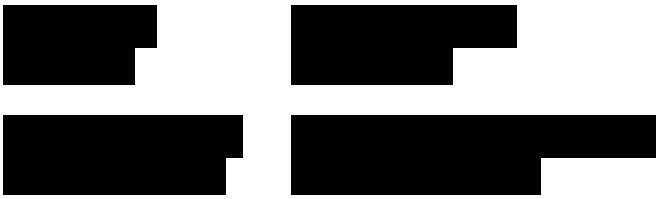
C. EPA Energy Benchmarking System

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 tracking and assessment of 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 emphasis is being placed 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. It is vital that local government municipalities assess facility energy usage, benchmark energy usage utilizing Portfolio Manager, set priorities and goals to lessen energy usage and move forward with priorities and goals.

In accordance with the Local Government Energy Audit Program, CEG has created an ENERGY STAR account for the municipality to access and monitoring the facility's 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



The utility bills and other information gathered during the energy audit process are entered into the Portfolio Manager. The following is a summary of the results for the facility:

Table 6
ENERGY STAR Performance Rating

ENERGY STAR PERFORMANCE RATING		
FACILITY DESCRIPTION	**ENERGY PERFORMANCE RATING**	**NATIONAL AVERAGE**
Municipal Building	N/A	50

Note that this building could not be given an Energy Performance Rating because in order to receive a rating, more than 50% of the building must be defined by one of the following space types: Bank/Financial Institution, Courthouse, Hospital (Acute Care and Children's), Hotel, K-12 School, Medical Office, Office, Residence Hall/Dormitory, Retail Store, Supermarket, Warehouse (Refrigerated and Non-refrigerated), or Wastewater Treatment Plant. Since more than 10% of the building is classified as a Police Station, it does not meet the requirements for being given a rating. A detailed energy summary is included in the Appendix **Statement of Energy Performance.**

V. FACILITY DESCRIPTION

The South Brunswick Municipal Building is a two story facility comprised of three sections: the Main Building, the West Wing and the Police Department. The upper level of the Main Building houses the Township Administrative Offices, the Mayor's Office and a main meeting room. The lower level of the Main Building houses the Health Department, Social Services and the local food bank. The upper level of the West Wing houses the Planning Department, Code Enforcement and Tax Assessor's Offices. The lower level of the West Wing houses the Tax Collector and Water and Sewer Departments. The Main Building and West Wing have typical operating hours between 6:30 am and 5:00 pm. The Police Station operates 24 hours a day, 7 days a week with varying occupancies.

The exterior walls are brick construction. The interior of the building walls are a combination of concrete masonry block, brick and gypsum wall board. The amount of insulation within the wall is unknown. The windows throughout the facility are in good condition and appear to be maintained. Typical windows throughout the facility are double pane, ¼" clear glass with aluminum frames. Blinds are utilized throughout the facility for occupant comfort. The blinds are valuable because they help to reduce heat loss in the winter and reduce solar heat in the summer. The majority of the roof is EPDM rubber roofing. A small portion of the roof is constructed of a built-up roof with stone covering. The amount of insulation below the roofing is unknown. The Main Building was built around 1970 (exact year is not know at the time of this report). The West Wing and the Police Station additions to the main building and were constructed in 1988.

HVAC Systems

The Main Building is served by nine (9) centrally located heat pump air conditioning units with the condensing sections of these units located on the roof. There are also two (2) above ceiling heat pump air conditioning units that serve the main meeting room and lobby of the upper level of the Main Building. Six (6) of the heat pump units were noted as having in-duct electric reheat coils tied into the individual unit controls. These coils provide reheat during cooling season during dehumidification cycles as well as supplemental heat during heating season. The indoor heat pump units are manufactured by GE and are varying in size. The condensing sections are located on the roof of the building are also varying in size to correspond to the capacities of the indoor units. There are eight (8) Trane units and one (1) York unit located on the roof of the main building.

The West Wing is served by two Carrier sixty (60) ton split system VAV units. The air handling units are located in a lower level mechanical room. The condensing units are located on the roof. These units were installed in 1988 when the West Wing was added to the building. There are also five (5) gas fired Hydrotherm boilers with a heating capacity of 135 MBH each, for a total heating capacity of 675 MBH. These boilers are high efficiency modular condensing boilers. The heating hot water is circulated to baseboard heating units and cabinet heaters located in various locations throughout the building. The heating hot water is circulated by two Taco model base mounted pumps, with a capacity of 65 GPM each. At the time of the survey, it was brought to our attention that some of the boilers had leaked from the bottom of the tanks, not from piping. It was also mentioned that they have had problems with the tanks "rusting out".

The boilers that are installed are high efficiency boilers and are optimal for the site. However, when boilers leak or rust, it would indicate maintenance deficiencies and/or water quality issues. Poor water quality can be detrimental to the overall efficiency of the boilers, as well as their useful service life.

The Police Wing is served by two Carrier fifty (50) ton packaged VAV cooling only rooftop air conditioning units. Heating is provided by five (5) gas fired Hydrotherm boilers with a heating capacity of 135 MBH each, for a total capacity of 657 MBH. The heating hot water is circulated to baseboard heating units and cabinet heaters located in various locations throughout the police building. The heating hot water is circulated by two Taco base mounted pumps with a capacity of 65 GPM each. As with the boilers that serve the West Wing, it was brought to our attention that some of the boilers had leaked from the bottom of the tanks, not from piping. It was also mentioned that they have had problems with the tanks "rusting out". One of the boilers was out of service with the condensing section open. This section was also rusted out. The boilers that are installed are high efficiency boilers and are optimal for the site. However, when boilers leak or rust, it would indicate maintenance deficiencies and/or water quality issues. Poor water quality can be detrimental to the overall efficiency of the boilers, as well as their useful service life.

Exhaust System

Air is exhausted from the toilet rooms through the roof exhausters. The toilet room exhaust fans are operated based on the facility occupancy schedule.

HVAC System Controls

The HVAC systems within the facility are controlled by a DDC control system provided by Carrier. System temperature set points and operational status are monitored and controlled from a single location.

Domestic Hot Water

Domestic hot water for the West Wing restrooms and lounges is supplied from an A.O. Smith 40 gallon electric hot water heater with two 4,500 Watt elements located in the lower level mechanical room. The Domestic hot water for the Main Building restrooms and lounge is supplied from an A.O Smith 40 gallon electric hot water heater with two 4,500 Watt elements. This water heater is located in the lower level janitor's closet. The police station is served by two hot water heaters. The first is located in the lower level and serves the lower level restroom, lounge and cell area. It is a 50 gallon electric A.O. Smith with two 3,000 Watt elements. The second hot water heater in the police station is located on the upper level and serves the restrooms, lounge and mens' and women's locker rooms. It is a 50 gallon electric A.O. Smith hot water heater with two 3,000 Watt elements.

Lighting

Typical lighting throughout building is fluorescent tube lay-in fixtures with T-8 lamps and electronic ballasts. Storage rooms and closets lit with a mixture of T-8 lamps with electronic

ballasts and compact fluorescent lamps. The parking lot is lit with light poles and high pressure sodium lamps. Overall, the lighting in the municipal building has been retrofitted with newer, more efficient lamps and ballasts.

VI. MAJOR EQUIPMENT LIST

The equipment list contains major energy consuming equipment that through energy conservation measures could yield substantial energy savings. The list shows the major equipment in the facility and all pertinent information utilized in energy savings calculations. An approximate age was assigned to the equipment in some cases if a manufactures date was not shown on the equipment's nameplate. The ASHRAE service life for the equipment along with the remaining useful life is also shown in the Appendix.

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

VII. ENERGY CONSERVATION MEASURES

ECM #1 High-Efficiency Split System Heat Pump Air Handling Units

There are a total of 9 split system heat pumps and conditioning units that are paired with indoor air handling units. The indoor air handling units that are currently installed are beyond their rated service life and in turn, are not fully maximizing the efficiency of the outdoor condensing sections. All of these units are located in and serve the Main Building.

This measure would replace the air handling units with high-efficiency models of equal capacity. The following assumptions are used in the savings analysis below:

- The existing combined energy rating of the aged units paired with the outdoor units is an average of 7 EER.
- The energy efficiency rating of the new units paired with the existing outdoor units is 10 EER
- The areas served need cooling approximately 492 cooling load hours per season.

Method for Calculating Summer Energy Savings:

Gross annual energy savings = Tons (Cooling) x RLF x $[12/EER_{exist} – 12/EER_{new}]$ x CLH
Where:

RLF = the ***rated load factor*** which is the ratio of the peak cooling load imposed on the cooling equipment to the total rated cooling capacity. This factor compensates for over sizing of the air conditioning unit. Recommended value is 0.8.

CLH = ***Cooling load hours*** are defined as the ratio of the annual cooling load to the peak cooling load. The cooling load hours for South Brunswick, NJ area is 492.

Energy Savings = 90 tons cooling x 0.8 x [12/7 – 12/10] x 492 = 18,218 kWh

Energy cost savings = 18,218 kWh x $0.154/kWh = $2,806

Cost of the nine (9) high-efficiency air handling units installed is approximately $26,010.

NJ Smart Start® Program Incentives are calculated as follows:
From **Appendix B**, the heat pump air handling unit replacement falls under the category "Unitary HVAC –Air to Air heat Pumps" and warrants an incentive based on efficiency (EER) at a certain cooling tonnage.

Energy Savings Summary:

ECM #1 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$26,010
NJ Smart Start Equipment Incentive ($):	$6,570
Net Installation Cost ($):	$19,440
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$2,806
Total Yearly Savings ($/Yr):	$2,806
Estimated ECM Lifetime (Yr):	15
Simple Payback	6.9
Simple Lifetime ROI	116.5%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$42,090
Internal Rate of Return (IRR)	12%
Net Present Value (NPV)	$14,057.85

ECM#2 - Domestic Hot Water Heater Replacement

Description:

This energy conservation measure will replace the two existing electric, 9,000 Watt, 40-gallon capacity domestic hot water heaters located in the Main Building and the West Wing with gas-fired, tankless point of use hot water heater. Tankless water heaters heat water directly without the use of a storage tank. Therefore, they avoid the standby heat losses associated with storage water heaters. In a gas-fired tankless water heater, a gas burner heats the water and provides a constant supply of hot water. Therefore, you do not need to wait for the storage tank to fill up with enough hot water as is typical with storage-type hot water heaters.

In addition, this measure would also replace the two, 6,000 kW electric hot water heaters that currently serve the Police Station, with new high efficiency gas fired units of equal storage capacity.

Before proceeding with the implementation, we recommend that the Owner verify that additional gas demand and consumption are viable and acceptable at this facility. In addition, mechanical piping plans were not available during the audit, so the exact location of the gas piping is not known. We recommend that the Owner investigate the accessibility of natural gas piping in these locations and the ability to route the piping to the hot water heaters.

Energy Savings Calculations:

Existing Electric DHW Heater (West Wing and Main Building)
Rated Capacity = 9,000 Watts each Energy Factor (EF) = 0.92

40 gallons storage

Proposed High-Efficiency Gas-Fired Tankless Water Heater
Rated Capacity = 5 gallons per minute Natural Gas-Fired

Six (6) units required (one per restroom and on in each lounge) EF= 0.65

Operating Data for Existing Electric DHW Heater:
Average cost of electricity = 15.4¢/kWh

Electric DHW Heater Operating Hrs/Yr. = 1,040 Hrs.

Electric usage = (1,040 Hrs x 9,000 Watts x 2) ÷ 1,000 Watts/kW = 18,720 kWh

Cost = 15.4¢/kWh x 18,720 kWh = $2,883

Operating Data for new tankless gas-fired DHW heater:
Average cost of natural gas = $1.096/Therm

Annual gas usage for six (6) 5 GPM tankless gas-fired units = 856 Therms

Cost = 856 Therms x $ 1.22 /Therm = $1,044

Energy Savings = $2,883 - $1,044 = $1,839

Installed cost of six (6) gas-fired 5 GPM tankless water heaters = $8,400

NJ Smart Start® Program Incentives are calculated as follows:
From Appendix C, a natural gas-fired domestic hot water heater less than 50 gallons warrants the following incentive:

$$\text{Smart Start® } Incentive = (Quantity \times \$50 \ per \ DHW \ Heater) = (6 \times \$50) = \$300$$

Existing Electric DHW Heaters (Two) (Police Station)
Rated Capacity = 6,000 Watts each Energy Factor (EF) = 0.92

52 gallons storage each

Proposed Natural Gas-Fired, High-Efficiency DW Heaters
Rated Capacity = 40 MBH input; 50 gallons storage

Thermal Efficiency = 90%

Radiation Losses = 0.5%
Net Efficiency = 89.5%

Operating Data for Existing Electric DHW Heater:
Average cost of electricity = 15.4¢/kWh

Electric DHW Heater Operating Hrs/Yr. = 1,040 Hrs.

Electric usage = (1,040 Hrs x 6,000 Watts x 2) ÷ 1,000 Watts/kW = 12,480 kWh

Cost = 15.4¢/kWh x 12,480 kWh = $1,922

Operating Data for New High Efficiency Gas Water Heater
Annual gas consumption of water heater (in therms)

2 x 40,000 MBH x 1040 hrs / 100000 Bth/therm = 832 therms

Annual cost of gas usage = 832 therms x 1.22/therm = $1,016

NJ Smart Start® Program Incentives are calculated as follows:
Smart Start Incentive = $2.00/MBh /installed MBh x (2 x 40 MBh) = $160.

Energy Savings Summary:

ECM #2 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$20,800
NJ Smart Start Equipment Incentive ($):	$460
Net Installation Cost ($):	$20,340
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$2,164
Total Yearly Savings ($/Yr):	$2,164
Estimated ECM Lifetime (Yr):	15
Simple Payback	9.4
Simple Lifetime ROI	59.6%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$32,460
Internal Rate of Return (IRR)	7%
Net Present Value (NPV)	$5,493.69

ECM #3 Install NEMA Premium Efficient Motors

Existing 1-1/2 HP, 1760 RPM electric motors on the hot water circulation pumps in the West Wing and Police Station are approximately 78% efficient. The improved efficiency of the NEMA premium efficient motors is primarily due to better designs with use of better materials to reduce losses. Surprisingly, the electricity used to power a motor represents 95 % of its total lifetime operating cost. Because many motors operate 40-80 hours per week, even small increases in efficiency can yield substantial energy and dollar savings.

This energy conservation measure would replace the hot water boiler pump motors with NEMA Premium® Efficient Motors. NEMA Premium® is the most efficient motor designation in the marketplace today. Using MotorMaster+, Version 4, the energy & cost savings were calculated for the pump motors in this municipal building.

For Example: A 1.5HP Pump Motor with the following:

Existing Motor Efficiency = 78.8%
Annual Hours of Operations = 1,080 (Average)
1.5 HP = 0.746 Watt
Load Factor = 75%
Cost of electricity = $0.154 / kWh

New NEMA Premium® Motor Efficiency = 86.5%

Existing 1.5HP Motor Operating Cost =
{0.746 Watt/HP x Motor HP x Load Factor x Hours of Operation x Cost of Electricity] ÷ Motor Efficiency
= [0.746 x 1.5 x 0.75 x 2,800 x 0.154] ÷ 0.788 = $611 / Year

New NEMA Premium® Efficiency Motor Operating Cost =
[0.746 x 1.5 x 0.75 x 2,800 x 0.154] ÷ 0.865 = $418 / Year

Savings = $611 - $418 = $193 / Year

Installed Cost of a 1.5 HP NEMA Premium® Efficiency Motor = $478 minus the SmartStart Building® incentive of $45 is $433.

The following table outlines the motor replacement plan for this facility:

MOTOR REPLACEMENT PLAN

MOTOR HP	INSTALLED COST**	QTY	TOTAL COST	SAVINGS	SIMPLE PAYBACK
1.5	$433	4	$1,732	$386	4.5

**** Net Cost after the SmartStart Buildings® incentive is applied.**

Energy Savings Summary:

ECM #3 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$1,912
NJ Smart Start Equipment Incentive ($):	$180
Net Installation Cost ($):	$1,732
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$386
Total Yearly Savings ($/Yr):	$386
Estimated ECM Lifetime (Yr):	15
Simple Payback	4.5
Simple Lifetime ROI	234.3%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$5,790
Internal Rate of Return (IRR)	21%
Net Present Value (NPV)	$2,876.04

Municipal-Police Bldg.-ECM #4: Lighting Upgrade – General

Description:

The lighting in the Municipal-Police Building is comprised of a mix of new and old technology. In most areas T8 lamps with electronic ballasts are utilized representing the newer technology. There are some areas that still have incandescent lamps which provide an opportunity to realize savings.

This ECM includes replacement of all incandescent lamps to a much more efficient compact fluorescent lamp (CFL). The energy usage of an incandescent compared to a CFL is 3 to 4 times greater. In addition to the energy savings, a CFLs burn-hours are more than 8 times longer than incandescent lamps with a rating of 8,000 to 14,000 hours compared to incandescent lamps which range from 750 to 1000 burn-hours. This allows savings to be realized on material and maintenance costs.

Hours of Operation:

Municipal Offices, Restrooms:
3120 Hrs per year.

Municipal Corridors, Entrances:
3600 Hrs per year.

Police Offices, Administration Areas:
4800 Hrs per year.

Police Lobby, Dispatch and Locker areas:
8700 Hrs per year.

Energy Savings Calculations:

The **Investment Grade Lighting Audit Appendix** outlines the proposed retrofits, costs, savings, and payback periods.

NJ Smart Start® Program Incentives are calculated as follows:

From the Smart Start Incentive appendix, the replacement of a T-12 fixture to a T-5 or T-8 fixture warrants the following incentive: T-5 or T-8 (1-2 lamp) = $10 per fixture; T-5 or T-8 (3-4 lamp) = $20 per fixture. Therefore no incentives are available for this lighting upgrade.

Energy Savings Summary:

ECM #4 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$800
NJ Smart Start Equipment Incentive ($):	$0
Net Installation Cost ($):	$800
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$799
Total Yearly Savings ($/Yr):	$799
Estimated ECM Lifetime (Yr):	15
Simple Payback	1.0
Simple Lifetime ROI	1398.1%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$11,985
Internal Rate of Return (IRR)	100%
Net Present Value (NPV)	$8,738.41

Muni/Police Bldg. -ECM #5: Lighting Controls

Description:

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 rooms that are occupied for only short periods and only a few times per day. In some instances lights are left on due to the misconception that it is better to keep the lights on rather than to continuously switch lights on and off. Although increased switching reduces lamp life, the energy savings outweigh the lamp replacement costs. The payback timeframe for when to turn the lights off is approximately two minutes. If the lights are expected to be off for at least a two minute interval, then it pays to shut them off.

Lighting controls come in many forms. Sometimes an additional switch is adequate to provide reduced lighting levels when full light output is not needed. Occupancy sensors detect motion and will switch the lights on when the room is occupied. Occupancy sensors can either be mounted in place of a current wall switch, or on the ceiling to cover large areas. 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:

- Occupancy Sensors for Lighting Control - 20%-28%.(10% used in calcs)

The ECM includes replacement of standard wall switches with sensor wall switches for individual offices, meeting rooms, and bathrooms. Sensors shall be manufactured by Sensorswitch, Watt Stopper or equivalent. See the "Investment Grade Lighting Audit" appendix for details.

The **Investment Grade Lighting Audit Appendix** of this report includes the summary of lighting controls implemented in this ECM and outlines the proposed controls, costs, savings, and payback periods. The calculations adjust the lighting power usage by 10% for all areas that include occupancy sensors.

Light Energy = 112,420 kWh/Yr. proposed lighting controlled energy

Hours of Operation:

Municipal Offices, Restrooms:
3120 Hrs per year.

Municipal Corridors, Entrances:
3600 Hrs per year.

Police Offices, Administration Areas:
4800 Hrs per year.

Police Lobby, Dispatch and Locker areas:
8700 Hrs per year.

Energy Savings Calculations:

$$Energy\ Savings = \left(10\% \times Occuapancy\ Sensored\ Light\ Energy\ \left(kWh/Yr\right)\right)$$

$$Energy\ Savings = \left(10\% \times 112{,}420\ \left(kWh\right)\right) = 11{,}242\ \left(kWh\right)$$

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

$$Savings. = 11{,}242\ \left(kWh\right) \times 0.154\left(\frac{\$}{kWh}\right) = \$1{,}731$$

Installation cost per dual-technology sensor (Basis: Sensor switch or equivalent) is $110/unit including material and labor.

Installation Cost = $110 x 36 motion sensors = $3,960

From the NJ Smart Start appendix, the installation of a lighting control device warrants the following incentive: occupancy = $20 per fixture.

$$\text{Smart Start®}\ Incentive = \left(\#\ of\ \ wall\ mount\ devices \times\ \$\ 20\right) = \left(36 \times \$20\right) = \$720$$

Energy Savings Summary:

ECM #5 - ENERGY SAVINGS SUMMARY	
Installation Cost ($):	$3,960
NJ Smart Start Equipment Incentive ($):	$720
Net Installation Cost ($):	$3,240
Maintenance Savings ($/Yr):	$0
Energy Savings ($/Yr):	$1,731
Total Yearly Savings ($/Yr):	$1,731
Estimated ECM Lifetime (Yr):	15
Simple Payback	1.9
Simple Lifetime ROI	701.4%
Simple Lifetime Maintenance Savings	$0
Simple Lifetime Savings	$25,965
Internal Rate of Return (IRR)	53%
Net Present Value (NPV)	$17,424.57

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 measures (REM) for the municipality utilizing renewable technologies and concluded that there is potential for solar energy generation. The solar photovoltaic system calculation summary will be concluded as **REM#1** within this report.

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). 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. A roof area of 8750 S.F. can be utilized for a PV system. A depiction of the area utilized is shown in **Renewable / Distributed Energy Measures Calculation Appendix**. Using this square footage it was determined that a system size of 123.28 kilowatts could be installed. A system of this size has an estimated kilowatt hour production of 142,456 KWh annually, reducing the overall utility bill by approximately 9.4% percent. A detailed financial analysis can be found in the **Renewable / Distributed Energy Measures Calculation Appendix**. This analysis illustrates the payback of the system over a 25 year period. The eventual degradation of the solar panels and the price of accumulated SREC's are factored into the payback.

The proposed photovoltaic array layout is designed based on the specifications for the Sun Power SPR-230 panel. This panel has a "DC" rated full load output of 230 watts, and has a total panel conversion efficiency of 18%. Although panels rated at higher wattages are available through Sun Power and other various manufacturers, in general most manufacturers who produce commercially available solar panels produce a similar panel in the 200 to 250 watt range. This provides more manufacturer options to the public entity if they wish to pursue the proposed solar recommendation without losing significant system capacity.

The array system capacity was sized on available roof space on the existing facility. Estimated solar array generation was then calculated based on the National Renewable Energy Laboratory

PVWatts Version 1.0 Calculator. In order to calculate the array generation an appropriate location with solar data on file must be selected. In addition the system DC rated kilowatt (kW) capacity must be inputted, a DC to AC de-rate factor, panel tilt angle, and array azimuth angle. The DC to AC de-rate factor is based on the panel nameplate DC rating, inverter and transformer efficiencies (95%), mismatch factor (98%), diodes and connections (100%), dc and ac wiring(98%, 99%), soiling, (95%), system availability (95%), shading (if applicable), and age(new/100%). The overall DC to AC de-rate factor has been calculated at an overall rating of 81%. The PVWatts Calculator program then calculates estimated system generation based on average monthly solar irradiance and user provided inputs. The monthly energy generation and offset electric costs from the PVWatts calculator is shown in the **Renewable/Distributed Energy Measures Calculation Appendix**.

The proposed solar array is qualified by the New Jersey Board of Public Utilities Net Metering Guidelines as a Class I Renewable Energy Source. These guidelines allow onsite customer generation using renewable energy sources such as solar and wind with a capacity of 2 megawatts (MW) or less. This limits a customer system design capacity to being a net user and not a net generator of electricity on an annual basis. Although these guidelines state that if a customer does net generate (produce more electricity than they use), the customer will be credited those kilowatt-hours generated to be carried over for future usage on a month to month basis. Then, on an annual basis if the customer is a net generator the customer will then be compensated by the utility the average annual PJM Grid LMP price per kilowatt-hour for the over generation. Due to the aforementioned legislation, the customer is at limited risk if they generate more than they use at times throughout the year. With the inefficiency of today's energy storage systems, such as batteries, the added cost of storage systems is not warranted and was not considered in the proposed design.

Direct purchase involves the Township paying for 100% of the total project cost upfront via one of the methods noted in the Installation Funding Options section below. Calculations include a utility inflation rate as well as the degradation of the solar panels over time. Based on our calculations the following is the payback period:

Table 7
Financial Summary – Photovoltaic System

FINANCIAL SUMMARY - PHOTOVOLTAIC SYSTEM			
PAYMENT TYPE	**SIMPLE PAYBACK**	**SIMPLE ROI**	**INTERNAL RATE OF RETURN**
Direct Purchase	15.45 Years	61.8%	4.1%

*The solar energy measure is shown for reference in the executive summary Renewable Energy Measure (REM) table

The resultant Internal Rate of Return indicates that if the Owner was able to work out a Power Purchase Agreement with a third-party and agree upon a decent base energy rate for kilowatt hour production, the "direct purchase" option could prove to be a beneficial route.

In addition to the Solar Analysis, CEG also conducted a review of the applicability of wind energy for the facility. Wind energy production is another option available through the Renewable Energy Incentive Program. Wind turbines of various types can be utilized to produce clean energy on a per building basis. Cash incentives are available per kWh of electric usage. Based on CEG's review of the applicability of wind energy for the facility, it was determined that the average wind speed is not adequate. Therefore, wind energy is not a viable option to implement.

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. The Electric and Natural Gas Usage Profiles included within this report to reference the respective electricity and natural gas usage load profile for October 2008 through September 2009.

Electricity:

The Electric Usage Profile demonstrates a very a-typical load profile. The load profile is said to be atypical because while the summer (July – September) demonstrates a strong peak (associated with air conditioner usage), the winter does as well. Typically the winter has the opposite, because the natural gas usage is increased here for heating load. In this facility air conditioning is supplied via (9) nine centrally located heat pumps. The West Wing is supplied via two Carrier sixty ton split system VAV units. The Police Wing is supplied via two Carrier 50 ton packaged VAV cooling only rooftop units. Domestic hot water in the west wing restroom and lounges is supplied from an A.O. Smith 40 gallon electric hot water heater with two 4.500 watt elements. The domestic hot water for the Main Building restrooms and lounge are supplied via an A.O. Smith 40 gallon electric hot water heater. The Police Station is served by two (2) 50 gallon electric hot water heaters. This electric load will add to the winter electric load profile. The main building has (6) six heat pumps that have in-duct electric re-heat coils. These coils provide supplemental heat during the heating season and also add to the winter electric load profile.

This facility utilizes the Delivery service (LPLS), and its Commodity service (BGS) from Public Service Electric and Gas Company (PSE&G). A base-load shaping is important because a flat consumption profile will yield more competitive pricing when shopping for a Third Party Supplier.

Natural Gas:
The Natural Gas Usage Profile demonstrates a typical heating load (November –March), and complimentary cooling load (April –October). Consequently there is a clear separation between summer and winter loads consistent with Wholesale Energy Pricing. Heating loads carry a much higher average cost because of the higher demand for natural gas during the winter. In the West Wing heating is supplied via (2) two Hydrotherm boilers with a capacity of 675 MBH. The heating hot water is circulated to baseboard heating units and cabinet heaters located in various locations throughout the building. In the Police Wing heating is supplied via (5) five gas fired Hydrotherm boilers with a total capacity of 675 MBH.
This facility utilizes the Delivery service (LVG) from Public Service Electric and Gas (PSE&G) while it receives its Commodity service from Woodruff Energy, the Third Party Supplier.

Tariff Analysis:

Electricity:

South Brunswick receives electrical service through Public Service Electric and Gas Company (PSE&G) on a LPLS (Large Power Lighting Service) rate. This utility tariff is for delivery service for general purposes at secondary distribution voltages where the customers measured peak demand exceeds 150 kW in any given month and also at primary distribution voltages. Customers may either purchase electric supply from a Third Party Supplier (TPS) of from PSE&G's Basic Generation Service default service as detailed in the rate schedule. The rate schedule has a Delivery Charge; Distribution kW and kWh Charge, Societal Benefits Charge, Non-utility Generation Charge, Securitization Charge, System Control Charge, Customer Account Services Charge, Standby Fee, Base Rate Distribution Adjustment Charge, Solar Pilot Recovery Charge and RGGI Charge. The customer can elect to have the Commodity Charge serviced through the utility or by a Third Party Supplier (TPS). South Brunswick should investigate why there is such a high peak in electric consumption in August. A flat load profile will allow for a more competitive energy price when shopping for an "alternate energy source".

Natural Gas:

South Brunswick receives natural gas service through Public Service Electric and Gas Company LVG (Large Volume Gas) rate class, when not receiving commodity by a Third Party Supplier. This utility tariff is for firm delivery service for general purposes. This rate schedule has a Delivery Charge, Balancing Charge, Societal Benefits Charge, Realignment Adjustment Charge, Margin Adjustment Charge, RGGI Charge and Customer Account Service 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, the customer may receive service from PSE&G under Emergency Sales Service. Emergency Sales Service carries an extremely high penalty cost of service.

Imbalances 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, imbalances can occur, jeopardizing economics and scheduling.

From review of the information provided by the School District, South Brunswick is utilizing the services of a Third Party Supplier, Woodruff Energy for natural gas service. The contract is administered through the Middlesex Regional Educational Services Commission (MRESC) for the term, August 1, 2008 through July 31, 2010. The agreement is between the MRESC and South Brunswick BOE and it does not define the full and final price. Based on the limited data available, it appears that South Brunswick is paying over 20% above market price.

Additionally, the MRESC charges $.0325 per deka-therm for administering this RFP. The South Brunswick BOE could realize additional savings by evaluating a new natural gas contract. It should be noted that there was not a Woodruff Energy Contract available for review, nor a complete delivered natural gas price.

Recommendations:

CEG recommends a global approach that will be consistent with all facilities. CEG's primary observation is seen in the electricity costs. South Brunswick's "weighted average price-to-compare" per kWh (kilowatt hour) for the Public Library and the Municipal Building is $12.96 / kWh (kWh is the common unit of electric measure).

The "price to compare" is defined as the price that would be compared to the equivalent utility price extracting the utility transmission and distribution costs (wires charges). This would be a market based price that would be supplied by a Third Party Supplier (TPS) or an alternative supplier. This is the price you would compare to your utility rates or the market based rates.

The average "price-to-compare" per decatherm for natural gas is $8.63/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. South Brunswick could see significant savings if it were to take advantage of these current market prices quickly, before energy increases. Based on last year's historical consumption (October 2008 through September 2009) and current electric rates, South Brunswick could see an improvement of over $80,000 or up to 25% annually. Note: Savings were calculated using South Brunswick's Average Annual Consumption of 2,135,520 kWh's and a variance of approximately $.04/kWh and utilizing a fixed one-year commodity contract from a Third Party Supplier. South Brunswick should aggregate its 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 recommends the use of an energy advisor on this topic.

CEG has reviewed the natural gas costs for the Municipal Building and the Public Library. And while the Municipal Building is approximately 10% higher in costs, CEG recommends the approach that South Brunswick is currently utilizing. It had been noted in other Local Government Energy Audits performed by CEG that South Brunswick was using the services of a Third Party Supplier for natural gas, Woodruff Energy Services. The audit for these facilities does not show the presence of a Third Party Supplier.

CEG recommends that South Brunswick 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 might be available to South Brunswick. Through its meeting with the Local Distribution Company (LDC), South Brunswick will learn more about the competitive supply process. South Brunswick can acquire a list of approved Third Party Suppliers from the New Jersey Board of Public Utilities website at www.nj.gov/bpu. South Brunswick 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 South Brunswick pay attention to credit mechanisms, imbalances, balancing charges and commodity charges when meeting with their utility representative. In addition, South Brunswick 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 South Brunswick 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 facility owner to utilize in subsidizing the costs for installing the energy conservation measures noted within this report. Below are a few alternative funding methods:

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

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

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

iv. *Pay For Performance* – The New Jersey Smart Start Pay for Performance program includes incentives based on savings resulted from implemented ECMs. The program is available for all facilities that are part of the Local Government Energy Audit Program. The facility's participation in the program is assisted by an approved program partner. An "Energy Reduction Plan" is created with the facility and approved partner to shown at least 15% reduction in the building's current energy use. Multiple energy conservation measures implemented together are applicable toward the total savings of at least 15%. No more than 50% of the total energy savings can result from lighting upgrades / changes.

Total incentive is capped at 50% of the project cost. The program savings is broken down into three benchmarks; Energy Reduction Plan, Project

Implementation, and Measurement and Verification. Each step provides additional incentives as the energy reduction project continues. The benchmark incentives are as follows:

1. Energy Reduction Plan – Upon completion of an energy reduction plan by an approved program partner, the incentive will grant $0.10 per square foot between $5,000 and $50,000, and not to exceed 50% of the facility's annual energy expense. (Benchmark #1 is not provided in addition to the local government energy audit program incentive.)

2. Project Implementation – Upon installation of the recommended measures along with the "Substantial Completion Construction Report," the incentive will grant savings per KWH or Therm based on the program's rates. Minimum saving must be 15%. (Example $0.11 / kWh for 15% savings, $0.12/ kWh for 17% savings, … and $1.10 / Therm for 15% savings, $1.20 / Therm for 17% saving, …) Increased incentives result from projected savings above 15%.

3. Measurement and Verification – Upon verification 12 months after implementation of all recommended measures, that actual savings have been achieved, based on a completed verification report, the incentive will grant additional savings per kWh or Therm based on the program's rates. Minimum savings must be 15%. (Example $0.07 / kWh for 15% savings, $0.08/ kWh for 17% savings, … and $0.70 / Therm for 15% savings, $0.80 / Therm for 17% saving, …) Increased incentives result from verified savings above 15%.

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 system power usage and maintain better IAQ.

E. Confirm that outside air economizers on the rooftop units are functioning properly to take advantage of free cooling and avoid excess outside air during occupied periods.

F. Have the hot water system water quality checked, and if necessary, install a water treatment system.

G. Engage a factory authorized service representative to investigate the current operation and settings on the Hydrotherm boilers to ensure that the boiler's optimal operating conditions are being met. Also, arrange for on-site training from the factory representative for proper operation and maintenance of the boilers that are installed at the facility.

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.

ECM COST & SAVINGS BREAKDOWN

CONCORD ENGINEERING GROUP

South Brunswick Municipal Building

ECM ENERGY AND FINANCIAL COSTS AND SAVINGS SUMMARY															
ECM NO.	DESCRIPTION	INSTALLATION COST				YEARLY SAVINGS			ECM LIFETIME	LIFETIME ENERGY SAVINGS	LIFETIME MAINTENANCE SAVINGS	LIFETIME ROI	SIMPLE PAYBACK	INTERNAL RATE OF RETURN (IRR)	NET PRESENT VALUE (NPV)
		MATERIAL	LABOR	REBATES, INCENTIVES	NET INSTALLATION COST	ENERGY	MAINT. / SREC	TOTAL		(Yearly Saving * ECM Lifetime)	(Yearly Maint Svaing * ECM Lifetime)	(Lifetime Savings - Net Cost) / (Net Cost)	(Net cost / Yearly Savings)	$\sum_{n=0}^{N} \frac{C_n}{(1+IRR)^n}$	$\sum_{n=0}^{N} \frac{C_n}{(1+DR)^n}$
		($)	($)	($)	($)	($/Yr)	($/Yr)	($/Yr)	(Yr)	($)	($)	(%)	(Yr)	($)	($)
ECM #1	Heat Pump and Split A/C Indoor Unit Replacement	$13,500	$12,510	$6,570	$19,440	$2,806	$0	$2,806	15	$42,090	$0	116.5%	6.9	11.68%	$14,057.85
ECM #2	Domestic Hot Water Heater Replacement	$14,560	$6,240	$460	$20,340	$2,164	$0	$2,164	15	$32,460	$0	59.6%	9.4	3.97%	$1,200.46
ECM #3	Premium Effeciency Motors	$1,912	$0	$180	$1,732	$386	$0	$386	15	$5,790	$0	234.3%	4.5	21.01%	$2,876.04
ECM #4	Lighting Upgrade	$400	$400	$0	$800	$799	$0	$799	15	$11,985	$0	1398.1%	1.0	99.87%	$8,738.41
ECM #5	Lighting Control	$1,080	$2,880	$720	$3,240	$1,731	$0	$1,731	15	$25,965	$0	701.4%	1.9	53.34%	$17,424.57
REM RENEWABLE ENERGY AND FINANCIAL COSTS AND SAVINGS SUMMARY															
REM #1	123.3 KW PV Array	$1,109,520	$0	$0	$1,109,520	$21,938	$49,860	$71,798	25	$1,794,950	$1,246,500	61.8%	15.5	4.10%	$140,709.18

Notes: 1) The variable Cn in the formulas for Internal Rate of Return and Net Present Value stands for the cash flow during each period.
2) The variable DR in the NPV equation stands for Discount Rate
3) For NPV and IRR calculations: From n=0 to N periods where N is the *lifetime of ECM* and Cn is the *cash flow during each period* .

Concord Engineering Group, Inc.

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SmartStart Building Incentives

The NJ SmartStart Buildings Program offers financial incentives on a wide variety of building system equipment. The incentives were developed to help offset the initial cost of energy-efficient equipment. The following tables show the current available incentives as of February, 2010:

Electric Chillers

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

Energy Efficiency must comply with ASHRAE 90.1-2004

Gas Cooling

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

Desiccant Systems

$1.00 per cfm – gas or electric

Electric Unitary HVAC

Unitary AC and Split Systems	$73 - $93 per ton
Air-to-Air Heat Pumps	$73 - $92 per ton
Water-Source Heat Pumps	$81 per ton
Packaged Terminal AC & HP	$65 per ton
Central DX AC Systems	$40- $72 per ton
Dual Enthalpy Economizer Controls	$250
Occupancy Controlled Thermostat (Hospitality & Institutional Facility)	$75 per thermostat

Energy Efficiency must comply with ASHRAE 90.1-2004

Ground Source Heat Pumps

Closed Loop & Open Loop	$450 per ton, EER ≥ 16 $600 per ton, EER ≥ 18 $750 per ton, EER ≥ 20

Energy Efficiency must comply with ASHRAE 90.1-2004

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, AFUE ≥ 92%

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
Gas Fired Tankless Water Heaters	$300 per unit

Premium Motors

Three-Phase Motors	$45 - $700 per motor
Fractional HP Motors Electronic Communicated Motors (replacing shaded pole motors in refrigerator/freezer cases)	$40 per electronic communicated motor

Prescriptive Lighting

T-5 and T-8 Lamps w/Electronic Ballast in Existing Facilities	$15 per fixture (1-4 lamps)
T-8 reduced Wattage (28w/25w 4', 1-4 lamps) Lamp & ballast replacement	$10 per fixture
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
HID ≥ 100w Retrofit with induction lamp, power coupler and generator (must be 30% less watts/fixture than HID system)	$50 per fixture
HID ≥ 100w Replacement with new HID ≥ 100w	$70 per fixture
LED Refrigerator/Freezer case lighting replacement of fluorescent in medium and low temperature display case	$42 per 5 foot $65 per 6 foot

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
Daylight Dimming - office	$50 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
Custom Measures	$0.16 KWh and $1.60/Therm of 1st year savings, or a buy down to a 1 year payback on estimated savings. Minimum required savings of 75,000 KWh or 1,500 Therms and a IRR of at least 10%.
Multi Measures Bonus	15%

OMB No. 2060-0347

STATEMENT OF ENERGY PERFORMANCE
Municipal Building

Building ID: 1954433
For 12-month Period Ending: September 30, 2009[1]
Date SEP becomes ineligible: N/A
Date SEP Generated: December 11, 2009

Facility
Municipal Building
540 Ridge Rd.
Monmouth Junction, NJ 08852

Facility Owner
N/A

Primary Contact for this Facility
N/A

Year Built: 1967
Gross Floor Area (ft²): 84,460

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

Site Energy Use Summary[3]

Electricity - Grid Purchase(kBtu)	5,166,860
Natural Gas (kBtu)[4]	1,942,161
Total Energy (kBtu)	7,109,021

Energy Intensity[5]

Site (kBtu/ft²/yr)	84
Source (kBtu/ft²/yr)	228

Emissions (based on site energy use)

Greenhouse Gas Emissions ($MtCO_2e$/year)	890

Electric Distribution Utility
Public Service Elec & Gas Co

National Average Comparison

National Average Site EUI	77
National Average Source EUI	182
% Difference from National Average Source EUI	26%
Building Type	Office

Stamp of Certifying Professional

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

Certifying Professional
N/A

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

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

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

MAJOR EQUIPMENT LIST

Concord Engineering Group

South Brunswick Township Municipal Building

Boiler

Location	Area Served	Manufacturer	Qty.	Model #	Serial #	Input (MBh)	Output (MBh)	Efficiency (%)	Fuel	Approx. Age	ASHRAE Service Life	Remaining Life	Notes
Lower Level MER-1	Main and West	Hydrotherm	5	AM-150	-	150	132	90.6%	Natural Gas	10	25	15	
Police Building MER	Police Building	Hydrotherm	5	AM-150	-	150	132	90.6%	Natural Gas	10	25	15	

1320

Boiler - Pumps

Location	Area Served	Manufacturer	Qty.	Model #	Serial #	HP	RPM	GPM	Ft. Hd	Frame Size	Volts	Phase	Approx. Age	ASHRAE Service Life	Remaining Life	
Lower Level MER-1	West Wing	Taco	2	BB250817	-	1.5	1760	65	68		208	3	10	20	5	
Police Building MER	Police Building	Taco	2	BB2508716	-	1.5	1760	65	68		208	3	10	20	5	

Domestic Hot Water Heater

Location	Area Served	Manufacturer	Qty	Model #	Serial #	Input (MBh)	Recovery (gal/h)	Capacity (gal)	Efficiency (%)	Fuel	Approx. Age	ASHRAE Service Life	Remaining Life	Notes
Lower Level MER-1	West Wing	A.O. Smith	1	DEN 40-110	-	9 KW	-	40		Electric	10	12	3	
Lower Level Jan. Closet	Main Building	A.O. Smith	1	DEL 40-104	-	9 KW	-	40		Electric	10	12	3	
Police Building LL	Police	A.O. Smith	1	DRE-52-920	-	6 KW	-	52		Electric	10	12	3	
Police Building UL	Police	A.O. Smith	1	DRE-52-920	-	6KW	-	52		Electric	10	12	3	

Air Handling Units

Location	Area Served	Manufacturer	Qty	Model #	Serial #	Cooling Coil	Cooling Eff. (EER)	Cooling Capacity	Heating Type	Input (MBh)	Output (MBh)	Heating Eff. (%)	Fuel	Volts	Phase	Amps	Approx. Age	ASHRAE Service Life	Remaining Life	Notes
LL MER-1	West ing	Carrier	1	50BK064600	X697787	D/X	-	60 Tons	Heat Pump								10	15	5	
LL MER-1	West ing	Carrier	1	50BK064600	X697788	D/X	-	60 Tons	Heat Pump								10	15	5	

AC/Heat Pump Condensers

Location	Area Served	Manufacturer	Qty.	Model #	Serial #	Cooling Capacity	EER	Refrigerant	Volts	Phase	Approx. Age	ASHRAE Service Life	Remaining Life	Notes
Roof	West Wing	Carrier	2	38AH-064-621JA	-	60 Tons	10.5	R-22	460	3	<10 years	15 Years	5+ years	
Roof	Main Building	Trane	1	TWA060A300A2	-	5 Tons	-	R-22	208	3	10	15	5	
Roof	Main Building	Trane	1	TWA060D300A1	-	5 Tons	-	R-22	208	3	10	15	5	
Roof	Main Building	Trane	1	TWA120A300BD	-	10 Tons	-	R-22	460	3	10	15	5	
Roof	Main Building	Trane	1	TWA120A300BD	-	10 Tons	-	R-22	460	3	10	15	5	
Roof	Main Building	Trane	1	TWA180B300BA	-	15 Tons	-	R-22	460	3	10	15	5	
Roof	Main Building	Trane	1	TWA120A300	-	10 Tons	-	R-22	460	3	10	15	5	
Roof	Main Building	Trane	1	TWA060A300A2	-	5 Tons	-	R-22	208	3	10	15	5	
Roof	Main Building	Trane	1	TTA180B300C	-	15 Tons	-	R-22	460	3	10	15	5	
Roof	Main Building	York	1	HL-15C00ATAA1C	-	15 Tons	-	R-22	460	3	10	15	5	

Split System Heat Pumps (Indoor Units)

Location	Area Served	Manufacturer	Qty.	Model #	Serial #	Rated Cooling Capacity	EER Heating Capacity	Refrigerant	Aux. Elec Heater		Phase	Amps	Approx. Age	ASHRAE Service Life	Remaining Life	Notes
									Model Number	Heating KW						
LL MER-2	Main Wing	GE	1	BGWE192D3B	174539	16 Tons	5	R-22	-	-	3	-	30+	15	(-15)	
LL MER-2	Main Wing	GE	1	21WE060C4A03	345638517	5Tons	5	R-22	AY96X181	29.8	3	-	30+	15	(-15)	
LL MER-2	Main Wing	GE	1	BWE120C400A0	171500	10 Tons	5	R-22	BAY96X180A	17.1/12.84	3	-	30+	15	(-15)	
LL MER-2	Main Wing	GE	1	BWE120C400A0	171292	10 Tons	5	R-22	BAY96181A	27.06/20.32	3	-	30+	15	(-15)	
LL MER-2	Main Wing	GE	1	BWE120C400A0	171269	10 Tons	5	R-22	BAY96X180A	17.10/12.84	3	-	30+	15	(-15)	
Main Level MER	Main Wing	GE	1	21WE060C4A03	345632512	5 Tons	5	R-22	AY96X181	29.8	3	-	30+	15	(-15)	
Main Level MER	Main Wing	GE	1	BWE102D3B	174172	8-1/2 Tons	5	R-22	-	-	3	-	30+	15	(-15)	
Main Level MER	Main Wing	GE	1	BWE120C400A0	171575	10 Tons	5	R-22	BAY96X182A	37.02/27.80	3	-	30+	15	(-15)	
Main Level MER	Main Wing	GE	1	BGWE192D3B	176333	16 Tons	5	R-22	-	-	3	-	30+	15	(-15)	

CEG Job #: 9C09079
Project: South Brunswick Township
Address: 540 Ridge Road
Monmouth Junction, NJ 08852
Building SF: 84,460

"Municipal/Police Building"

KWH COST: $0.154

ECM #4: Lighting Upgrade - General

EXISTING LIGHTING										PROPOSED LIGHTING										SAVINGS			
CEG Type	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly $ Cost	No. Fixts	No. Lamps	Retro-Unit Description	Watts Used	Total kW	kWh/Yr Fixtures	Yearly $ Cost	Unit Cost (INSTALLED)	Total Cost	kW Savings	kWh/Yr Savings	Yearly $ Savings	Yearly Simple Payback
5.34	Mech. Room, West Wing	3120	5	1	1x4 1 Lamp 32w T8 Elect. Ballast, Pendant Mnt., No Lens	28	0.14	436.8	$67.27	5	0	No Change	0	0.00	436.8	$67.27	$0.00	$0.00	0.00	0	$0.00	0.00
5.31		3120	1	1	1x4 1 Lamp 32w T8 Elect. Ballast, Pendant Mnt., Prismatic	28	0.03	87.4	$13.45	1	0	No Change	0	0.00	87.36	$13.45	$0.00	$0.00	0.00	0	$0.00	0.00
5.22	Hall/Locker Area	3120	1	1	1x4 1 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	28	0.03	87.4	$13.45	1	0	No Change	0	0.00	87.36	$13.45	$0.00	$0.00	0.00	0	$0.00	0.00
8.21	Maintenance Room	3120	4	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.14	424.3	$65.35	4	0	No Change	0	0.00	424.32	$65.35	$0.00	$0.00	0.00	0	$0.00	0.00
8.21	Parts Room/Work Shop	3120	1	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.03	106.1	$16.34	1	0	No Change	0	0.00	106.08	$16.34	$0.00	$0.00	0.00	0	$0.00	0.00
2.21		3120	1	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.06	181.0	$27.87	1	0	No Change	0	0.00	180.96	$27.87	$0.00	$0.00	0.00	0	$0.00	0.00
6.11	Main Office	3120	2	2	1x4 1 Lamp 32w T8 Elect. Ballast, Surface Mnt., Prismatic	58	0.12	361.9	$55.74	2	0	No Change	0	0.00	361.92	$55.74	$0.00	$0.00	0.00	0	$0.00	0.00
6.31	Sprinkler Room	3120	6	2	1x4 1 Lamp 32w T8 Elect. Ballast, Pendant Mnt., Prismatic	58	0.35	1,085.8	$167.21	6	0	No Change	0	0.00	1085.76	$167.21	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Records Storage	3120	7	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.41	1,266.7	$195.07	7	0	No Change	0	0.00	1266.72	$195.07	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Social Services	3120	9	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.52	1,628.6	$250.81	9	0	No Change	0	0.00	1628.64	$250.81	$0.00	$0.00	0.00	0	$0.00	0.00
11		3120	2	1	Recessed Down Light, 60w A19 Lamp	60	0.12	374.4	$57.66	2	1	Energy Star Rated, 16w BR30 CFL Lamp	16	0.03	99.84	$15.38	$20.00	$40.00	0.09	274.56	$42.28	0.95
2.21	Meeting Room	3120	8	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.46	1,447.7	$222.94	8	0	No Change	0	0.00	1447.68	$222.94	$0.00	$0.00	0.00	0	$0.00	0.00
6.31	Elevator Room	800	1	2	1x4 1 Lamp 32w T8 Elect. Ballast, Pendant Mnt., Prismatic	58	0.06	46.4	$7.15	1	0	No Change	0	0.00	46.4	$7.15	$0.00	$0.00	0.00	0	$0.00	0.00
12	Janitor's Closet	800	1	1	Porcelain Socket, 13w CFL Spiral	13	0.01	10.4	$1.60	1	0	No Change	0	0.00	10.4	$1.60	$0.00	$0.00	0.00	0	$0.00	0.00
13	Men's Restroom	3120	4	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.11	349.4	$53.81	4	0	No Change	0	0.00	349.44	$53.81	$0.00	$0.00	0.00	0	$0.00	0.00
13	Women's Restroom	3120	4	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.11	349.4	$53.81	4	0	No Change	0	0.00	349.44	$53.81	$0.00	$0.00	0.00	0	$0.00	0.00
6.31	Mech. Room, Lower Level	1200	4	2	1x4 1 Lamp 32w T8 Elect. Ballast, Pendant Mnt., Prismatic	58	0.23	278.4	$42.87	4	0	No Change	0	0.00	278.4	$42.87	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Public Works Office	3120	23	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	1.33	4,162.1	$640.96	23	0	No Change	0	0.00	4162.08	$640.96	$0.00	$0.00	0.00	0	$0.00	0.00

2.21	Health Dept.	3120	39	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	2.26	7,057.4	$1,086.85	39	0	No Change	0	0.00	7057.44	$1,086.85	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Training Room	3120	14	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.81	2,533.4	$390.15	14	0	No Change	0	0.00	2533.44	$390.15	$0.00	$0.00	0.00	0	$0.00	0.00
15		3120	6	1	Recessed Down Light, 150w BR40 Flood	150	0.90	2,808.0	$432.43	6	1	EnergyStar Rated, 26w BR40 Dimmable CFL Lamp	26	0.16	486.72	$74.95	$20.00	$120.00	0.74	2321.28	$357.48	0.34
2.21	Upper Corridor	3600	6	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.35	1,252.8	$192.93	6	0	No Change	0	0.00	1252.8	$192.93	$0.00	$0.00	0.00	0	$0.00	0.00
17		3600	20	1	Round Back Track Light, 50w R20 Lamp	50	1.00	3,600.0	$554.40	20	1	EnergyStar Rated, 14w R20 Dimmable CFL Lamp	14	0.28	1008	$155.23	$20.00	$400.00	0.72	2592	$399.17	1.00
18		3600	24	2	Pendant Mnt., Indirect 2 Lamp 25w T8	25	0.60	2,160.0	$332.64	24	0	No Change	0	0.00	2160	$332.64	$0.00	$0.00	0.00	0	$0.00	0.00
10		3600	9	1	Recessed Down Light, 26w CFL Lamp	26	0.23	842.4	$129.73	9	0	No Change	0	0.00	842.4	$129.73	$0.00	$0.00	0.00	0	$0.00	0.00
16		3600	2	2	1x2 2 Lamp, 17w T8 Elect. Ballast, Recessed, Prismatic	34	0.07	244.8	$37.70	2	0	No Change	0	0.00	244.8	$37.70	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Law Dept.	3120	8	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.46	1,447.7	$222.94	8	0	No Change	0	0.00	1447.68	$222.94	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Copy Room	3120	4	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.23	723.8	$111.47	4	0	No Change	0	0.00	723.84	$111.47	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Clerk's Office	3120	26	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	1.51	4,705.0	$724.56	26	0	No Change	0	0.00	4704.96	$724.56	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Admin. Offices	3120	33	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	1.91	5,971.7	$919.64	33	0	No Change	0	0.00	5971.68	$919.64	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Mayor's Office	3120	11	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.64	1,990.6	$306.55	11	0	No Change	0	0.00	1990.56	$306.55	$0.00	$0.00	0.00	0	$0.00	0.00
13	Men's Restroom	3120	4	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.11	349.4	$53.81	4	0	No Change	0	0.00	349.44	$53.81	$0.00	$0.00	0.00	0	$0.00	0.00
13	Women's Restroom	3120	4	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.11	349.4	$53.81	4	0	No Change	0	0.00	349.44	$53.81	$0.00	$0.00	0.00	0	$0.00	0.00
6.11	2nd Floor Mech. Room	1200	4	2	1x4 1 Lamp 32w T8 Elect. Ballast, Surface Mnt., Prismatic	58	0.23	278.4	$42.87	4	0	No Change	0	0.00	278.4	$42.87	$0.00	$0.00	0.00	0	$0.00	0.00
6.34		1200	3	2	1x4 1 Lamp 32w T8 Elect. Ballast, Pendant Mnt., No Lens	58	0.17	208.8	$32.16	3	0	No Change	0	0.00	208.8	$32.16	$0.00	$0.00	0.00	0	$0.00	0.00
18	Meeting Room 2	2200	64	2	Pendant Mnt., Indirect 2 Lamp 25w T8	25	1.60	3,520.0	$542.08	64	0	No Change	0	0.00	3520	$542.08	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Committee Conf. Room	2200	14	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.81	1,786.4	$275.11	14	0	No Change	0	0.00	1786.4	$275.11	$0.00	$0.00	0.00	0	$0.00	0.00
20	Main Stairs	3600	4	2	Wallpack, (2) 9w CFL	22	0.09	316.8	$48.79	4	0	No Change	0	0.00	316.8	$48.79	$0.00	$0.00	0.00	0	$0.00	0.00
20	Side Stairs	3600	5	2	Wallpack, (2) 9w CFL	22	0.11	396.0	$60.98	5	0	No Change	0	0.00	396	$60.98	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Lower Hall	3600	16	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.93	3,340.8	$514.48	16	0	No Change	0	0.00	3340.8	$514.48	$0.00	$0.00	0.00	0	$0.00	0.00
	WEST WING														0				0.00	0	$0.00	
2.22	Lowr Hall	3600	18	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	1.04	3,758.4	$578.79	18	0	No Change	0	0.00	3758.4	$578.79	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Service Entrance	3600	5	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.29	1,044.0	$160.78	5	0	No Change	0	0.00	1044	$160.78	$0.00	$0.00	0.00	0	$0.00	0.00

8.22	Men's Restroom	3120	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	318.2	$49.01	3	0	No Change	0	0.00	318.24	$49.01	$0.00	$0.00	0.00	0	$0.00	0.00
13		3120	2	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.06	174.7	$26.91	2	0	No Change	0	0.00	174.72	$26.91	$0.00	$0.00	0.00	0	$0.00	0.00
8.22	Women's Restroom	3120	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	318.2	$49.01	3	0	No Change	0	0.00	318.24	$49.01	$0.00	$0.00	0.00	0	$0.00	0.00
13		3120	2	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.06	174.7	$26.91	2	0	No Change	0	0.00	174.72	$26.91	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Storage Closet	800	1	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.06	46.4	$7.15	1	0	No Change	0	0.00	46.4	$7.15	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Finance Dept.	3120	61	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	3.54	11,038.6	$1,699.94	61	0	No Change	0	0.00	11038.56	$1,699.94	$0.00	$0.00	0.00	0	$0.00	0.00
2.21		3120	20	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	1.16	3,619.2	$557.36	20	0	No Change	0	0.00	3619.2	$557.36	$0.00	$0.00	0.00	0	$0.00	0.00
8.22		3120	4	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.14	424.3	$65.35	4	0	No Change	0	0.00	424.32	$65.35	$0.00	$0.00	0.00	0	$0.00	0.00
9		3120	9	2	2x2 2 Lamp 32w T8 Utube, Elect. Ballast, Recessed, Parabolic	58	0.52	1,628.6	$250.81	9	0	No Change	0	0.00	1628.64	$250.81	$0.00	$0.00	0.00	0	$0.00	0.00
6.11	Closet (2)	800	2	2	1x4 1 Lamp 32w T8 Elect. Ballast, Surface Mnt., Prismatic	58	0.12	92.8	$14.29	2	0	No Change	0	0.00	92.8	$14.29	$0.00	$0.00	0.00	0	$0.00	0.00
9	Smart Trans. Office	3120	9	2	2x2 2 Lamp 32w T8 Utube, Elect. Ballast, Recessed, Parabolic	58	0.52	1,628.6	$250.81	9	0	No Change	0	0.00	1628.64	$250.81	$0.00	$0.00	0.00	0	$0.00	0.00
8.22	Finance Entrance	3600	10	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.34	1,224.0	$188.50	10	0	No Change	0	0.00	1224	$188.50	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Lounge	3120	6	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.35	1,085.8	$167.21	6	0	No Change	0	0.00	1085.76	$167.21	$0.00	$0.00	0.00	0	$0.00	0.00
13		3120	1	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.03	87.4	$13.45	1	0	No Change	0	0.00	87.36	$13.45	$0.00	$0.00	0.00	0	$0.00	0.00
6.22	Stairwell	3600	3	2	1x4 1 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.17	626.4	$96.47	3	0	No Change	0	0.00	626.4	$96.47	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	2nd Floor Corridor	3600	15	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.87	3,132.0	$482.33	15	0	No Change	0	0.00	3132	$482.33	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Tax Accessor	3120	14	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.81	2,533.4	$390.15	14	0	No Change	0	0.00	2533.44	$390.15	$0.00	$0.00	0.00	0	$0.00	0.00
8.21		3120	1	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.03	106.1	$16.34	1	0	No Change	0	0.00	106.08	$16.34	$0.00	$0.00	0.00	0	$0.00	0.00
2.22		3120	4	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.23	723.8	$111.47	4	0	No Change	0	0.00	723.84	$111.47	$0.00	$0.00	0.00	0	$0.00	0.00
8.22		3120	4	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.14	424.3	$65.35	4	0	No Change	0	0.00	424.32	$65.35	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Code Enforcement	3120	93	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	5.39	16,829.3	$2,591.71	93	0	No Change	0	0.00	16829.28	$2,591.71	$0.00	$0.00	0.00	0	$0.00	0.00

8.22	Code Enforcement	3120	8	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.27	848.6	$130.69	8	0	No Change	0	0.00	848.64	$130.69	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Copy Room	3120	2	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.12	361.9	$55.74	2	0	No Change	0	0.00	361.92	$55.74	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Planning Office	3120	54	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	3.13	9,771.8	$1,504.86	54	0	No Change	0	0.00	9771.84	$1,504.86	$0.00	$0.00	0.00	0	$0.00	0.00
5.21		3120	7	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.41	1,266.7	$195.07	7	0	No Change	0	0.00	1266.72	$195.07	$0.00	$0.00	0.00	0	$0.00	0.00
8.21		3120	5	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.17	530.4	$81.68	5	0	No Change	0	0.00	530.4	$81.68	$0.00	$0.00	0.00	0	$0.00	0.00
5.21	Stairwell	3600	3	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.17	626.4	$96.47	3	0	No Change	0	0.00	626.4	$96.47	$0.00	$0.00	0.00	0	$0.00	0.00
8.22	Men's Restroom	3120	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	318.2	$49.01	3	0	No Change	0	0.00	318.24	$49.01	$0.00	$0.00	0.00	0	$0.00	0.00
13		3120	4	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.11	349.4	$53.81	4	0	No Change	0	0.00	349.44	$53.81	$0.00	$0.00	0.00	0	$0.00	0.00
8.22	Women's Restroom	3120	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	318.2	$49.01	3	0	No Change	0	0.00	318.24	$49.01	$0.00	$0.00	0.00	0	$0.00	0.00
13		3120	4	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.11	349.4	$53.81	4	0	No Change	0	0.00	349.44	$53.81	$0.00	$0.00	0.00	0	$0.00	0.00
6.34	2nd Floor Storage	800	4	2	1x4 1 Lamp 32w T8 Elect. Ballast, Pendant Mnt., No Lens	58	0.23	185.6	$28.58	4	0	No Change	0	0.00	185.6	$28.58	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Corridor	3600	8	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.46	1,670.4	$257.24	8	0	No Change	0	0.00	1670.4	$257.24	$0.00	$0.00	0.00	0	$0.00	0.00
5.22	Access Stairway	800	1	1	1x4 1 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	28	0.03	22.4	$3.45	1	0	No Change	0	0.00	22.4	$3.45	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Media Room	1200	4	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.23	278.4	$42.87	4	0	No Change	0	0.00	278.4	$42.87	$0.00	$0.00	0.00	0	$0.00	0.00
8.21		1200	2	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.07	81.6	$12.57	2	0	No Change	0	0.00	81.6	$12.57	$0.00	$0.00	0.00	0	$0.00	0.00
	POLICE														0				0.00	0	$0.00	
2.22	Lower Hall	8736	3	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.17	1,520.1	$234.09	3	0	No Change	0	0.00	1520.064	$234.09	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Electrical/Mech. Room	1200	1	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.06	69.6	$10.72	1	0	No Change	0	0.00	69.6	$10.72	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Police Records	4800	14	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.81	3,897.6	$600.23	14	0	No Change	0	0.00	3897.6	$600.23	$0.00	$0.00	0.00	0	$0.00	0.00
2.21		4800	11	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.64	3,062.4	$471.61	11	0	No Change	0	0.00	3062.4	$471.61	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Family Crisis Room	3120	2	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.12	361.9	$55.74	2	0	No Change	0	0.00	361.92	$55.74	$0.00	$0.00	0.00	0	$0.00	0.00
2.21		3120	4	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.23	723.8	$111.47	4	0	No Change	0	0.00	723.84	$111.47	$0.00	$0.00	0.00	0	$0.00	0.00

2.22	Hall/Storage	4800	1	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.06	278.4	$42.87	1	0	No Change	0	0.00	278.4	$42.87	$0.00	$0.00	0.00	0	$0.00	0.00
8.22		4800	1	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.03	163.2	$25.13	1	0	No Change	0	0.00	163.2	$25.13	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Station Commander	4800	2	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.12	556.8	$85.75	2	0	No Change	0	0.00	556.8	$85.75	$0.00	$0.00	0.00	0	$0.00	0.00
8.22	Lobby	8736	17	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.58	5,049.4	$777.61	17	0	No Change	0	0.00	5049.408	$777.61	$0.00	$0.00	0.00	0	$0.00	0.00
16		8736	2	2	1x2 2 Lamp, 17w T8 Elect. Ballast, Recessed, Prismatic	34	0.07	594.0	$91.48	2	0	No Change	0	0.00	594.048	$91.48	$0.00	$0.00	0.00	0	$0.00	0.00
8.22	Men's Restroom	4800	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	489.6	$75.40	3	0	No Change	0	0.00	489.6	$75.40	$0.00	$0.00	0.00	0	$0.00	0.00
13		4800	2	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.06	268.8	$41.40	2	0	No Change	0	0.00	268.8	$41.40	$0.00	$0.00	0.00	0	$0.00	0.00
8.22	Women's Restroom	4800	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	489.6	$75.40	3	0	No Change	0	0.00	489.6	$75.40	$0.00	$0.00	0.00	0	$0.00	0.00
13		4800	2	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.06	268.8	$41.40	2	0	No Change	0	0.00	268.8	$41.40	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Sargent's Office	4800	4	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.23	1,113.6	$171.49	4	0	No Change	0	0.00	1113.6	$171.49	$0.00	$0.00	0.00	0	$0.00	0.00
8.21		4800	8	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.27	1,305.6	$201.06	8	0	No Change	0	0.00	1305.6	$201.06	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Police Lounge	4800	11	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.64	3,062.4	$471.61	11	0	No Change	0	0.00	3062.4	$471.61	$0.00	$0.00	0.00	0	$0.00	0.00
8.22	Front Stairwell	8736	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	891.1	$137.23	3	0	No Change	0	0.00	891.072	$137.23	$0.00	$0.00	0.00	0	$0.00	0.00
5		8736	1	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.06	506.7	$78.03	1	0	No Change	0	0.00	506.688	$78.03	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Lieutenant's Office	4800	2	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.12	556.8	$85.75	2	0	No Change	0	0.00	556.8	$85.75	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Squad Room	4800	5	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.29	1,392.0	$214.37	5	0	No Change	0	0.00	1392	$214.37	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Interview Room	3600	3	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.17	626.4	$96.47	3	0	No Change	0	0.00	626.4	$96.47	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Dispatch	8736	10	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.58	5,066.9	$780.30	10	0	No Change	0	0.00	5066.88	$780.30	$0.00	$0.00	0.00	0	$0.00	0.00
8.22		8736	1	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.03	297.0	$45.74	1	0	No Change	0	0.00	297.024	$45.74	$0.00	$0.00	0.00	0	$0.00	0.00
8.21	Restroom	4800	1	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.03	163.2	$25.13	1	0	No Change	0	0.00	163.2	$25.13	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Server Room	8736	6	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.35	3,040.1	$468.18	6	0	No Change	0	0.00	3040.128	$468.18	$0.00	$0.00	0.00	0	$0.00	0.00

8.22	Men's Restroom - Court Office	3120	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	318.2	$49.01	3	0	No Change	0	0.00	318.24	$49.01	$0.00	$0.00	0.00	0	$0.00	0.00
13		3120	3	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.08	262.1	$40.36	3	0	No Change	0	0.00	262.08	$40.36	$0.00	$0.00	0.00	0	$0.00	0.00
8.22	Women's Restroom - Court Office	3120	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	318.2	$49.01	3	0	No Change	0	0.00	318.24	$49.01	$0.00	$0.00	0.00	0	$0.00	0.00
13		3120	3	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.08	262.1	$40.36	3	0	No Change	0	0.00	262.08	$40.36	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Court Offices	3120	11	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.64	1,990.6	$306.55	11	0	No Change	0	0.00	1990.56	$306.55	$0.00	$0.00	0.00	0	$0.00	0.00
2.22		3120	12	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.70	2,171.5	$334.41	12	0	No Change	0	0.00	2171.52	$334.41	$0.00	$0.00	0.00	0	$0.00	0.00
8.22		3120	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	318.2	$49.01	3	0	No Change	0	0.00	318.24	$49.01	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Court Entrance	3600	4	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.23	835.2	$128.62	4	0	No Change	0	0.00	835.2	$128.62	$0.00	$0.00	0.00	0	$0.00	0.00
8.22	Women's Restroom - Court	1200	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	122.4	$18.85	3	0	No Change	0	0.00	122.4	$18.85	$0.00	$0.00	0.00	0	$0.00	0.00
8.22	Men's Restroom - Court	1200	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	122.4	$18.85	3	0	No Change	0	0.00	122.4	$18.85	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Hall	3600	10	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.58	2,088.0	$321.55	10	0	No Change	0	0.00	2088	$321.55	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Court Room	1800	21	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	1.22	2,192.4	$337.63	21	0	No Change	0	0.00	2192.4	$337.63	$0.00	$0.00	0.00	0	$0.00	0.00
2.21		1800	3	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.17	313.2	$48.23	3	0	No Change	0	0.00	313.2	$48.23	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Arms Room	1200	2	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.12	139.2	$21.44	2	0	No Change	0	0.00	139.2	$21.44	$0.00	$0.00	0.00	0	$0.00	0.00
6.11	Garage Bays	4800	4	2	1x4 1 Lamp 32w T8 Elect. Ballast, Surface Mnt., Prismatic	58	0.23	1,113.6	$171.49	4	0	No Change	0	0.00	1113.6	$171.49	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Prisoner Processing	4800	4	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.23	1,113.6	$171.49	4	0	No Change	0	0.00	1113.6	$171.49	$0.00	$0.00	0.00	0	$0.00	0.00
6.11		4800	1	2	1x4 1 Lamp 32w T8 Elect. Ballast, Surface Mnt., Prismatic	58	0.06	278.4	$42.87	1	0	No Change	0	0.00	278.4	$42.87	$0.00	$0.00	0.00	0	$0.00	0.00
5.22	Holding Cell Hall	8736	4	1	1x4 1 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	28	0.11	978.4	$150.68	4	0	No Change	0	0.00	978.432	$150.68	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Cell Area	4800	2	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.12	556.8	$85.75	2	0	No Change	0	0.00	556.8	$85.75	$0.00	$0.00	0.00	0	$0.00	0.00
5.22	Rear Stairwell	8736	1	1	1x4 1 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	28	0.03	244.6	$37.67	1	0	No Change	0	0.00	244.608	$37.67	$0.00	$0.00	0.00	0	$0.00	0.00
8.22		8736	2	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.07	594.0	$91.48	2	0	No Change	0	0.00	594.048	$91.48	$0.00	$0.00	0.00	0	$0.00	0.00

8.22	Investigations Squad B	4800	1	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.03	163.2	$25.13	1	0	No Change	0	0.00	163.2	$25.13	$0.00	$0.00	0.00	0	$0.00	0.00
2.21		4800	9	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.52	2,505.6	$385.86	9	0	No Change	0	0.00	2505.6	$385.86	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Upper Corridor	8736	10	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.58	5,066.9	$780.30	10	0	No Change	0	0.00	5066.88	$780.30	$0.00	$0.00	0.00	0	$0.00	0.00
8.22		8736	5	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.17	1,485.1	$228.71	5	0	No Change	0	0.00	1485.12	$228.71	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Community Services	4800	16	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.93	4,454.4	$685.98	16	0	No Change	0	0.00	4454.4	$685.98	$0.00	$0.00	0.00	0	$0.00	0.00
6.31	2nd Floor Mech. Room	1200	2	2	1x4 1 Lamp 32w T8 Elect. Ballast, Pendant Mnt., Prismatic	58	0.12	139.2	$21.44	2	0	No Change	0	0.00	139.2	$21.44	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Support Services	4800	6	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.35	1,670.4	$257.24	6	0	No Change	0	0.00	1670.4	$257.24	$0.00	$0.00	0.00	0	$0.00	0.00
2.22		4800	4	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.23	1,113.6	$171.49	4	0	No Change	0	0.00	1113.6	$171.49	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Investigations Squad A	4800	7	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.41	1,948.8	$300.12	7	0	No Change	0	0.00	1948.8	$300.12	$0.00	$0.00	0.00	0	$0.00	0.00
2.22		4800	6	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.35	1,670.4	$257.24	6	0	No Change	0	0.00	1670.4	$257.24	$0.00	$0.00	0.00	0	$0.00	0.00
8.22		4800	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	489.6	$75.40	3	0	No Change	0	0.00	489.6	$75.40	$0.00	$0.00	0.00	0	$0.00	0.00
6.11		4800	1	2	1x4 1 Lamp 32w T8 Elect. Ballast, Surface Mnt., Prismatic	58	0.06	278.4	$42.87	1	0	No Change	0	0.00	278.4	$42.87	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Men's Restroom/Locker Room	8736	10	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.58	5,066.9	$780.30	10	0	No Change	0	0.00	5066.88	$780.30	$0.00	$0.00	0.00	0	$0.00	0.00
8.21		8736	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.10	891.1	$137.23	3	0	No Change	0	0.00	891.072	$137.23	$0.00	$0.00	0.00	0	$0.00	0.00
13		8736	2	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.06	489.2	$75.34	2	0	No Change	0	0.00	489.216	$75.34	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Women's Restroom/Locker Room	8736	2	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.12	1,013.4	$156.06	2	0	No Change	0	0.00	1013.376	$156.06	$0.00	$0.00	0.00	0	$0.00	0.00
8.21		8736	4	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.14	1,188.1	$182.97	4	0	No Change	0	0.00	1188.096	$182.97	$0.00	$0.00	0.00	0	$0.00	0.00
13		8736	2	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.06	489.2	$75.34	2	0	No Change	0	0.00	489.216	$75.34	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Gym	4800	4	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.23	1,113.6	$171.49	4	0	No Change	0	0.00	1113.6	$171.49	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Office	4800	3	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.17	835.2	$128.62	3	0	No Change	0	0.00	835.2	$128.62	$0.00	$0.00	0.00	0	$0.00	0.00
2.22	Hall	8736	11	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.64	5,573.6	$858.33	11	0	No Change	0	0.00	5573.568	$858.33	$0.00	$0.00	0.00	0	$0.00	0.00

8.21	Closet	800	2	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.07	54.4	$8.38	2	0	No Change	0	0.00	54.4	$8.38	$0.00	$0.00	0.00	0	$0.00	0.00
2.22		4800	5	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.29	1,392.0	$214.37	5	0	No Change	0	0.00	1392	$214.37	$0.00	$0.00	0.00	0	$0.00	0.00
2.21	Command Staff	4800	12	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.70	3,340.8	$514.48	12	0	No Change	0	0.00	3340.8	$514.48	$0.00	$0.00	0.00	0	$0.00	0.00
8.22		4800	2	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.07	326.4	$50.27	2	0	No Change	0	0.00	326.4	$50.27	$0.00	$0.00	0.00	0	$0.00	0.00
	Totals		1163	276			59.51	221,495	########	1163	3			0.47	216,308	########		$560.00	1.55	5188	$798.93	0.70

NOTES: 1. Simple Payback noted in this spreadsheet does not include Maintenance Savings and NJ Smart Start Incentives.

2. Lamp totals only include T-12 tube replacment calculations

CEG Job #: 9C09079
Project: South Brunswick Township
Address: 540 Ridge Road
Monmouth Junction, NJ 08852
Building SF: 84,460

"Municipal/Police Building"

KWH COST: $0.154

ECM #5: Lighting Control - General

EXISTING LIGHTING										PROPOSED LIGHTING										SAVINGS		
CEG Type	Fixture Location	Yearly Usage	No. Fixts	No. Lamps	Fixture Type	Fixt Watts	Total kW	kWh/Yr Fixtures	Yearly $ Cost	No. Fixts	No. Lamps	Retro-Unit Description	Qnty.	Savings %	kWh/Yr Fixtures	Yearly $ Cost	Unit Cost (INSTALLED)	Total Cost	kWh/Yr Savings	Yearly $ Savings	Yearly Simple Payback
5.34	Mech. Room, West Wing	3120	5	1	1x4 1 Lamp 32w T8 Elect. Ballast, Pendant Mnt., No Lens	28	0.14	436.8	$67.27	5	0	No Change	0	0%	436.8	$67.27	$0	$0.00	0.0	$0.00	0.00
5.31		3120	1	1	1x4 1 Lamp 32w T8 Elect. Ballast, Pendant Mnt., Prismatic	28	0.03	87.4	$13.45	1	0	No Change	0	0%	87.36	$13.45	$0	$0.00	0.0	$0.00	0.00
5.22	Hall/Locker Area	3120	1	1	1x4 1 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	28	0.03	87.4	$13.45	1	0	No Change	0	0%	87.36	$13.45	$0	$0.00	0.0	$0.00	0.00
8.21	Maintenance Room	3120	4	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.14	424.3	$65.35	4	0	No Change	0	0%	424.32	$65.35	$0	$0.00	0.0	$0.00	0.00
8.21	Parts Room/Work Shop	3120	1	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.03	106.1	$16.34	1	0	No Change	0	0%	106.08	$16.34	$0	$0.00	0.0	$0.00	0.00
2.21		3120	1	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.06	181.0	$27.87	1	0	No Change	0	0%	180.96	$27.87	$0	$0.00	0.0	$0.00	0.00
6.11	Main Office	3120	2	2	1x4 1 Lamp 32w T8 Elect. Ballast, Surface Mnt., Prismatic	58	0.12	361.9	$55.74	2	0	No Change	0	0%	361.92	$55.74	$0	$0.00	0.0	$0.00	0.00
6.31	Sprinkler Room	3120	6	2	1x4 1 Lamp 32w T8 Elect. Ballast, Pendant Mnt., Prismatic	58	0.35	1,085.8	$167.21	6	0	Dual Technology Occupancy Sensor	1	10%	977.184	$150.49	$110	$110.00	108.6	$16.72	6.58
2.21	Records Storage	3120	7	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.41	1,266.7	$195.07	7	0	Dual Technology Occupancy Sensor	1	10%	1140.048	$175.57	$110	$110.00	126.7	$19.51	5.64
2.21	Social Services	3120	9	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.52	1,628.6	$250.81	9	0	Dual Technology Occupancy Sensor	1	10%	1465.776	$225.73	$110	$110.00	162.9	$25.08	4.39
11		3120	2	1	Recessed Down Light, 60w A19 Lamp	60	0.12	374.4	$57.66	2	1	No Change	0	0%	374.4	$57.66	$0	$0.00	0.0	$0.00	0.00
2.21	Meeting Room	3120	8	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.46	1,447.7	$222.94	8	0	Dual Technology Occupancy Sensor	1	10%	1302.912	$200.65	$110	$110.00	144.8	$22.29	4.93
6.31	Elevator Room	800	1	2	1x4 1 Lamp 32w T8 Elect. Ballast, Pendant Mnt., Prismatic	58	0.06	46.4	$7.15	1	0	No Change	0	0%	46.4	$7.15	$0	$0.00	0.0	$0.00	0.00
12	Janitor's Closet	800	1	1	Porcelain Socket, 13w CFL Spiral	13	0.01	10.4	$1.60	1	0	No Change	0	0%	10.4	$1.60	$0	$0.00	0.0	$0.00	0.00
13	Men's Restroom	3120	4	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.11	349.4	$53.81	4	0	No Change	0	0%	349.44	$53.81	$0	$0.00	0.0	$0.00	0.00
13	Women's Restroom	3120	4	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.11	349.4	$53.81	4	0	No Change	0	0%	349.44	$53.81	$0	$0.00	0.0	$0.00	0.00
6.31	Mech. Room, Lower Level	1200	4	2	1x4 1 Lamp 32w T8 Elect. Ballast, Pendant Mnt., Prismatic	58	0.23	278.4	$42.87	4	0	No Change	0	0%	278.4	$42.87	$0	$0.00	0.0	$0.00	0.00
2.21	Public Works Office	3120	23	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	1.33	4,162.1	$640.96	23	0	Dual Technology Occupancy Sensor	1	10%	3745.872	$576.86	$110	$110.00	416.2	$64.10	1.72

2.21	Health Dept.	3120	39	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	2.26	7,057.4	$1,086.85	39	0	No Change	0	0%	7057.44	$1,086.85	$0	$0.00	0.0	$0.00	0.00
2.21	Training Room	3120	14	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.81	2,533.4	$390.15	14	0	Dual Technology Occupancy Sensor	1	10%	2280.096	$351.13	$110	$110.00	253.3	$39.01	2.82
15		3120	6	1	Recessed Down Light, 150w BR40 Flood	150	0.90	2,808.0	$432.43	6	1	No Change	0	0%	2808	$432.43	$0	$0.00	0.0	$0.00	0.00
2.21	Upper Corridor	3600	6	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.35	1,252.8	$192.93	6	0	No Change	0	0%	1252.8	$192.93	$0	$0.00	0.0	$0.00	0.00
17		3600	20	1	Round Back Track Light, 50w R20 Lamp	50	1.00	3,600.0	$554.40	20	0	No Change	0	0%	3600	$554.40	$0	$0.00	0.0	$0.00	0.00
18		3600	24	2	Pendant Mnt., Indirect 2 Lamp 25w T8	25	0.60	2,160.0	$332.64	24	0	No Change	0	0%	2160	$332.64	$0	$0.00	0.0	$0.00	0.00
10		3600	9	1	Recessed Down Light, 26w CFL Lamp	26	0.23	842.4	$129.73	9	0	No Change	0	0%	842.4	$129.73	$0	$0.00	0.0	$0.00	0.00
16		3600	2	2	1x2 2 Lamp, 17w T8 Elect. Ballast, Recessed, Prismatic	34	0.07	244.8	$37.70	2	0	No Change	0	0%	244.8	$37.70	$0	$0.00	0.0	$0.00	0.00
2.21	Law Dept.	3120	8	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.46	1,447.7	$222.94	8	0	No Change	0	0%	1447.68	$222.94	$0	$0.00	0.0	$0.00	0.00
2.21	Copy Room	3120	4	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.23	723.8	$111.47	4	0	No Change	0	0%	723.84	$111.47	$0	$0.00	0.0	$0.00	0.00
2.21	Clerk's Office	3120	26	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	1.51	4,705.0	$724.56	26	0	Dual Technology Occupancy Sensor	1	10%	4234.464	$652.11	$110	$110.00	470.5	$72.46	1.52
2.21	Admin. Offices	3120	33	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	1.91	5,971.7	$919.64	33	0	Dual Technology Occupancy Sensor	1	10%	5374.512	$827.67	$110	$110.00	597.2	$91.96	1.20
2.21	Mayor's Office	3120	11	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.64	1,990.6	$306.55	11	0	No Change	0	0%	1990.56	$306.55	$0	$0.00	0.0	$0.00	0.00
13	Men's Restroom	3120	4	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.11	349.4	$53.81	4	0	No Change	0	0%	349.44	$53.81	$0	$0.00	0.0	$0.00	0.00
13	Women's Restroom	3120	4	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.11	349.4	$53.81	4	0	No Change	0	0%	349.44	$53.81	$0	$0.00	0.0	$0.00	0.00
6.11	2nd Floor Mech. Room	1200	4	2	1x4 1 Lamp 32w T8 Elect. Ballast, Surface Mnt., Prismatic	58	0.23	278.4	$42.87	4	0	No Change	0	0%	278.4	$42.87	$0	$0.00	0.0	$0.00	0.00
6.34		1200	3	2	1x4 1 Lamp 32w T8 Elect. Ballast, Pendant Mnt., No Lens	58	0.17	208.8	$32.16	3	0	No Change	0	0%	208.8	$32.16	$0	$0.00	0.0	$0.00	0.00
18	Meeting Room 2	2200	64	2	Pendant Mnt., Indirect 2 Lamp 25w T8	25	1.60	3,520.0	$542.08	64	0	No Change	0	0%	3520	$542.08	$0	$0.00	0.0	$0.00	0.00
2.21	Committee Conf. Room	2200	14	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.81	1,786.4	$275.11	14	0	No Change	0	0%	1786.4	$275.11	$0	$0.00	0.0	$0.00	0.00
20	Main Stairs	3600	4	2	Wallpack, (2) 9w CFL	22	0.09	316.8	$48.79	4	0	No Change	0	0%	316.8	$48.79	$0	$0.00	0.0	$0.00	0.00
20	Side Stairs	3600	5	2	Wallpack, (2) 9w CFL	22	0.11	396.0	$60.98	5	0	No Change	0	0%	396	$60.98	$0	$0.00	0.0	$0.00	0.00
2.21	Lower Hall	3600	16	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.93	3,340.8	$514.48	16	0	No Change	0	0%	3340.8	$514.48	$0	$0.00	0.0	$0.00	0.00
	WEST WING														0			$0.00	0.0		
2.22	Lowr Hall	3600	18	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	1.04	3,758.4	$578.79	18	0	No Change	0	0%	3758.4	$578.79	$0	$0.00	0.0	$0.00	0.00
2.22	Service Entrance	3600	5	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.29	1,044.0	$160.78	5	0	No Change	0	0%	1044	$160.78	$0	$0.00	0.0	$0.00	0.00

8.22	Men's Restroom	3120	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	318.2	$49.01	3	0	No Change	0	0%	318.24	$49.01	$0	$0.00	0.0	$0.00	0.00
13		3120	2	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.06	174.7	$26.91	2	0	No Change	0	0%	174.72	$26.91	$0	$0.00	0.0	$0.00	0.00
8.22	Women's Restroom	3120	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	318.2	$49.01	3	0	No Change	0	0%	318.24	$49.01	$0	$0.00	0.0	$0.00	0.00
13		3120	2	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.06	174.7	$26.91	2	0	No Change	0	0%	174.72	$26.91	$0	$0.00	0.0	$0.00	0.00
2.21	Storage Closet	800	1	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.06	46.4	$7.15	1	0	No Change	0	0%	46.4	$7.15	$0	$0.00	0.0	$0.00	0.00
2.22	Finance Dept.	3120	61	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	3.54	11,038.6	$1,699.94	61	0	Dual Technology Occupancy Sensor	1	10%	9934.704	$1,529.94	$110	$110.00	1103.9	$169.99	0.65
2.21		3120	20	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	1.16	3,619.2	$557.36	20	0	Dual Technology Occupancy Sensor	1	10%	3257.28	$501.62	$110	$110.00	361.9	$55.74	1.97
8.22		3120	4	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.14	424.3	$65.35	4	0	No Change	0	0%	424.32	$65.35	$0	$0.00	0.0	$0.00	0.00
9		3120	9	2	2x2 2 Lamp 32w T8 Utube, Elect. Ballast, Recessed, Parabolic	58	0.52	1,628.6	$250.81	9	0	Dual Technology Occupancy Sensor	1	10%	1465.776	$225.73	$110	$110.00	162.9	$25.08	4.39
6.11	Closet (2)	800	2	2	1x4 1 Lamp 32w T8 Elect. Ballast, Surface Mnt., Prismatic	58	0.12	92.8	$14.29	2	0	No Change	0	0%	92.8	$14.29	$0	$0.00	0.0	$0.00	0.00
9	Smart Trans. Office	3120	9	2	2x2 2 Lamp 32w T8 Utube, Elect. Ballast, Recessed, Parabolic	58	0.52	1,628.6	$250.81	9	0	Dual Technology Occupancy Sensor	1	10%	1465.776	$225.73	$110	$110.00	162.9	$25.08	4.39
8.22	Finance Entrance	3600	10	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.34	1,224.0	$188.50	10	0	No Change	0	0%	1224	$188.50	$0	$0.00	0.0	$0.00	0.00
2.22	Lounge	3120	6	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.35	1,085.8	$167.21	6	0	Dual Technology Occupancy Sensor	1	10%	977.184	$150.49	$110	$110.00	108.6	$16.72	6.58
13		3120	1	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.03	87.4	$13.45	1	0	No Change	0	0%	87.36	$13.45	$0	$0.00	0.0	$0.00	0.00
6.22	Stairwell	3600	3	2	1x4 1 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.17	626.4	$96.47	3	0	No Change	0	0%	626.4	$96.47	$0	$0.00	0.0	$0.00	0.00
2.22	2nd Floor Corridor	3600	15	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.87	3,132.0	$482.33	15	0	No Change	0	0%	3132	$482.33	$0	$0.00	0.0	$0.00	0.00
2.21	Tax Accessor	3120	14	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.81	2,533.4	$390.15	14	0	Dual Technology Occupancy Sensor	1	10%	2280.096	$351.13	$110	$110.00	253.3	$39.01	2.82
8.21		3120	1	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.03	106.1	$16.34	1	0	No Change	0	0%	106.08	$16.34	$0	$0.00	0.0	$0.00	0.00
2.22		3120	4	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.23	723.8	$111.47	4	0	No Change	0	0%	723.84	$111.47	$0	$0.00	0.0	$0.00	0.00
8.22		3120	4	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.14	424.3	$65.35	4	0	No Change	0	0%	424.32	$65.35	$0	$0.00	0.0	$0.00	0.00
2.22	Code Enforcement	3120	93	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	5.39	16,829.3	$2,591.71	93	0	Dual Technology Occupancy Sensor	4	10%	15146.35	$2,332.54	$110	$440.00	1682.9	$259.17	1.70

8.22	Code Enforcement	3120	8	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.27	848.6	$130.69	8	0	No Change	0	0%	848.64	$130.69	$0	$0.00	0.0	$0.00	0.00
2.22	Copy Room	3120	2	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.12	361.9	$55.74	2	0	No Change	0	0%	361.92	$55.74	$0	$0.00	0.0	$0.00	0.00
2.22	Planning Office	3120	54	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	3.13	9,771.8	$1,504.86	54	0	Dual Technology Occupancy Sensor	1	10%	8794.656	$1,354.38	$110	$110.00	977.2	$150.49	0.73
5.21		3120	7	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.41	1,266.7	$195.07	7	0	Dual Technology Occupancy Sensor	1	10%	1140.048	$175.57	$110	$110.00	126.7	$19.51	5.64
8.21		3120	5	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.17	530.4	$81.68	5	0	Dual Technology Occupancy Sensor	1	10%	477.36	$73.51	$110	$110.00	53.0	$8.17	13.47
5.21	Stairwell	3600	3	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.17	626.4	$96.47	3	0	No Change	0	0%	626.4	$96.47	$0	$0.00	0.0	$0.00	0.00
8.22	Men's Restroom	3120	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	318.2	$49.01	3	0	No Change	0	0%	318.24	$49.01	$0	$0.00	0.0	$0.00	0.00
13		3120	4	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.11	349.4	$53.81	4	0	No Change	0	0%	349.44	$53.81	$0	$0.00	0.0	$0.00	0.00
8.22	Women's Restroom	3120	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	318.2	$49.01	3	0	No Change	0	0%	318.24	$49.01	$0	$0.00	0.0	$0.00	0.00
13		3120	4	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.11	349.4	$53.81	4	0	No Change	0	0%	349.44	$53.81	$0	$0.00	0.0	$0.00	0.00
6.34	2nd Floor Storage	800	4	2	1x4 1 Lamp 32w T8 Elect. Ballast, Pendant Mnt., No Lens	58	0.23	185.6	$28.58	4	0	No Change	0	0%	185.6	$28.58	$0	$0.00	0.0	$0.00	0.00
2.22	Corridor	3600	8	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.46	1,670.4	$257.24	8	0	No Change	0	0%	1670.4	$257.24	$0	$0.00	0.0	$0.00	0.00
5.22	Access Stairway	800	1	1	1x4 1 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	28	0.03	22.4	$3.45	1	0	No Change	0	0%	22.4	$3.45	$0	$0.00	0.0	$0.00	0.00
2.22	Media Room	1200	4	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.23	278.4	$42.87	4	0	No Change	0	0%	278.4	$42.87	$0	$0.00	0.0	$0.00	0.00
8.21		1200	2	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.07	81.6	$12.57	2	0	No Change	0	0%	81.6	$12.57	$0	$0.00	0.0	$0.00	0.00
	POLICE														0			$0.00	0.0		
2.22	Lower Hall	8736	3	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.17	1,520.1	$234.09	3	0	No Change	0	0%	1520.064	$234.09	$0	$0.00	0.0	$0.00	0.00
2.22	Electrical/Mech. Room	1200	1	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.06	69.6	$10.72	1	0	No Change	0	0%	69.6	$10.72	$0	$0.00	0.0	$0.00	0.00
2.22	Police Records	4800	14	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.81	3,897.6	$600.23	14	0	Dual Technology Occupancy Sensor	1	10%	3507.84	$540.21	$110	$110.00	389.8	$60.02	1.83
2.21		4800	11	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.64	3,062.4	$471.61	11	0	Dual Technology Occupancy Sensor	1	10%	2756.16	$424.45	$110	$110.00	306.2	$47.16	2.33
2.22	Family Crisis Room	3120	2	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.12	361.9	$55.74	2	0	No Change	0	0%	361.92	$55.74	$0	$0.00	0.0	$0.00	0.00
2.21		3120	4	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.23	723.8	$111.47	4	0	No Change	0	0%	723.84	$111.47	$0	$0.00	0.0	$0.00	0.00

2.22	Hall/Storage	4800	1	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.06	278.4	$42.87	1	0	No Change	0	0%	278.4	$42.87	$0	$0.00	0.0	$0.00	0.00
8.22		4800	1	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.03	163.2	$25.13	1	0	No Change	0	0%	163.2	$25.13	$0	$0.00	0.0	$0.00	0.00
2.21	Station Commander	4800	2	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.12	556.8	$85.75	2	0	No Change	0	0%	556.8	$85.75	$0	$0.00	0.0	$0.00	0.00
8.22	Lobby	8736	17	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.58	5,049.4	$777.61	17	0	No Change	0	0%	5049.408	$777.61	$0	$0.00	0.0	$0.00	0.00
16		8736	2	2	1x2 2 Lamp, 17w T8 Elect. Ballast, Recessed, Prismatic	34	0.07	594.0	$91.48	2	0	No Change	0	0%	594.048	$91.48	$0	$0.00	0.0	$0.00	0.00
8.22	Men's Restroom	4800	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	489.6	$75.40	3	0	No Change	0	0%	489.6	$75.40	$0	$0.00	0.0	$0.00	0.00
13		4800	2	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.06	268.8	$41.40	2	0	No Change	0	0%	268.8	$41.40	$0	$0.00	0.0	$0.00	0.00
8.22	Women's Restroom	4800	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	489.6	$75.40	3	0	No Change	0	0%	489.6	$75.40	$0	$0.00	0.0	$0.00	0.00
13		4800	2	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.06	268.8	$41.40	2	0	No Change	0	0%	268.8	$41.40	$0	$0.00	0.0	$0.00	0.00
2.21	Sargent's Office	4800	4	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.23	1,113.6	$171.49	4	0	No Change	0	0%	1113.6	$171.49	$0	$0.00	0.0	$0.00	0.00
8.21		4800	8	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.27	1,305.6	$201.06	8	0	No Change	0	0%	1305.6	$201.06	$0	$0.00	0.0	$0.00	0.00
2.22	Police Lounge	4800	11	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.64	3,062.4	$471.61	11	0	Dual Technology Occupancy Sensor	1	10%	2756.16	$424.45	$110	$110.00	306.2	$47.16	2.33
8.22	Front Stairwell	8736	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	891.1	$137.23	3	0	No Change	0	0%	891.072	$137.23	$0	$0.00	0.0	$0.00	0.00
5		8736	1	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.06	506.7	$78.03	1	0	No Change	0	0%	506.688	$78.03	$0	$0.00	0.0	$0.00	0.00
2.22	Lieutenant's Office	4800	2	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.12	556.8	$85.75	2	0	No Change	0	0%	556.8	$85.75	$0	$0.00	0.0	$0.00	0.00
2.21	Squad Room	4800	5	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.29	1,392.0	$214.37	5	0	Dual Technology Occupancy Sensor	1	10%	1252.8	$192.93	$110	$110.00	139.2	$21.44	5.13
2.22	Interview Room	3600	3	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.17	626.4	$96.47	3	0	No Change	0	0%	626.4	$96.47	$0	$0.00	0.0	$0.00	0.00
2.22	Dispatch	8736	10	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.58	5,066.9	$780.30	10	0	No Change	0	0%	5066.88	$780.30	$0	$0.00	0.0	$0.00	0.00
8.22		8736	1	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.03	297.0	$45.74	1	0	No Change	0	0%	297.024	$45.74	$0	$0.00	0.0	$0.00	0.00
8.21	Restroom	4800	1	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.03	163.2	$25.13	1	0	No Change	0	0%	163.2	$25.13	$0	$0.00	0.0	$0.00	0.00
2.22	Server Room	8736	6	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.35	3,040.1	$468.18	6	0	Dual Technology Occupancy Sensor	1	10%	2736.115	$421.36	$110	$110.00	304.0	$46.82	2.35

8.22	Men's Restroom - Court Office	3120	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	318.2	$49.01	3	0	No Change	0	0%	318.24	$49.01	$0	$0.00	0.0	$0.00	0.00
13		3120	3	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.08	262.1	$40.36	3	0	No Change	0	0%	262.08	$40.36	$0	$0.00	0.0	$0.00	0.00
8.22	Women's Restroom - Court Office	3120	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	318.2	$49.01	3	0	No Change	0	0%	318.24	$49.01	$0	$0.00	0.0	$0.00	0.00
13		3120	3	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.08	262.1	$40.36	3	0	No Change	0	0%	262.08	$40.36	$0	$0.00	0.0	$0.00	0.00
2.21	Court Offices	3120	11	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.64	1,990.6	$306.55	11	0	Dual Technology Occupancy Sensor	1	10%	1791.504	$275.89	$110	$110.00	199.1	$30.65	3.59
2.22		3120	12	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.70	2,171.5	$334.41	12	0	Dual Technology Occupancy Sensor	1	10%	1954.368	$300.97	$110	$110.00	217.2	$33.44	3.29
8.22		3120	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	318.2	$49.01	3	0	No Change	0	0%	318.24	$49.01	$0	$0.00	0.0	$0.00	0.00
2.21	Court Entrance	3600	4	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.23	835.2	$128.62	4	0	No Change	0	0%	835.2	$128.62	$0	$0.00	0.0	$0.00	0.00
8.22	Women's Restroom - Court	1200	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	122.4	$18.85	3	0	No Change	0	0%	122.4	$18.85	$0	$0.00	0.0	$0.00	0.00
8.22	Men's Restroom - Court	1200	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	122.4	$18.85	3	0	No Change	0	0%	122.4	$18.85	$0	$0.00	0.0	$0.00	0.00
2.22	Hall	3600	10	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.58	2,088.0	$321.55	10	0	No Change	0	0%	2088	$321.55	$0	$0.00	0.0	$0.00	0.00
2.22	Court Room	1800	21	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	1.22	2,192.4	$337.63	21	0	No Change	0	0%	2192.4	$337.63	$0	$0.00	0.0	$0.00	0.00
2.21		1800	3	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.17	313.2	$48.23	3	0	No Change	0	0%	313.2	$48.23	$0	$0.00	0.0	$0.00	0.00
2.21	Arms Room	1200	2	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.12	139.2	$21.44	2	0	No Change	0	0%	139.2	$21.44	$0	$0.00	0.0	$0.00	0.00
6.11	Garage Bays	4800	4	2	1x4 1 Lamp 32w T8 Elect. Ballast, Surface Mnt., Prismatic	58	0.23	1,113.6	$171.49	4	0	No Change	0	0%	1113.6	$171.49	$0	$0.00	0.0	$0.00	0.00
2.21	Prisoner Processing	4800	4	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.23	1,113.6	$171.49	4	0	No Change	0	0%	1113.6	$171.49	$0	$0.00	0.0	$0.00	0.00
6.11		4800	1	2	1x4 1 Lamp 32w T8 Elect. Ballast, Surface Mnt., Prismatic	58	0.06	278.4	$42.87	1	0	No Change	0	0%	278.4	$42.87	$0	$0.00	0.0	$0.00	0.00
5.22	Holding Cell Hall	8736	4	1	1x4 1 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	28	0.11	978.4	$150.68	4	0	No Change	0	0%	978.432	$150.68	$0	$0.00	0.0	$0.00	0.00
2.21	Cell Area	4800	2	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.12	556.8	$85.75	2	0	No Change	0	0%	556.8	$85.75	$0	$0.00	0.0	$0.00	0.00
5.22	Rear Stairwell	8736	1	1	1x4 1 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	28	0.03	244.6	$37.67	1	0	No Change	0	0%	244.608	$37.67	$0	$0.00	0.0	$0.00	0.00
8.22		8736	2	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.07	594.0	$91.48	2	0	No Change	0	0%	594.048	$91.48	$0	$0.00	0.0	$0.00	0.00

8.22	Investigations Squad B	4800	1	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.03	163.2	$25.13	1	0	No Change	0	0%	163.2	$25.13	$0	$0.00	0.0	$0.00	0.00
2.21		4800	9	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.52	2,505.6	$385.86	9	0	Dual Technology Occupancy Sensor	1	10%	2255.04	$347.28	$110	$110.00	250.6	$38.59	2.85
2.22	Upper Corridor	8736	10	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.58	5,066.9	$780.30	10	0	No Change	0	0%	5066.88	$780.30	$0	$0.00	0.0	$0.00	0.00
8.22		8736	5	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.17	1,485.1	$228.71	5	0	No Change	0	0%	1485.12	$228.71	$0	$0.00	0.0	$0.00	0.00
2.21	Community Services	4800	16	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.93	4,454.4	$685.98	16	0	Dual Technology Occupancy Sensor	1	10%	4008.96	$617.38	$110	$110.00	445.4	$68.60	1.60
6.31	2nd Floor Mech. Room	1200	2	2	1x4 1 Lamp 32w T8 Elect. Ballast, Pendant Mnt., Prismatic	58	0.12	139.2	$21.44	2	0	No Change	0	0%	139.2	$21.44	$0	$0.00	0.0	$0.00	0.00
2.21	Support Services	4800	6	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.35	1,670.4	$257.24	6	0	No Change	0	0%	1670.4	$257.24	$0	$0.00	0.0	$0.00	0.00
2.22		4800	4	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.23	1,113.6	$171.49	4	0	No Change	0	0%	1113.6	$171.49	$0	$0.00	0.0	$0.00	0.00
2.21	Investigations Squad A	4800	7	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.41	1,948.8	$300.12	7	0	Dual Technology Occupancy Sensor	1	10%	1753.92	$270.10	$110	$110.00	194.9	$30.01	3.67
2.22		4800	6	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.35	1,670.4	$257.24	6	0	Dual Technology Occupancy Sensor	1	10%	1503.36	$231.52	$110	$110.00	167.0	$25.72	4.28
8.22		4800	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.10	489.6	$75.40	3	0	No Change	0	0%	489.6	$75.40	$0	$0.00	0.0	$0.00	0.00
6.11		4800	1	2	1x4 1 Lamp 32w T8 Elect. Ballast, Surface Mnt., Prismatic	58	0.06	278.4	$42.87	1	0	No Change	0	0%	278.4	$42.87	$0	$0.00	0.0	$0.00	0.00
2.21	Men's Restroom/Locker Room	8736	10	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.58	5,066.9	$780.30	10	0	Dual Technology Occupancy Sensor	1	10%	4560.192	$702.27	$110	$110.00	506.7	$78.03	1.41
8.21		8736	3	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.10	891.1	$137.23	3	0	Dual Technology Occupancy Sensor	1	10%	801.9648	$123.50	$110	$110.00	89.1	$13.72	8.02
13		8736	2	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.06	489.2	$75.34	2	0	No Change	0	0%	489.216	$75.34	$0	$0.00	0.0	$0.00	0.00
2.21	Women's Restroom/Locker Room	8736	2	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.12	1,013.4	$156.06	2	0	No Change	0	0%	1013.376	$156.06	$0	$0.00	0.0	$0.00	0.00
8.21		8736	4	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.14	1,188.1	$182.97	4	0	Dual Technology Occupancy Sensor	1	10%	1069.286	$164.67	$110	$110.00	118.8	$18.30	6.01
13		8736	2	1	6"x4 1 Lamp 32w T8, Elect. Ballast, Wall Mnt., Prismatic	28	0.06	489.2	$75.34	2	0	No Change	0	0%	489.216	$75.34	$0	$0.00	0.0	$0.00	0.00
2.21	Gym	4800	4	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.23	1,113.6	$171.49	4	0	No Change	0	0%	1113.6	$171.49	$0	$0.00	0.0	$0.00	0.00
2.21	Office	4800	3	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.17	835.2	$128.62	3	0	No Change	0	0%	835.2	$128.62	$0	$0.00	0.0	$0.00	0.00
2.22	Hall	8736	11	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.64	5,573.6	$858.33	11	0	No Change	0	0%	5573.568	$858.33	$0	$0.00	0.0	$0.00	0.00

8.21	Closet	800	2	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Prismatic	34	0.07	54.4	$8.38	2	0	No Change	0	0%	54.4	$8.38	$0	$0.00	0.0	$0.00	0.00
2.22	Command Staff	4800	5	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Parabolic	58	0.29	1,392.0	$214.37	5	0	No Change	0	0%	1392	$214.37	$0	$0.00	0.0	$0.00	0.00
2.21		4800	12	2	2x4 2 Lamp 32w T8 Elect. Ballast, Recessed, Prismatic	58	0.70	3,340.8	$514.48	12	0	Dual Technology Occupancy Sensor	1	10%	3006.72	$463.03	$110	$110.00	334.1	$51.45	2.14
8.22		4800	2	2	2x2 2 Lamp 17w T8, Elect. Ballast, Recessed, Parabolic	34	0.07	326.4	$50.27	2	0	No Change	0	0%	326.4	$50.27	$0	$0.00	0.0	$0.00	0.00
	Totals		1163	276			59.51	221,495	########	1163	2			3.30	210,254	########		$3,960.00	11242	$1,731.21	2.29

NOTES: 1. Simple Payback noted in this spreadsheet does not include Maintenance Savings and NJ Smart Start Incentives.

2. Lamp totals only include T-12 tube replacment calculations

Project Name: LGEA Solar PV Project - South Brunswick Municipal Building
Location: Monmouth Junction, NJ
Description: Photovoltaic System - Direct Purchase

Simple Payback Analysis

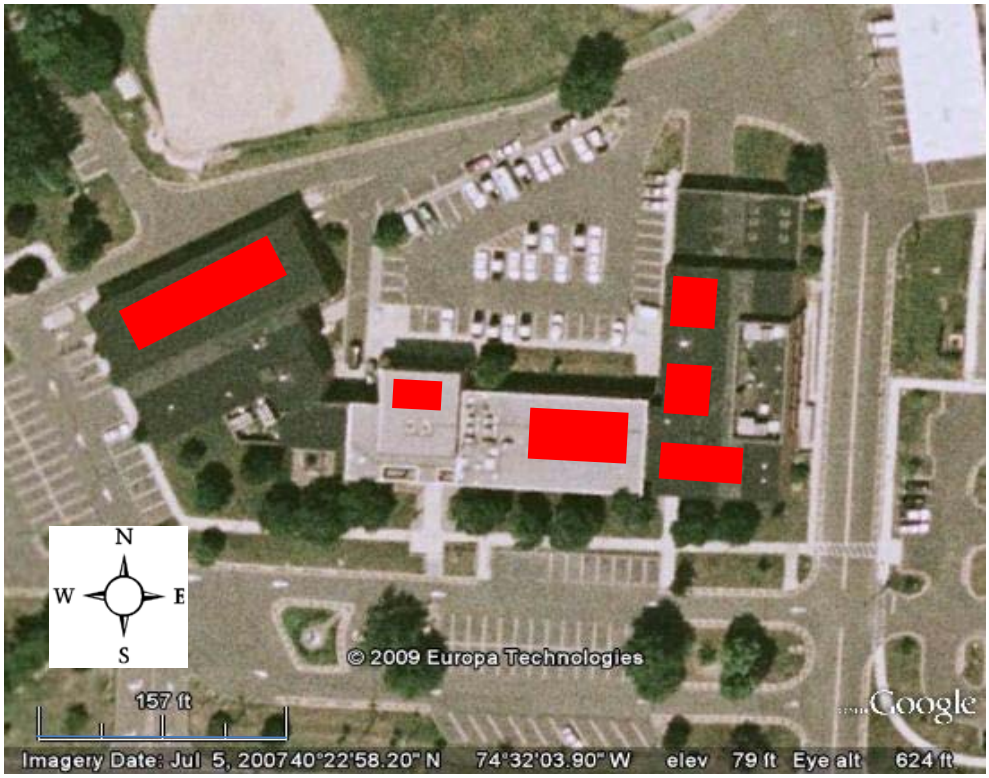
	Photovoltaic System - Direct Purchase
Total Construction Cost	$1,109,520
Annual kWh Production	142,456
Annual Energy Cost Reduction	$21,938
Annual SREC Revenue	$49,860
First Cost Premium	**$1,109,520**
Simple Payback:	**15.45** **Years**

Life Cycle Cost Analysis

Analysis Period (years):	25	Financing %:	0%
Financing Term (mths):	0	Maintenance Escalation Rate:	3.0%
Average Energy Cost ($/kWh)	**$0.154**	Energy Cost Escalation Rate:	3.0%
Financing Rate:	0.00%	SREC Value ($/kWh)	$0.350

Period	Additional Cash Outlay	Energy kWh Production	Energy Cost Savings	Additional Maint Costs	SREC Revenue	Net Cash Flow	Cumulative Cash Flow
0	$1,109,520	0	0	0	$0	(1,109,520)	0
1	$0	142,456	$21,938	$0	$49,860	$71,798	($1,037,722)
2	$0	141,744	$22,596	$0	$49,610	$72,207	($965,516)
3	$0	141,035	$23,274	$0	$49,362	$72,637	($892,879)
4	$0	140,330	$23,972	$0	$49,115	$73,088	($819,791)
5	$0	139,628	$24,692	$1,438	$48,870	$72,123	($747,668)
6	$0	138,930	$25,432	$1,431	$48,626	$72,627	($675,041)
7	$0	138,235	$26,195	$1,424	$48,382	$73,154	($601,887)
8	$0	137,544	$26,981	$1,417	$48,140	$73,705	($528,182)
9	$0	136,856	$27,791	$1,410	$47,900	$74,281	($453,901)
10	$0	136,172	$28,624	$1,403	$47,660	$74,882	($379,019)
11	$0	135,491	$29,483	$1,396	$47,422	$75,510	($303,509)
12	$0	134,814	$30,368	$1,389	$47,185	$76,164	($227,345)
13	$0	134,140	$31,279	$1,382	$46,949	$76,846	($150,499)
14	$0	133,469	$32,217	$1,375	$46,714	$77,556	($72,943)
15	$0	132,802	$33,184	$1,368	$46,481	$78,296	$5,353
16	$0	132,138	$34,179	$1,361	$46,248	$79,066	$84,420
17	$0	131,477	$35,204	$1,354	$46,017	$79,867	$164,287
18	$0	130,820	$36,261	$1,347	$45,787	$80,700	$244,987
19	$0	130,166	$37,348	$1,341	$45,558	$81,566	$326,552
20	$0	129,515	$38,469	$1,334	$45,330	$82,465	$409,017
21	$1	128,867	$39,623	$1,327	$45,104	$83,399	$492,416
22	$2	128,223	$40,812	$1,321	$44,878	$84,369	$576,785
23	$3	127,582	$42,036	$1,314	$44,654	$85,375	$662,161
24	$4	126,944	$43,297	$1,308	$44,430	$86,420	$748,580
25	$5	126,309	$44,596	$1,301	$44,208	$87,503	$836,084
	Totals:	2,717,762	$589,488	$22,168	$951,217	$1,945,604	$1,518,537
				Net Present Value (NPV)		**$836,109**	
				Internal Rate of Return (IRR)		**4.7%**	

Building	Roof Area (sq ft)	Panel	Qty	Panel Sq Ft	Panel Total Sq Ft	Total KW_{DC}	Total Annual kWh	Panel Weight (33 lbs)	W/SQFT
Municipal Bldg	8750	Sunpower SPR230	536	14.7	7,881	123.28	142,456	17,688	15.64



.= Proposed PV Layout

Notes:
1. Estimated kWH based on the National Renewable Energy Laboratory PVWatts Version 1 Calculator Program.