CDM

City of Vineland
City Hall and Police Station

October 2009

Final Energy Audit Report

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October 8, 2009

Ms. Denise Monaco
Business Administrator
City of Vineland
Vineland, NJ 08362-1508

Subject: Energy Audit for the City of Vineland

Dear Ms. Monaco:

Please find enclosed (4) four copies of our final report detailing the findings and recommendations of CDM's energy audit for the City of Vineland. An electronic copy of this report has also been provided to TRC for their record.

Very truly yours,

Matthew T. Goss, P.E., C.E.M., C.E.A., LEED®AP
Project Manager
CDM

c: Theodore C. Schlette (CDM)
Colleen Kling (TRC)

Enclosure

Contents

Executive Summary

As part of an initiative to reduce energy cost and consumption, the City of Vineland has secured the services of Camp Dresser and McKee (CDM) to perform an energy audit for two buildings which are owned and operated by the City in an effort to develop comprehensive Energy Conservation and Retrofit Measures (ECRMs).

CDM's energy audit team visited both facilities on August 5th, 2009. As a result of the site visits and evaluation of the historical energy usage of the facilities, CDM was successful in identifying opportunities for energy savings measures.

CDM has also evaluated the potential for renewable energy technologies to be implemented at both buildings to offset the City's electrical energy usage. Specifically, the use of solar electric photovoltaic panels, ground source heat pumps and wind turbines were investigated.

Not all ECRMs identified as a result of the energy audit are recommended. ECRMs must be economically feasible to be recommended to the City for implementation. The feasibility of each ECRM was measured through a simple payback analysis. The simple payback period was determined after establishing Engineer's Opinion of Probable Construction Cost estimates, O&M estimates, projected annual energy savings estimates, and the potential value of New Jersey Clean Energy rebates, or Renewable Energy Credits, if applicable. ECRMs with a payback period of 20 years or less can be recommended.

Historical Energy Usage

The following table, Table ES-1, summarizes the 2008 energy usage at each of the City's buildings. These values can serve as a benchmarking tool, along with the building profile that has been established through the EPA's Portfolio Manager Program, to quantify the reduction in electrical energy and natural gas usage following the implementation of the recommended ECRMs.

Table ES-1: Annual Energy Usage & Cost
(Electric: December 2007-2008, Natural Gas: December 2007-2008)

	Electrical Energy Use (kWh)	Peak Summer Demand (kW)	Peak Winter Demand (kW)	Fuel Use for Entire Building (therms)	Cost for Electric Service	Cost for Fuel
City Hall	2,993,400	746.5	563.5	34,951	$417,025	$54,044
Police Station	803,200	144	152	-	$122,179	-

Recommended ECRMs

The following table, Table ES-2, presents the ranking of recommended ECRMs identified for the buildings lighting, HVAC systems and reduction of miscellaneous plug loads based on the simply payback analysis. Option 1 of the lighting system retrofits is recommended as these measures result in greater energy savings. Additional ECRMs associated with the buildings envelope (exterior shell) and other miscellaneous appliances were identified and evaluated, as discussed in Sections 2 and 4; however, were not recommended due to longer payback periods. This table includes the Engineer's Opinion of Probable Construction Cost, projected annual energy cost savings, projected annual energy usage savings, and total simple payback period for each recommended ECRM. The ECRMs are ranked based on payback period.

Table ES-3 summarizes the Total Engineer's Opinion of Construction Cost, annual energy savings, projected annual energy and O&M cost savings and the payback period based on the implementation of all recommended ECRMs.

Table ES-2: Ranking of Recommended ECRM's

Overall Ranking (Based on Simple Payback)	ECRM	Engineer's Opinion of Probable Construction Cost[1]	Projected Annual Energy Savings	Projected Annual Energy Cost Savings	Simple Payback Period (years)
1	Police Station – Building Management System	$19,355	80,320 kWh	$12,289	**1.6**
2	Vineland City Hall – Lighting Upgrades – Option 2	$19,723	42,803 kWh	$8,560	**2.3**
3	Vineland City Hall – Night Setback	$27,816	7,376 therms	$11,507	**2.4**
4	Vineland Police Station – Lighting Upgrades	$12,890	22,144 kWh	$4,428	**2.9**
5	Vineland City Hall – Building Management System	$57,500	3,536 therms 103,800 kWh	$19,944	**2.9**
6	Vineland City Hall – Variable Frequency Drives	$38,273	53,000 kWh	$7,367	**5.2**
7	Vineland City Hall – Lighting Upgrades – Option 1	$86,068	53,651 kWh	$10,830	**8.0**
8	Vineland City Hall – Boiler Upgrade	$110,281	7,179 therms	$11,199	**9.8**

1. Engineers Probable Construction takes into account any applicable rebates.

Table ES-3: Recommended ECRM's[1]			
Total Engineer's Opinion of Probable Construction Cost	**Projected Annual Energy Savings (kWh or therms)**	**Projected Annual Energy Cost Savings**	**Simple Payback Period (years)**
$371,906	355,718 kWh / 18,109 therms	$86,124	**4.3**

1. Does not include energy savings associated with Solar Energy System.

Renewable Energy Technologies

Solar Energy

Section 4.3 of the report provides for an economic evaluation of a solar energy system recommended to be installed at the City Hall and Police Station. The evaluation covered the economic feasibility of the City furnishing and installing the two solar energy systems under a typical construction contract and to assume full responsibility of the operation of such a system.

Based on the simple payback model summarized in Table ES-4, it would benefit the City to further investigate the installation of solar energy systems. This is primarily based on the initial upfront capital investment required for a solar energy system installation and the 38 year payback period. Other options such as Power Purchase Agreements are potentially available as well to help finance the project. Solar technology is constantly changing and will most likely continue to lower in price.

Two major factors influencing the project financial evaluation is the variance of the prevailing energy market conditions and Solar Renewable Energy Credit (SREC) rates, with the largest impact to the payback model being the SREC credit pricing. For the payback model, conservative estimates of the SREC's market value over a 15 year period were assumed, as discussed in Section 4.3.

Table ES-4 includes a simple payback analysis for the installation of a solar energy system in the City Hall and the Police Station. Refer to Appendix E for a more detailed solar financing spreadsheet.

Table ES-4: Simple Payback Analysis for Solar Energy System		
Parameter	**City Hall Solar**	**Police Station Solar**
Estimated Budgetary Project Cost	$1,688,850	$1,237,050
1st Year Production	247,792 kWh	181,503 kWh
Annual Electric Savings	$40,118	$29,385
Annual Estimated SREC Revenue	$156,217	$114,426
Project Simple Payback	**8.6 Years**	**8.6 Years**

Section 1
Introduction

1.1 General

As part of an initiative to reduce energy cost and consumption, the City of Vineland has secured the services of Camp Dresser and McKee (CDM) to perform an energy audit at two (2) of the City's buildings in an effort to develop comprehensive energy conservation initiatives.

The performance of an Energy Audit requires a coordinated phased approach to identify, evaluate, and recommend energy conservation and retrofit measures (ECRM). The various phases conducted under this Energy Audit included the following:

- Gather preliminary data on all facilities;
- Facility inspection;
- Identify and evaluate potential ECRMs;
- Develop the energy audit report.

Figure 1-1 is a schematic representation of the phases utilized by CDM to prepare the Energy Audit Report.

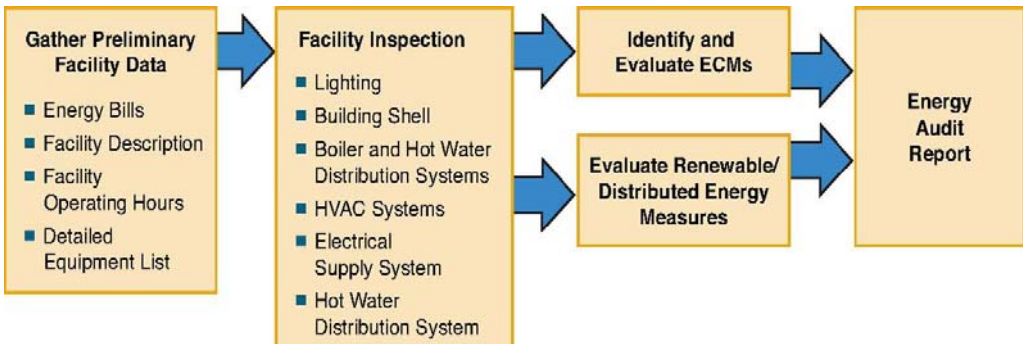


Figure 1-1: Energy Audit Phases

1.2 Background

The two (2) buildings that were included in the energy audit for the City of Vineland were Vineland City Hall and the Police, Health and Welfare Building.

The Vineland City Hall was constructed in 1971, and is approximately 100,000 square feet. The building consists of five main floors with mostly office space, a smaller sixth floor reserved for the mayor's office, and a below grade basement that houses the majority of the building's mechanical equipment. There are approximately 150 employees at the City Hall, who occupy the building primarily during regular business hours, between 7 AM and 6 PM, five days a week.

Figure 1-2: Vineland City Hall

The building layout consists of two towers which house the majority of the building office space and are connected by a central corridor area where the elevators and main stairwells are located. Each tower rises from the ground floor to the fifth floor, while the mayor's office area on the sixth floor occupies only the central corridor space. The five main floors contain two primary office spaces each, devoted to various City departments, such as tax collector, licensing, city clerk, etc.

The City of Vineland Police, Health & Welfare Departments Facility was constructed in 1968 and is approximately 33,660 square feet. It is a two story building, with the lower level partially below grade. The ground floor consists of motor vehicle storage, communications rooms, miscellaneous storage rooms and various offices. The second floor consists of conference rooms, offices, a weight room, prisoner holding/interrogation areas, and various filing/storage spaces. As a Police Station, the majority of the facility is opened 24 hours a day, 7 days a week. Various administration offices, however, are occupied only during normal business hours.

Figure 1-3: Vineland Police Building

1.3 Purpose and Scope

The objective of the energy audit is to identify energy conservation and retrofit measures to reduce energy usage and to develop an economic basis to financially validate the planning and implementation of identified energy conservation and retrofit measures.

The buildings were originally designed to provide comfortable conditions for employees, with limited consideration for energy consumption. Currently, due to the rising costs of power and the desire to minimize dependence on foreign oil supplies, energy consumption is taking a higher priority across the nation. Significant energy savings may be available with retrofits to the buildings' envelopes, heating, cooling systems and lighting systems. It should be noted that the magnitude of energy savings available is not only dependent on the type of heating, lighting or insulation systems that are in use, but also on the age and condition of the equipment and the capital available to implement major changes.

The purpose of this energy audit is to identify the various critical building comfort systems within the buildings that are major consumers of electrical energy and are clear candidates for energy savings measures. In addition, the potential for alternative energy systems to be installed at each building was evaluated and presented herein.

Section 2
Facility Description

2.1 Vineland City Hall

2.1.1 Description of Building Envelope

The energy audit included an evaluation of the building's envelope (exterior shell) to determine the components' effective R-values to be utilized in the building model and to locate and fix any thermal weaknesses that may be present. The components of a building's envelope include the exterior walls, foundation and roof. The construction and material, age and general condition of these components, including exterior windows and doors, impact the building's energy use.

The exterior walls of the City Hall primarily consist of 8"-12" concrete structure, with 2" rigid insulation, an air gap, and, in most areas, 4" brick or precast concrete panel facing. Some areas of the building utilize CMU block construction in lieu of concrete as the main wall structure, with similar insulation, air gaps, and facing. The existing building roof consists of a 4" concrete deck supporting additional light weight concrete fill, with 2" rigid insulation, a vapor barrier, and finally a roofing membrane covered with gravel. There was minimal evident pooling observed on the roof, indicating that the drains are maintained and the roof is properly sloped to minimize accumulation of water.

The majority of the exterior building windows are 1" insulated glass, with fixed aluminum frames. Additionally, some of the office space windows consist of ¼" polished plate glass with either fixed or operable aluminum frames. The entry doors on the ground and first floors are aluminum-framed glass doors.

The existing windows and exterior doors were sealed well with no signs of infiltration. As such, it was determined that the building's envelope is in good condition and is currently providing a high level of insulation. Therefore, any modifications to the insulation system would not prove to be cost effective, from an energy savings stand-point.

2.1.2 Description of Building HVAC

Heating for the building is provided by a 100 hp Kewanee boiler, installed in 1991. This boiler provides approximately 3,350,000 Btu/hr (3,350 MBH) of heat to the building hot water system.

Cooling is provided by a 300 ton Trane Centravac chiller, which provides as much as 3,600 MBH of cooling to the building chilled water system. The condenser is water-cooled, with the heat being rejected at cooling towers located on the roof.

The West Tower uses two 50 HP supply fans to push air across the heating and cooling coils, then up hot or cold supply main ducts that branch off to serve each floor. This system utilizes a 20 HP return fan, with an open plenum return.

The East Tower uses one 75 HP supply fan to push air across the heating and cooling coils, then to similar hot and cold supply ducts, which branch off at each floor. This system utilizes a 15 HP return fan, with a similar open plenum return.

A third system is used to condition the City Council Chamber meeting room. This system is similar to the tower systems, but uses a 7.5 HP supply fan and a 1 HP return fan.

Additionally, stairwells utilize electric fan coil units for heat.

2.1.3 Description of Building Lighting

The Vineland City Hall's existing lighting system consists of 2X2 (2 lamp), 1X4 (1, 2, 3, and 4 lamp), 2X4 (2, 3, and 4 lamp) T8 linear fluorescent fixtures with electronic ballasts, and T12 linear fluorescent fixtures with magnetic ballasts, along with compact fluorescent, metal halide, and incandescent fixtures. The City has already converted a majority of the building lighting to energy efficient T8 lamps, with electronic ballasts. The remaining T12 linear fluorescent fixtures should be retrofitted with T8 linear fluorescent bulbs, reflectors, and electronic ballasts. The existing incandescent fixtures should be retrofitted with compact fluorescent bulbs, sized to match existing light output of the fixtures. In addition, inactive storage and maintenance areas were identified during the audit where the installation of occupancy sensors would increase overall energy savings. As an additional energy conservation measure, two options are provided for the replacement of the parking lot and exterior lighting fixtures. The first option is to replace the fixtures with energy efficient LED fixtures; the second is to not change the fixtures. Changing all the exterior lighting fixtures to LED will result in an addition annual savings of $2,170.

2.1.4 Miscellaneous Equipment

As noted in Section 1, the majority of the building's office spaces are contained within the East and West "Towers". These office spaces include open and cubicle formats, as well as individual private offices. Energy using equipment (plug-load) in these office spaces includes computers, as well as photocopiers, printers, and other typical office equipment. Additionally, each office space contains at least one break room, which typically contains a refrigerator and/or vending machine and a microwave. Computer peripherals, such as monitors, printers or scanners, continue to use energy even after they are shut off, adding up over time. The Smart Strip power strips offer surge protection and the ability to monitor the current on a single 'control' outlet. When the computer that is plugged into that single outlet is shut down, Smart Strip shuts off all of the other peripherals on the power strip. This is discussed further in Section 4.4.

It is recommended that the City consider implementing the standardized use of Energy Star appliances as the need arises. Energy Star refrigerators and freezers, for example, use up to 40% less energy than models built in 2001. Energy Star appliances will not only reduce the City's utility bills, but will also outperform standard appliances, due to the improved design and advanced technologies.

2.2 Vineland Police Station

2.2.1 Description of Building Envelope

The exterior walls of the Police Station consist of a 6" concrete block, 2" insulation and a 4" brick facing. The top 2'-6" of the building's exterior walls, however, consists of a pre-cast concrete fascia which is tied into a pre-cast concrete spandrel beam. This spandrel beam unites the walls with the roof of the facility. The roof is constructed with a base pre-cast structural tee layout, concrete fill, vapor barrier, 1" rigid insulation and built up roofing membrane. There was no evidence of roof/wall leakage during the course of the inspection.

The Police Station windows consist of an aluminum sash and sill construction. Many of the existing windows appeared to be old and weathered. A few of the windows have become separated from the framing and a relatively large (approximately ¼") infiltration space was identified. It is recommended that these windows be properly reinstalled and sealed where applicable.

The building's exterior doors consist of aluminum framed glass doors. Additionally, there are 1¾" thick aluminum double doors with a polished plate wire glass finish above.

2.2.2 Description of Building HVAC

The building's ventilation is provided by six separate NesbittAire air handling units. Each unit has an electric heating coil and a chilled water cooling coil. There are also several electric reheat coils located within the supply ductwork throughout the building for additional heating capacity.

The chilled water system is fed from a 110 ton Trane chiller located within the ground floor Mechanical Room No. 1. Maintenance staff reported that the chiller is under persistent maintenance and service.

There are also several split system heating/cooling units serving various offices, communications rooms, and the weight room. The condensers are located outside on the periphery of the building. Additionally, the Motor Vehicle Storage Room utilizes electric unit heaters for additional heating capacity.

The building's HVAC system is controlled by local Automatic Temperature Control (ATC) panels for each of the air handling units. There is no known main building control system.

The building's domestic hot water is provided by three electric water heaters (two with 80 gallons storage capacity at 8 kW, one with 15 gallons storage capacity at 2.5 kW).

2.2.3 Description of Building Lighting

The Vineland Police Building's existing lighting system consists of 2X2 (2 lamp), 1X4 (1, 2, 3, and 4 lamp), 2X4 (2, 3, and 4 lamp) T8 linear fluorescent fixtures with electronic ballasts, and T12 linear fluorescent fixtures with magnetic ballasts, along with compact fluorescent, and incandescent fixtures. The City has already converted a majority of the building's lighting to energy efficient T8 lamps with electronic ballasts. The remaining T12 linear fluorescent fixtures should be retrofitted with T8 linear fluorescent bulbs, reflectors, and electronic ballasts. The existing incandescent fixtures should be retrofitted with compact fluorescent bulbs sized to match existing light output of the fixtures. In addition, inactive storage and maintenance areas were identified during the audit where the installation of occupancy sensors would increase overall energy savings.

2.2.4 Miscellaneous Equipment

The Vineland, NJ Police Station consists of a large amount of offices, conference rooms, communications rooms and other miscellaneous storage rooms as stated in Section 1. With spaces such as these, most of the miscellaneous equipment includes computers, photocopiers, printers and communication equipment. As with City Hall, it is recommended to implement the Smart Strip power strips where applicable to these various office and communications spaces. Refer to Section 4.4 for further detail.

Section 3
Baseline Energy Use

3.1 Utility Data Analysis

The first step in the energy audit process is the compilation and quantification of the facility's current and historical energy usage and associated utility costs. It is important to establish the existing patterns of electric, gas, and fuel oil usage in order to be able to identify areas in which energy consumption can be reduced.

For this study, a spreadsheet summarizing monthly gas usage and cost per facility and monthly electric bills were analyzed and unit costs of energy were obtained. The unit cost of energy, as determined from the information provided by the City, was utilized in determining the feasibility of switching from one energy source to another or reducing the demand on that particular source of energy to create annual cost savings for the City of Vineland.

3.1.1 Electric Charges

It was also important to understand how the utility's charge for the service. The majority of the energy consumed is electric, as a result of both indoor and outdoor lighting and appliances, such as kitchen appliances, computers, printers and projectors. Electricity is charged by three basic components: electrical consumption (kWH), electrical demand (kW) and power factor (kVAR) (reactive power). The cost for electrical consumption is similar to the cost for fuel oil, the monthly consumption appears on the utility bill as kWH consumed per month with a cost figure associated with it. The City's service connections are billed under the industrial service classification, which utilizes electrical consumption, and electrical demand charges.

Electrical demand can be as much as 50 percent or more of the electric bill. The maximum demand (kW value) during the billing period is multiplied by the demand cost factor and the result is added to the electric bill. It is often possible to decrease the electric bill by 15 – 25 percent by reducing the demand, while still using the same amount of energy.

The power factor (reactive power) is the power required to energize electric and magnetic fields that result in the production of real power. Power factor is important because transmission and distribution systems must be designed and built to manage the need for real power, as well as the reactive power component (the total power). If the power factor is low, then the total power required can be greater than 50 percent or more than the real power alone. The power factor charge is a penalty for having a low power factor. This penalty charge does not impact the City.

The other parts of the electric bill are the supply charges, delivery charges, system benefits, transmission revenue adjustments, state and municipality tariff surcharges and sales taxes, which cannot be avoided.

3.1.2 Fuel Charges

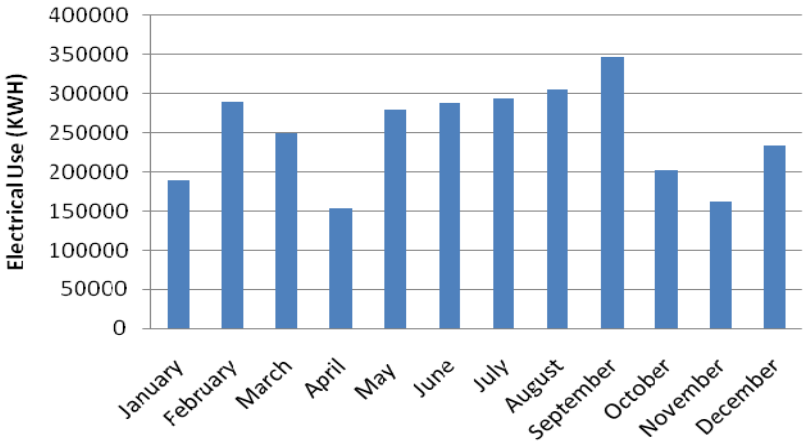
Woodruff Energy is the current supplier and South Jersey Gas the current distributor of natural gas for the City. The City is charged for the cost of the natural gas, a delivery charge and a customer charge, which covers Gas administration charges.

3.2 Facility Results

3.2.1 Vineland City Hall

Electric power for the Vineland City Hall is fed from General Secondary Service three phase lines from Vineland Electric Municipal Utilities (VMEU). Figure 3.2-1 illustrates the average monthly total energy consumption from December 2007 through November 2008, reordered to represent a typical year. From this graph, it can be determined that the electrical baseline consumption for the Vineland City Hall is around 150,000 kWh / month, while monthly consumption averages around 299,000 kWh.

Figure 3.2-1: Vineland City Hall Electrical Usage

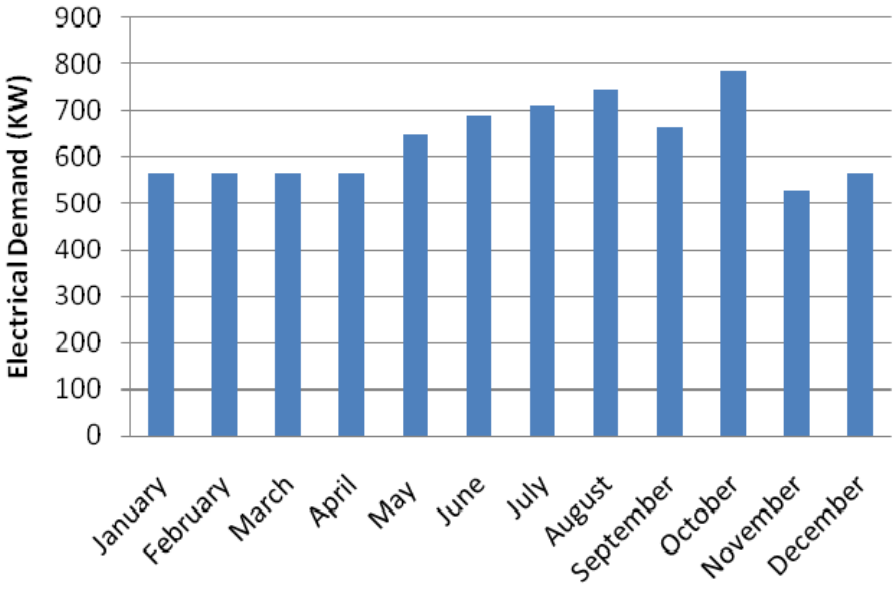


The most recent tariff rates available at the time of this audit for the account from VMEU for the City Hall service are as follows:

	Acct #: 39355-14244
Customer Charge:	$350
Monthly Energy Charge(Summer)	First 70,000 kWh: $0.0735/kWh
	Additional kWh: $0.655/kWh
Monthly Energy Charge(Winter)	First 70,000 kWh: $0.0735/kWh
	Additional kWh: $0.535/kWh
Monthly Demand Charges	Summer: $6.75
	Winter: $6.25
Fuel Charge	$0.06

Figure 3.2-2 illustrates the monthly demand load for the City Hall from December 2007 through November 2008, reordered to represent a typical year.

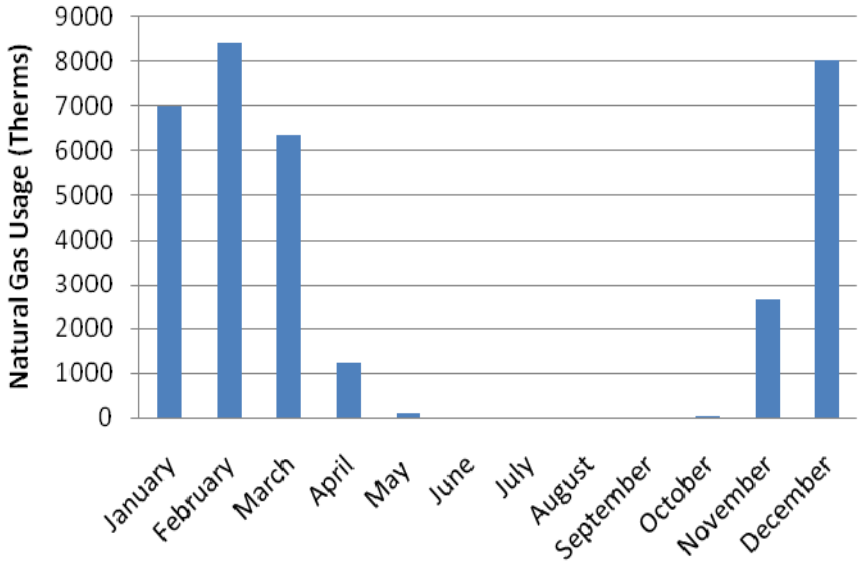
Figure 3.2-2: Vineland City Hall Monthly Electric Demand



Refer to Table 3.3-1, in Section 3.3, for average electrical aggregate cost. These tariffs are subject to change quite frequently. Refer to Appendix A for complete Historical Data Analysis.

Figure 3.2 -3 illustrates the building's monthly average natural gas consumption from December 2007 through November 2008, reordered to represent a typical year.

Figure 3.2-3: Vineland City Hall Gas Usage

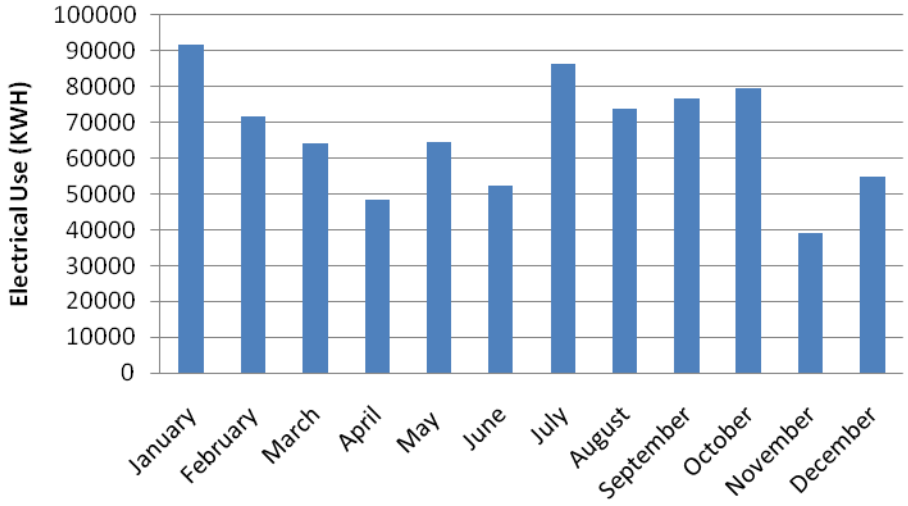


For more on the building gas usage, refer to Section 4.2.

3.2.2 Vineland Police Building

Electric power for the Vineland Police Building is fed from one General Secondary Service three phase line from Vineland Municipal Electric Utilities (VMEU). Figure 3.2-1 illustrates the average monthly total energy consumption from December 2007 through November 2008, reordered to represent a typical year. From this graph, it can be determined that the electrical baseline consumption for the Vineland City Hall is around 40,000 kWh / month, while monthly consumption averages around 67,000 kWh.

Figure 3.2-1: Vineland Police Station Electrical Usage

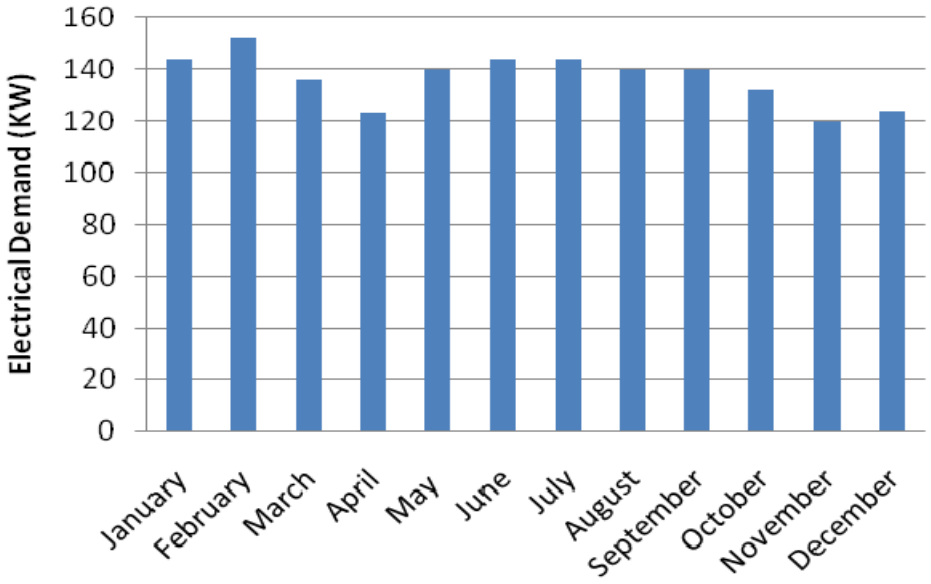


The most recent tariff rates available at the time of this audit for the account from VMEU for the Police Station service are as follows:

	Acct#: 39357-54960
Customer Charge:	$350
Monthly Energy Charge(Summer)	First 70,000 kWh: $0.0735/kWh
	Additional kWh: $0.655/kWh
Monthly Energy Charge(Winter)	First 70,000 kWh: $0.0735/kWh
	Additional kWh: $0.535/kWh
Monthly Demand Charges	Summer: $6.75
	Winter: $6.25
Fuel Charge	$0.06

Figure 3.2-2 illustrates the monthly demand load for the Police Station from December 2007 through November 2008, reordered to represent a typical year.

Figure 3.2-2: Vineland Police Station Monthly Electric Demand



Refer to Table 3.3-1, in Section 3.3, for average electrical aggregate cost. These tariffs are subject to change quite frequently. Refer to Appendix A for complete Historical Data Analysis.

3.3 Aggregate Costs

For the purposes of computing energy savings for all identified energy conservation and retrofit measures, aggregate unit costs for electrical energy and fuel, in terms of cost/kWh and cost/therm, were determined for each building and utilized in the simple payback analyses discussed in subsequent sections. The aggregate unit cost accounts for all distribution and supply charges for each location. Table 3.3-1 and Table 3.3-2 summarize the aggregate costs for electrical energy consumption and therms utilized, respectively.

Table 3.3-1: Electrical Aggregate Unit Costs

Service Location	Aggregate $ / kW-hr
Vineland City Hall	$ 0.139
Vineland Police Building	$ 0.153

Table 3.3-2: Natural Gas Aggregate Unit Costs

Service Location	Aggregate $ / therm
Vineland City Hall	$ 1.56

3.4 Portfolio Manager

3.4.1 Portfolio Manager Overview

Portfolio Manager is an interactive energy management tool that allows the City to track and assess energy consumption at the two buildings in a secure online environment. Portfolio Manager can help the City set investment priorities, verify efficiency improvements, and receive EPA recognition for superior energy performance.

3.4.2 Energy Performance Rating

For many facilities, you can rate their energy performance on a scale of 1–100 relative to similar facilities nationwide. Your facility is *not* compared to the other facilities entered into Portfolio Manager to determine your ENERGY STAR rating. Instead, statistically representative models are used to compare your facility against similar facilities from a national survey conducted by the Department of Energy's Energy Information Administration. This national survey, known as the Commercial Building Energy Consumption Survey (CBECS), is conducted every four years, and gathers data on building characteristics and energy use from thousands of facilities across the United States. Your facility's peer group of comparison is those facilities in the CBECS survey that have similar facility and operating characteristics. A rating of 50 indicates that the facility, from an energy consumption standpoint, performs better than 50% of all similar facilities nationwide, while a rating of 75 indicates that the facility performs better than 75% of all similar facilities nationwide.

Office buildings are eligible to receive a rating.

3.4.3 Portfolio Manager Account Information

A Portfolio Manager account has been established for the City, which includes a profile for each building. Information entered into this Portfolio Manager building profile, including electrical energy consumption and natural gas consumption may be used to apply for an Energy Star rating with the USEPA.

At the time of this report, the buildings received the following ratings:

Vineland City Hall – 15
Vineland Police Building – 71

However the electric and natural gas consumption data utilized to develop these ratings was > 120 days old, and as all active utility meters entered must have 12 consecutive overlapping months of usage data for the program to be able to calculate an energy star rating, it is highly recommended that the information be updated to determine a current rating.

A Statement of Energy Performance report for the Vineland City Hall and Police Building was generated through Portfolio Manager and included in Appendix B, along with a Portfolio Manager Reference sheet.

In order to qualify for an energy star rating, utility data must be current. Therefore, as the City takes possession of this account, it is important to keep it updated with the latest utility bill data. Also, as a result of the City's commitment to implementing energy efficiency improvements, the building ratings may improve to be 75 or more, warranting an Energy Star label.

The following website link, username and password shall be used to access the Portfolio Manager account and building profiles that has been established for the City:

https://www.energystar.gov/istar/pmpam/

USERNAME: Vineland1

PASSWORD: EnergyStar

Section 4
Energy Conservation and Retrofit Measures (ECRM)

4.1 Building Lighting Systems

The goal of this section is to present any lighting energy conservation measures that may also be cost beneficial. It should be noted that replacing current bulbs with more energy-efficient equivalents will have a small effect on the building heating and cooling loads. The building cooling load will see a small decrease from an upgrade to more efficient bulbs and the heating load will see a small increase, as the more energy efficient bulbs give off less heat.

Please note that the probable construction costs presented herein are estimates based on historic data compiled from similar installations and engineering opinions. Additional engineering will be required for each measure identified in this report and final scope of work and budget cost estimates will need to be confirmed prior to the coordination of project financing or the issuance of a Request for Proposal.

4.1.1 Vineland City Hall

It is recommended that the existing lighting system at the Vineland City Hall, which consists of T-12, T-8 fixtures, compact fluorescent, metal halide, and incandescent fixtures, as discussed in Section 2.1.2, be upgraded to high efficiency standards to create lighting uniformity throughout the buildings. Limited ECRM's can be applied to the existing system, because the City has recently performed a T-8 upgrade on a majority of the lighting in the City Hall. In general, the recommended lighting upgrade project, as presented in Appendix D involves replacing existing inefficient bulbs, retrofitting T-12 fixtures with new ballasts, bulbs, and reflectors, and installing new energy-efficient luminaries to the existing lighting systems. Two options have also been proposed in Appendix D for the exterior lighting. Option 1 includes the cost to replace all the existing exterior lighting fixtures with high efficiency LED fixtures, and Option 2 does not include this cost, and assumes that no LED related ECRM's will be applied to the aforementioned lighting. The strategies included in this section focus on maximizing energy savings and maintaining or exceeding existing lighting levels, while also maintaining the existing look of each fixture; therefore, proposed lamp styles remain consistent with existing lamp styles. The additional recommendations to install occupancy sensors in specified areas of the facility are included in Options 1 and 2. Please refer to Appendix D: Lighting Retrofit Spreadsheets Option 1 and 2 for a line-by-line proposed detailed lighting upgrades list.

The annual energy savings for Option 1 are estimated to be 22.9kW, 53,651 kWh and $10,730. The annual energy savings for Option 2 are estimated to be 18.4 kW, 42,803 kWh and $8,561. The following table, Table 4.1-1, summarizes a simple payback analysis assuming the implementation of all recommended lighting system

improvements at the Vineland City Hall. Included in this simplified payback analysis summary table is a 'Return on Investment' (ROI) values. This value is a performance measure used to evaluate the efficiency of an investment and is calculated by dividing the 'return' or savings associated with an investment by the total investment cost. ROI values are calculated by dividing the annual energy savings by the retrofit cost after incentives. ROI ratings can be utilized to prioritize the implementation of energy savings measures.

Table 4.1-1
Vineland City Hall Lighting System Improvements

	Option 1	Option 2
New & Retrofit Cost (Material and Labor)	$ 93,158	$26,813
New Jersey SmartStart Rebate	-$7,090*	-$7,090
Total Cost	$86,068	$19,723
Annual Energy Savings	$10,730	$8,560
Simple Payback	**8.0 years**	**2.3 years**
Return on Investment (ROI)	**12%**	**44%**

* Additional incentives are available through the New Jersey SmartStart Program, see Appendix F.

It should be noted that the Lighting Annual Savings assume the annual hours per year of operation as outlined under the columns entitled "Proposed Operational Hours" and "Proposed Operational Hours with Sensors" in Appendix D.

4.1.2 Vineland Police Building

It is recommended that the existing lighting system at the Vineland Police Building, which consists of T-12, T-8 fixtures, compact fluorescent, metal halide, and incandescent fixtures, as discussed in Section 2.1.2, be upgraded to high efficiency standards to create lighting uniformity throughout the buildings. In general, the recommended lighting upgrade project, as presented in Appendix D, involves replacing existing inefficient bulbs, retrofitting T-12 fixtures with new ballasts, bulbs, and reflectors, and installing new energy-efficient luminaires to the existing lighting systems. The strategies included in this section focus on maximizing energy savings and maintaining or exceeding existing lighting levels, while also maintaining the existing look of each fixture; therefore, proposed lamp styles remain consistent with existing lamp styles. Please refer to Appendix D: Lighting Retrofit Spreadsheets Option 1 and 2 for a line-by-line proposed detailed lighting upgrades list.

The annual energy savings are estimated to be 9.2kW, 22,144 kWh and $4,428. The following table, Table 4.1-2, summarizes a simple payback analysis assuming the implementation of all recommended lighting system improvements at the Vineland Police Building. Included in this simplified payback analysis summary table is a 'Return on Investment' (ROI) values. This value is a performance measure used to evaluate the efficiency of an investment and is calculated by dividing the 'return' or savings associated with an investment by the total investment cost. ROI values are calculated by dividing the annual energy savings by the retrofit cost after incentives. ROI ratings can be utilized to prioritize the implementation of energy savings measures.

Table 4.1-2
Vineland Police Building Lighting System Improvements

New & Retrofit Cost (Material and Labor)	$ 17,360
New Jersey SmartStart Rebate	-$4,470
Total Cost	$12,890
Annual Energy Savings	$4,428
Simple Payback	**2.91 years**
Return on Investment (ROI)	**34%**

It should be noted that the Lighting Annual Savings assume the annual hours per year of operation as outlined under the columns entitled "Proposed Operational Hours" and "Proposed Operational Hours with Sensors" in Appendix D.

4.2 HVAC Systems

The goal of this section is to present any heating and cooling energy reduction and cost saving measures that may also be cost beneficial. Where possible, measures will be presented with a life-cycle cost analysis. This analysis displays a payback period based on weighing the capital cost of the measure against predicted annual fiscal savings. To do this, the buildings have been modeled as accurately as possible to predict energy usage for space heating and cooling, as well as domestic hot water use.

Each building is modeled using software called eQuest, a Department of Energy-sponsored energy modeling program, to establish a baseline space heating and cooling energy usage. Climate data from Atlantic City, NJ was used for analysis. From this, the model may be calibrated, using historical utility bills, to predict the impact of theoretical energy savings measures.

Once annual energy savings from a particular measure have been predicted and the initial capital cost has been estimated, payback periods may be approximated. Equipment cost estimate calculations are provided in Appendix G.

4.2.1 Vineland City Hall

A model of the Vineland City Hall was created in eQuest to predict heating and cooling loads for the building. To calibrate this model, CDM used electricity bills from December, 2007 through November, 2008 and natural gas bills from December, 2007 through November, 2008. The eQuest model incorporates local climate data, compiled over several decades to obtain a normalized heating and cooling building usage pattern. It's important to note when comparing the average, normalized energy usage pattern to only one year of data, some months will be significantly different. For example, a warmer-than-average April during the year of available utility data would indicate less energy consumption because less heating was needed during that particular month. Therefore, while the model cannot replicate the exact energy usage trend representative of only one year, it is calibrated to match the approximate annual energy usages and monthly trends as closely as possible.

Figure 4.2-1 below compares actual monthly electricity usages, with those predicted by the eQuest model.

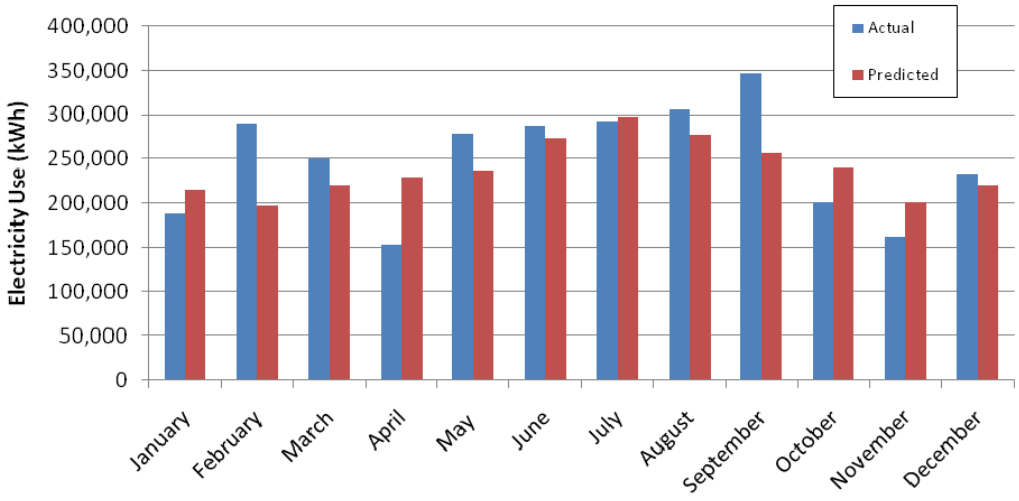


Figure 4.2-1: Vineland City Hall Electricity Usage

Once the eQuest model was calibrated, it could be used to predict approximate major usage categories, such as lighting, plug loads (miscellaneous), ventilation, and cooling. It should be noted that these are only estimated usages based on information gathered during CDM's field audit. Figure 4.2-2 presents this information to help the City visualize where the electricity is ultimately being used.

At approximately 3,000,000 kWh a year, the City Hall uses a relatively large amount of electricity for a building of its size. Because of this, CDM had difficulty creating a model that matched the electricity usage of the City Hall. While the high electricity usage may be attributed to longer lighting or HVAC equipment schedules, a

conservative approach is to assume it is due to a large amount of plug-load (miscellaneous) equipment. This allows savings estimates to be predicted based on typical office HVAC equipment schedules. Therefore, if the City Hall actually runs its HVAC equipment longer than modeled, savings from a system-wide upgrade would likely be more than anticipated in the model. So it should be noted that for this model, the miscellaneous electricity usage was assumed to be a bit high, and, consequently, savings estimates may be on the conservative side.

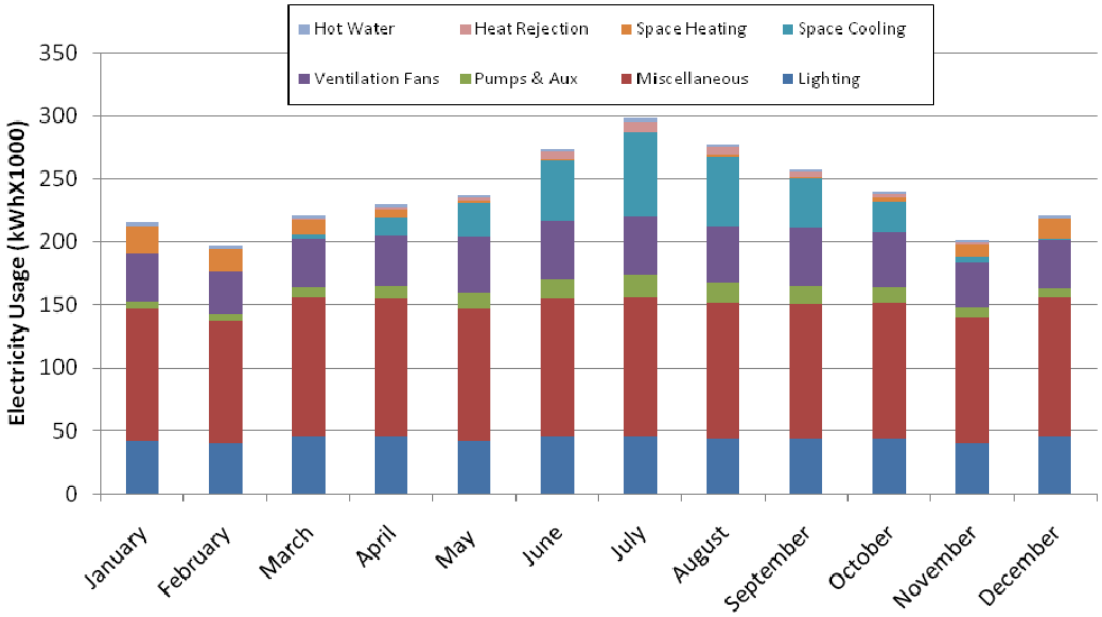


Figure 4.2-2: Vineland City Hall Electricity Usage Breakdown

Figure 4.2-3 below compares actual natural gas usage to model-predicted natural gas use, to demonstrate the accuracy of the model.

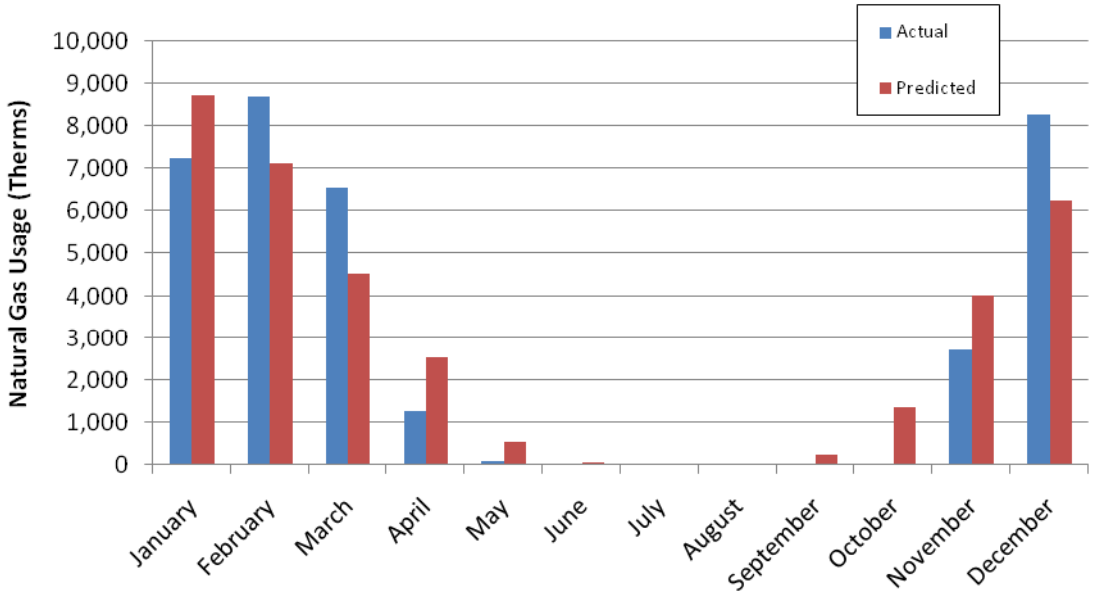


Figure 4.2-3: Vineland City Hall Natural Gas Usage

Currently, the City Hall heating system utilizes one 100hp, 3,350 MBH Kewanee fire-tube boiler. CDM estimates this boiler to be 80% efficient.

CDM recommends replacing this boiler with two, 2,000 MBH, high-efficiency, condensing boilers. While the system capacity would increase with such an upgrade, this allows for some redundancy. In the event that one boiler is offline for servicing, the other boiler will still be providing the building with approximately 60% of the current system heat capacity.

Figure 4.2-4 compares current gas usage with predicted gas usage resulting from a switch to high-efficiency, condensing boilers.

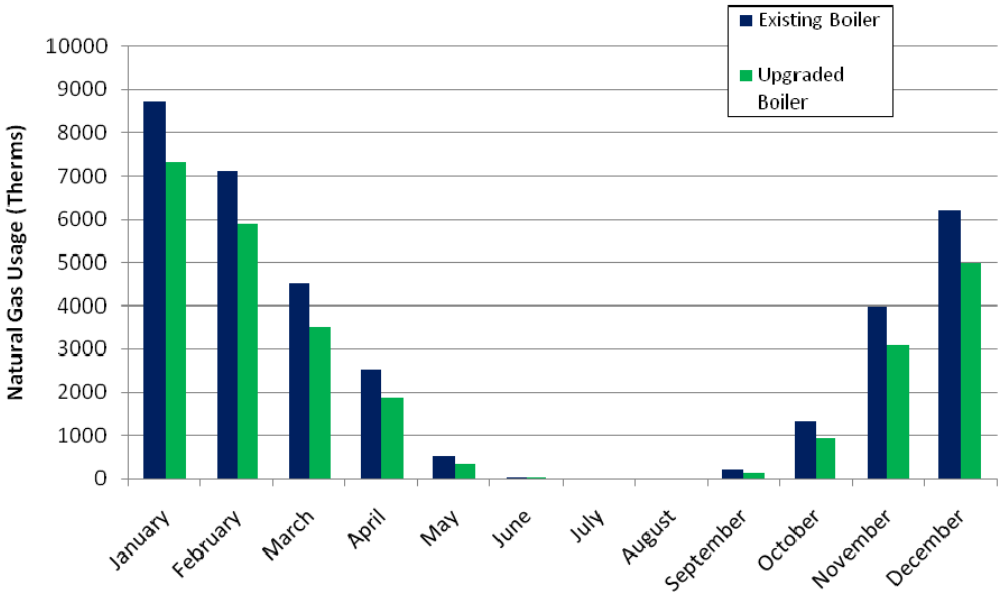


Figure 4.2-4: Vineland City Hall – Boiler Upgrade - Natural Gas Usage

Fiscal savings from such an upgrade are identified in Table 4.2-1 below.

Table 4.2-1: Vineland City Hall Boiler Upgrade Payback	
Predicted Annual Savings (Therms)	7,179
Total Annual Savings	$11,199
Initial Capital Cost of Upgrade	$114,281
Incentives	$4,000
Cost of Upgrade	$110,281
Simple Payback	**9.8 Years**
Return on Investment (ROI)	**10.2%**

During the site visit, facility personnel noted that the building would benefit from a modern, central HVAC building management system (BMS). The existing Andover system is antiquated and difficult to maintain. CDM does not have enough

information on the existing system to model a savings from an upgrade to a new BMS. However, it is commonly estimated that a modern central direct digital controls (DDC) system will save approximately 10% of a building's heating and cooling costs. Based on this assumption, Table 4.2-2 displays a projected BMS upgrade payback, assuming a building management system with 92 points of control. Electricity savings are estimated to be 10% of the total ventilation, pump, space heating, heat rejection, and space cooling electricity usage.

Table 4.2-2: City Hall Building Management System	
Predicted Annual Savings (Therms)	3536
Annual Savings (Gas)	$5,516
Predicted Annual Savings (kWh)	103,800
Annual Savings (Electricity)	$14,428
Total Annual Savings	$19,944
Initial Capital Cost of Upgrade	$57,500
Incentives	-
Cost of Upgrade	$57,500
Simple Payback	**2.9 Years**
Return on Investment (ROI)	**34.6%**

CDM was informed during the site visit that the temperature set point for the building is 72 degrees year-round, with no setback at night. Incorporating a night setback, where the building thermostats are turned down at night, would provide significant natural gas savings while having minimal impact on the interior ambient conditions during the day, when the building is occupied. Figure 4.2-5 indicates predicted natural gas usage, if the building is maintained at a conservative 64 degrees F between the hours of 6 PM and 7 AM, and 72 degrees F during the remainder of the day.

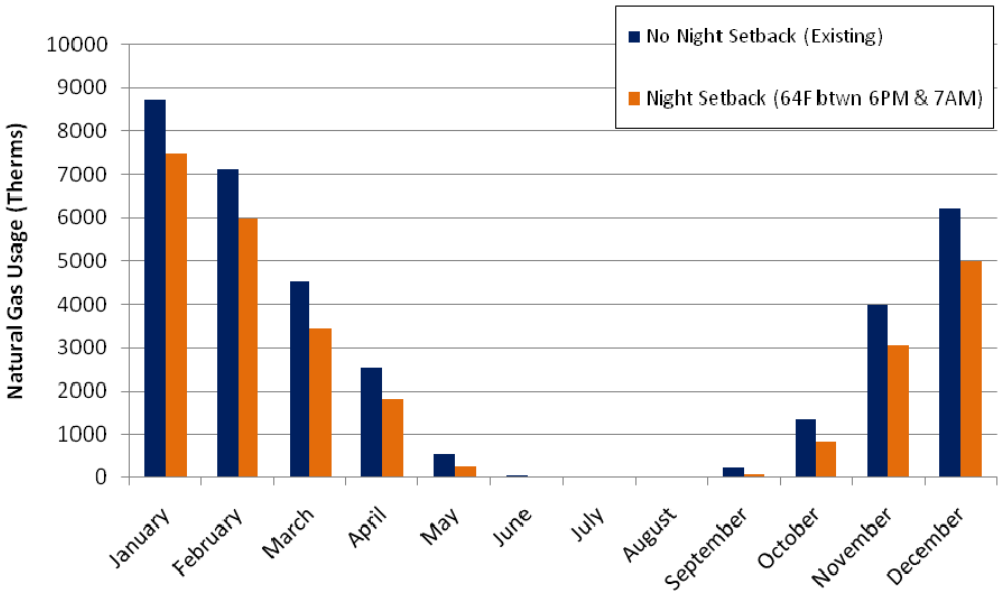


Figure 4.2-5: Vineland City Hall – Night Setback - Natural Gas Usage

Table 4.2-3 indicates predicted savings and a simple payback period associated with incorporating night setbacks. Switching to a reliable night setback schedule would necessitate automatic programmable thermostats to replace the manual thermostats in each office. From floor plans, CDM counts 85 separate office spaces and 6 lobby (central corridor near elevator) areas. Therefore, the anticipated capital cost represented in Table 4.2-3 reflects a conservative estimate of 100 automatic programmable thermostats.

Table 4.2-3: Vineland City Hall Night Setback Payback	
Predicted Annual Savings (Therms)	7,376
Total Annual Savings	$11,507
Initial Capital Cost of Upgrade	$27,816
Incentives	-
Cost of Upgrade	$27,816
Simple Payback	**2.4 Years**
Return on Investment (ROI)	**41%**

Implementing the use of variable frequency drives for the cooling tower fan and chiller motors (if applicable) can provide energy savings, as the motors will only operate at a speed which accommodates the current cooling need. Figure 4.2-6 demonstrates predicted electricity usage after implementing variable frequency drives for the cooling tower fans and chiller.

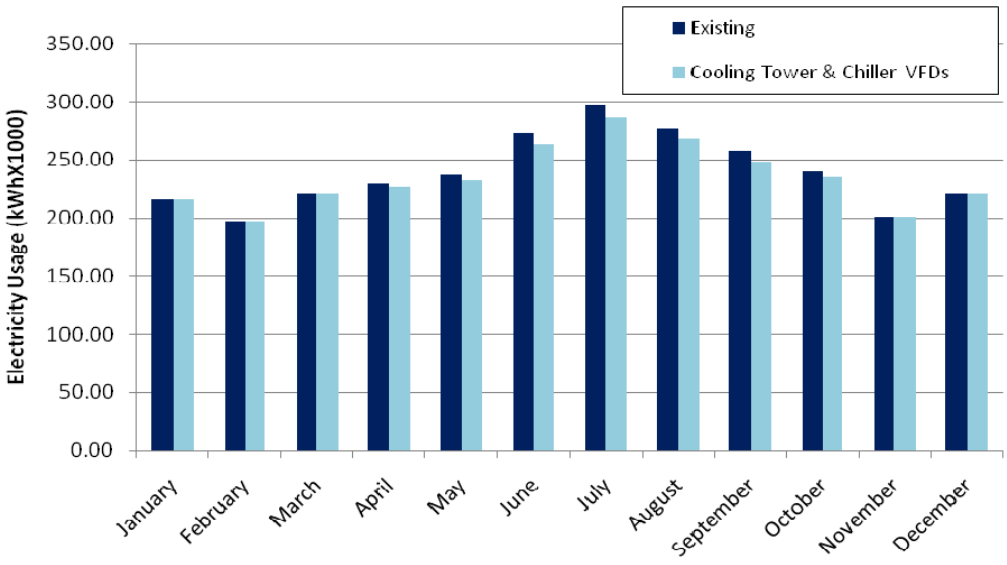


Figure 4.2-6: Vineland City Hall – Variable Frequency Drives - Electricity Usage

Table 4.2-4 indicates predicted savings and a simple payback period associated with implementing VFDs on the cooling tower and chiller.

Table 4.2-4: Vineland City Hall Variable Frequency Drive Payback	
Predicted Annual Savings (kWh)	53,000
Total Annual Savings	$7,367
Initial Capital Cost of Upgrade	$38,273
Incentives	-
Cost of Upgrade	$38,273
Simple Payback	**5.2 Years**
Return on Investment (ROI)	**19%**

It is important to note that not all chillers are capable of operating at variable speeds. While the aforementioned variable frequency drive savings calculations assume that the chiller at the City Hall does have this capacity, this is subject to approval of the chiller manufacturer. However, the cooling tower fans should be able to incorporate variable frequency drives, allowing the City to realize a significant portion of the calculated savings, even if this option is not available with the chiller.

Over several decades, ASHRAE has compiled data pertaining to service lives of most HVAC related equipment. From this, ASHRAE indicates a median service life (life until replacement) for HVAC related equipment that may be used as an estimate for the useful life of HVAC equipment currently in service. For example, ASHRAE indicates a window air conditioning unit has a median service life of 10 years. Therefore, if a window unit has been in service for more than 10 years, the owner may

want to consider replacement. Not only will a replacement ensure minimal downtime between units (the unit is replaced before it ceases to function), but it will also maintain rated system efficiency, as efficiency tends to decrease with age.

All major equipment noted during CDM's on site audit is listed in Table 4.2-5 below, along with estimated current ages and ASHRAE-expected service lives. It should be noted that only equipment that was observed at the time of the audit is included. Where equipment ages were not found on the equipment tags, they have been estimated based on the unit appearance or approximate renovation dates.

Table 4.2-5 Vineland City Hall HVAC Equipment Service Lives

Description	Equipment Location	Service Location	Manufacturer	Model	Estimated Age (Years)	ASHRAE Expected Life (Years)
Boiler	Boiler Room	Entire Building	Kewanee	M-265-KX-OHIO	18	25
Chiller	Basement	Entire Building	Trane	CVHA044R00	<23	23
Exhaust Fan	Roof	Ladies' Rooms	Buffalo	450B	<20	20
Exhaust Fan	Roof	Mens' Rooms	Buffalo	400B	<20	20
Exhaust Fan	Roof	Air Return Shaft	Buffalo	250B	<20	20
Cooling Tower	Roof	Chiller	Baltimore Aircoil	F1343-H	15	20
Supply Fan	Basement	West Side Offices	Unknown	Unknown (50 HP)	Unknown	20
Supply Fan	Basement	West Side Offices	Unknown	Unknown (50 HP)	Unknown	20
Supply Fan	Basement	East Side Offices	Unknown	Unknown (75 HP)	Unknown	20
Supply Fan	Basement	Meeting Room	Unknown	Unknown (7.5 HP)	Unknown	20
Return Fan	Basement	West Side Offices	Unknown	Unknown (20 HP)	Unknown	20
Return Fan	Basement	East Side Offices	Unknown	Unknown (15 HP)	Unknown	20
Return Fan	Basement	Meeting Room	Unknown	Unknown (1 HP)	Unknown	20

CDM was not able to view the supply and return fans. Information for these fans was obtained from facility personnel. However, if the fans are original with the building

(approximately 40 years old), they would warrant replacement as the ASHRAE expected life for these fans is 20 years. Facility personnel should consider investigating the fans' ages, and replacing them if they are indeed older than 20 years.

CDM identified two electric Bradford domestic water heaters for the building. One heater had 18 kW heating capacity and provided for 119 gallons of storage, the other had 4.5 kW heating capacity and provided for 80 gallons of storage. Both appeared to be in very good condition, and would not warrant replacement.

4.2.2 Vineland Police Building

A model of the Vineland Police Building was created in eQuest to predict heating and cooling loads for the building. To calibrate this model, CDM used electricity bills from December, 2007 through November, 2008.

Figure 4.2-5 below compares actual monthly electricity usages, with those predicted by the eQuest model.

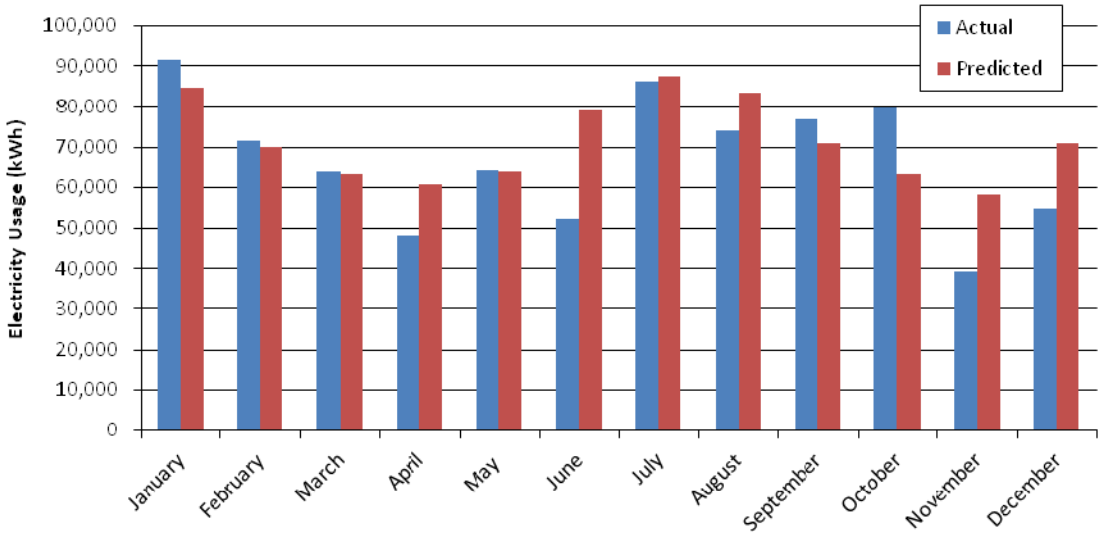


Figure 4.2-7: Vineland Police Building Electricity Usage

As illustrated in Figure 4.2-7, electrical usage is elevated during the summer (cooling system) and winter (heating system) months. Conversely, electrical consumption goes down during "shoulder" months because the heating/cooling systems are being minimally used.

Once the eQuest model was calibrated, it could be used to predict approximate major usage categories such as lighting, plug loads (miscellaneous), ventilation, and cooling. It should be noted that these are only estimated usages based on information gathered during CDM's field audit. Figure 4.2-8 presents this information to help the City visualize where the electricity is ultimately being used.

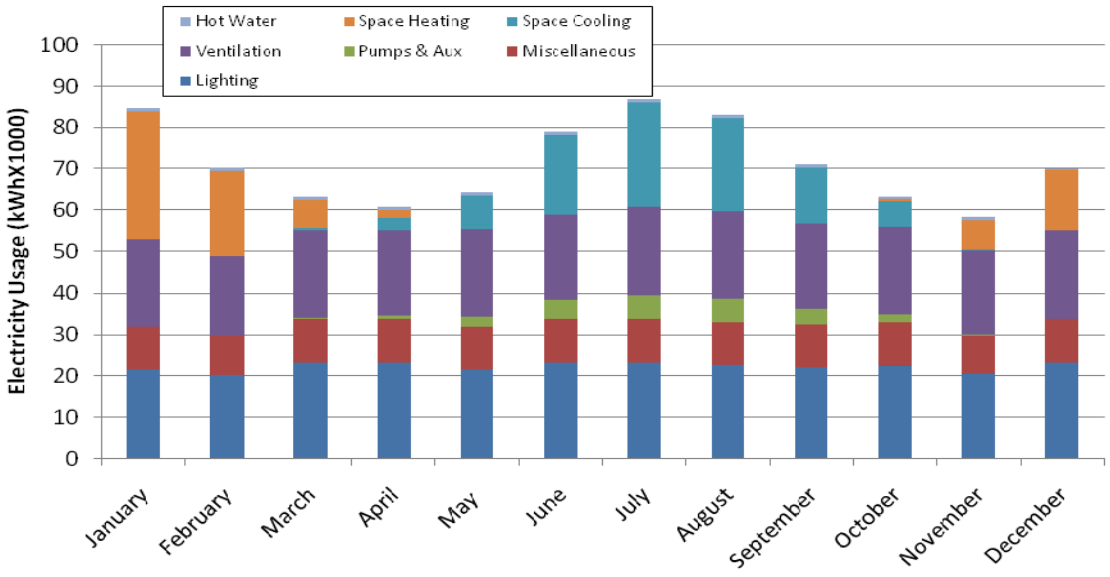


Figure 4.2-8: Vineland Police Building Electricity Usage Breakdown

Currently, the HVAC equipment located within the Vineland Police Building is controlled by several individual automatic temperature control panels. The City has expressed interest in consolidating the control systems so that one software application maintains all major HVAC unit temperature set points and schedules. A central direct digital controls (DDC) system should save approximately 10% of the building's heating and cooling costs. Centralizing the HVAC control system would also allow the management system to properly monitor and utilize the temperature control devices (valves, temperature set points, economizer set points, etc.) for proper, energy efficient operation. The existing air handling units do have economizer control ability which would allow for free cooling when the outdoor air temperature is at a certain set point. Maintenance staff, however, didn't believe that this control was functioning properly.

Table 4.2-6 displays a projected building management system payback assuming a building management system with 31 points of control. Electricity savings are estimated to be 10% of the total ventilation, pump, space heating and space cooling electricity usage.

Table 4.2-6: Vineland Police Station Management System	
Predicted Annual Savings (kWh)	80,320
Total Annual Savings	$12,289
Initial Capital Cost of Upgrade	$19,355
Incentives	-
Cost of Upgrade	$19,355
Simple Payback	**1.6 years**
Return on Investment (ROI)	**63%**

Again, all major equipment noted during CDM's on site audit is listed in Table 4.2-7 below, along with estimated current ages and ASHRAE-expected service lives. It should be noted that only the equipment that was observed at the time of the audit is included. Where equipment ages were not found on the equipment tags, they have been estimated based on the unit appearance or approximate renovation dates. In some cases, service locations have been estimated based on unit proximity.

Table 4.2-7 Vineland Police Building HVAC Equipment Service Lives

Description	Equipment Location	Service Location	Manufacturer	Model	Estimated Age (Years)	ASHRAE Expected Life (Years)
Air Handling Unit #1	Mechanical Room No. 1	Health & Wellness	NesbittAire	Unknown	20+	20
Air Handling Unit #2	Mechanical Room No. 1	Police First Floor	NesbittAire	Unknown	20+	20
Air Handling Unit #3	Mechanical Room No. 1	Police Second Floor	NesbittAire	Unknown	20+	20
Air Handling Unit #4	Mechanical Room No. 2	Lobby & Second Floor	NesbittAire	Unknown	20+	20
Air Handling Unit #5	Mechanical Room No. 2	Gym	NesbittAire	Unknown	20+	20
Air Handling Unit #6	1st Floor Storage Rm	Offices	NesbittAire	Unknown	20+	20
Chiller	Mechanical Room No. 1	Entire Building	Trane	CG112A	39	23
Cooling Tower	Outdoors – East Wall	Entire Building	Baltimore Air Company	Unknown	39	20
Air Conditioner	Gym	Gym	Sanyo	KHS2422	5	15
Air Conditioner	1st Floor Comm Rm	1st Floor Comm Rm	Bard	P1136A2	9	15

CDM also conducted preliminary research on potentially converting the space heating system from electric to natural gas. However, as the evaluation got more detailed, it appeared that the payback period would be more than twenty years. Converting to natural gas would have a large upfront cost as it would involve running new, buried

natural gas piping, replacing the air handling units, and addressing the associated control system.

4.3 Alternative Energy Sources

4.3.1 Photovoltaic Solar Energy System Overview

Photovoltaic (PV) cells convert energy in sunlight directly into electrical energy through the use of silicon semi conductors, diodes and collection grids. Several PV cells are then linked together in a single frame of module to become a solar panel. PV cells are able to convert the energy from the sun into electricity. The angle of inclination of the PV cells, the amount of sunlight available, the orientation of the panels, the amount of physical space available and the efficiency of the individual panels are all factors that affect the amount of electricity that is generated.

Based on the estimated cumulative total available roof area, calculations determine that the installation of four systems with a total combined rating of approximately 326 kW (dc) will be appropriate for two buildings.

As part of this energy audit, a preliminary engineering feasibility study of the sites outlined above to support solar generation facilities was completed consisting of the following tasks:

a. Site Visit by our engineers.

b. Satellite Image Analysis and Conceptual design and layout of the photovoltaic system

c. Design and construction cost estimates

d. Determine a preliminary design for the size and energy production of the solar system.

The total unobstructed available area of each section of the roof with southern exposure was evaluated. It is important to note the following:

1. The structural integrity of the roofs was not confirmed during our site visit. The two buildings may require some degree of roofing work prior to the implementation of a solar system.

2. In the case of the flat areas, the PV system sizing and kWh production was calculated assuming the installation of a crystalline module facing south direction (220 Degree Azimuth) and tilted approximately 20 degrees to allow better rain water shedding and snow melting. Please note that the kWh production as well as system size may differ significantly based on final panel tilt selected during the RFP and design phase.

3. Blended electric rates were used based on actual utility bills and were applied for each facility.

The following is a preliminary study on the feasibility of installing a PV solar system at the City Hall and the Police Station to generate a portion of the each facility's electricity requirements. The system is designed to offset the electric purchased from the local utility and not as a backup or emergency source of power.

In order to determine the best location for the installation of the PV solar system, a satellite image analysis and site walkthrough of the two buildings was performed on August 4th and 5th. As per the Scope of Work, only the building roofs were considered for PV installation.

Also, as part of our assessment we investigated possible locations for electrical equipment that need to be installed such as combiner boxes, disconnect switches and DC to AC inverters. Consideration was also given to locations of interconnection between the solar system and building's electrical grid.

4.3.1.1 Vineland City Hall

The roof of the Vineland City Hall has a flat roof with a number of obstructions such as exhaust fans, rooftop HVAC units, and electrical and gas piping. There is a minimal amount of shading on the roof from adjacent foliage that would need to be addressed during the design phase of the project. The structural integrity of the roof was not confirmed although a visual inspection revealed no leaks or major defects. The structural integrity of the roof and the existence of a warranty shall be confirmed prior to the implementation of a PV system.

The Project Team conducted both a facility walkthrough and a satellite image analysis and based on the estimated total available area we calculated the installation of a system rated at approximately 188 kW (dc).

Electrical Service

The interconnection point for the PV system will require a modification or replacement of the existing service entrance equipment wherein the PV system feeder connections will have to be made after the main circuit breaker, and protective relaying will also have to be implemented. Preferably the inverter should be installed in close proximity to the service entrance equipment, but if there is no available space, the inverter shall be installed outside on a concrete pad in a weather proof enclosure. AC wiring would run from the inverters into the connection point(s) at the service entrance equipment. Any connection points would have to meet NEC and local utility requirements. Further investigation and verification of existing electrical equipment would be required prior to implementation of a PV system.

4.3.1.2 Vineland Police Building

The roof of the Police Station has a flat roof with a number of obstructions such as exhaust fans, rooftop HVAC units, and electrical and gas piping. There is a minimal amount of shading on the roof from adjacent foliage that would need to be addressed during the design phase of the project. The structural integrity of the roof was not confirmed although a visual inspection revealed no leaks or major defects. The

structural integrity of the roof and the existence of a warranty shall be confirmed prior to the implementation of a PV system.

The Project Team conducted both a facility walkthrough and a satellite image analysis and based on the estimated total available area we calculated the installation of a system rated at approximately 138 kW (dc).

Electrical Service

The interconnection point for the PV system will require a modification or replacement of the existing service entrance equipment wherein the PV system feeder connections will have to be made after the main circuit breaker, and protective relaying will also have to be implemented. Preferably the inverter should be installed in close proximity to the service entrance equipment, but if there is no available space, the inverter shall be installed outside on a concrete pad in a weather proof enclosure. AC wiring would run from the inverters into the connection point(s) at the service entrance equipment. Any connection points would have to meet NEC and local utility requirements. Further investigation and verification of existing electrical equipment would be required prior to implementation of a PV system.

4.3.1.3 Basis for Design and Calculations

The most common roof mounted system is referred to as a ("fixed tilt") system typically mounted to a metal rack that can be fixed at a specific angle. There are also ("tracking systems") or movable along one or two axes to follow the position of the sun during the day. For a roof-mounted PV system, tracking systems are very rarely installed and are usually used for ground-mounted systems only, as they require more complex racks and higher maintenance costs. For the "fixed" system, the tilt is determined based on the following factors: geographical location, total targeted kWh production, seasonal electricity requirements and weather conditions such as wind. Ideally, the module tilt for Central New Jersey should be 25-35 degrees with an azimuth as close as possible to 180 (south); however, our experience has shown that PV systems are typically installed at a tilt of 20 degrees or lower in order to avoid any issues with wind and to maximize total system size

Fixed Tilt System

The type of PV panels and equipment used to mount the system shall be determined based on the wind conditions and structural integrity of the roof determined during the design phase of the project. In general, penetration/tie-down systems, non-penetrating ballasted type systems, or a combination of the two should be considered.

Calculation of PV System Yield

An industry accepted software package, PV Watts, was used to calculate projected annual electrical production of the crystalline silicon PV system in its first year, as summarized in Table 4.3-1. The assumptions we used in the calculations were as follows: solar array tilt angle of 10°, array azimuth of 170° and a de-rate factor of 0.8.

Table 4.3-1 System Summary

Site	Est. Area (ft2)	kWh Production	kW dc	Annual Energy Savings	Est. Annual SREC
Vineland City Hall	18,765	247,792	188	40,118	156,217
Vineland Police Building	13,745	181,503	138	29,385	114,426

Total Costs

It should be noted that construction costs are only estimates based on historic data compiled from similar installations, and engineering opinion. Additional engineering and analysis is required to confirm the condition of the roofs, structural integrity of the roofs, the system type, sizing, costs and savings. Budget costs assume existing roofs are structurally sound, do not need to be replaced, and can accommodate a solar system. For illustration purposes, a draft financial analysis pro forma is attached outlining all project costs and revenues.

Table 4.3-2 Budget Installation Cost

Budget Installation Cost	**$3,025,900**

As stated above the estimated installation costs are based on significant experience with the pricing of solar installations in New Jersey, and are intended to provide the City with a realistic budget cost. A typical solar installation can vary in cost from $7.00 - $10.00 per watt depending on size, complexity of the system, labor rates, etc. Approximately 60-70% of that number is material costs while the balance is labor, engineering, etc. Like any installation, certain conditions can affect a price upward or downward. For purposes of this analysis the estimated installation cost does not include any roofing or structural work which may be required to maintain warranties or for additional structural support. We have included a budget of $9/watt for the solar system installation with an additional estimated budget of $100,000 for potential electric service work.

Refer to Section 7 for discussion on Solar Renewable Energy Certificates and other financing options for solar projects. The financial model in Appendix E provides an annual forecast illustration of project revenues and costs for 25 years.

4.3.2 Ground Source Heat Pumps

Ground source heat pumps utilize the relatively constant temperature of underground water sources to reject or supply heat to the interior space. Water is pumped through a loop that runs from the underground source to heat pumps at the

building level. Depending on the time of year and building demand, these heat pumps use the ground source loop as a heat source or a heat sink.

Ground source heat pump systems are often very costly to install due to the high cost of test boring and drilling wells. Additionally, the wells require a fair amount of vacant land, which the City does not appear to have near the City Hall and the Police Station. Due to this, CDM anticipates that installation of ground source heat pump systems would not prove cost-beneficial.

4.3.3 On-Site Wind Power Generation

On-site wind power generation typically utilizes a form of turbine, which is rotated with the flow of wind across it, this rotational force powers a generator, producing DC electricity. The DC electricity is then converted into AC electricity, which can be used for commercial power, or can be fed back into the power grid, reducing the overall electric demand. The size of the turbine is proportional to the amount of wind and concurrently the amount of energy it can produce. An ideal location for a wind turbine is 20 feet above any surrounding object within a 250 foot radius. In general this relates to a property size of one acre or more. In addition, an average of 9 mph wind speed is required to 'fuel' the wind turbine.

On-site wind power generation is not recommended for the City of Vineland, as the average maintained wind speed in this area is between 2 and 4 mph. The system would require a high initial investment, including feasibility studies, material and labor costs, installation, and lifetime maintenance costs and would not generate enough energy savings to result in an attractive payback period.

4.4 Next Steps – Additional Measures

As discussed in Section 2, it may be possible to reduce the plug load of the two buildings even further with the implementation of smart strips and energy star appliances. Smart Strips save energy by electronically unplugging all of the devices that are plugged into the "Automatically Switched outlets" when the device plugged into the control outlet is turned off. It is important to note that CDM is not suggesting that computers be plugged into the automatically switched off outlets, as there would be potential for the computers to be shut off mid-operation. There are a vast amount of computer peripherals that are typically left on after a computer is shut off, including monitors, scanners, printers and DSL/Cable modems. These peripherals can be plugged into the automatic outlets.

Vineland City Hall, for example, has several office spaces which each house a number of computer systems. A standard Smart Strip has one 'control' outlet, six (6) outlets that are automatically switched off when the control device is and three (3) outlets that are always hot. An example of how the City can implement the use of Smart Strips is to plug a computer into the control outlet, six monitors into the automatic outlets and three computers into the always hot outlets. An LCD monitor can use up

to 34W; in standby mode the monitor utilizes 1 – 2W. A CRT monitor typically utilizes around 75W.

The following Table 4.4-1 summarizes other applications for the Smart Strip that may be applicable throughout the City buildings:

Table 4.4-1 Applications for Smart Strips

Control Outlet	Switched Outlets
Computer	Monitors, printers, scanners, lamps
TV	VCR, DVD player, cable box
Lamp	Stereo, space heater

In was also noted that the City consider the implementation of Energy Star appliances throughout the buildings. This is recommended on an 'as-needed' basis, where appliances such as break room refrigerators are replaced as funding is available and replacements are warranted.

Section 5
Evaluation of Energy Purchasing and Procurement Strategies

5.1 Energy Deregulation

The city of Vineland operates the Vineland Municipal Electric Utility Company (VMEU), which owns and operates a power plant in the city of Vineland. VMEU has established a fixed rate tariff structure, consisting of three service rates, residential, commercial, and industrial. Implied from the fact that VMEU is operated by the City of Vineland, energy purchasing/procurement opportunities from external companies do not exist.

Section 6
Ranking of Energy Conservation and Retrofit Measures (ECRM)

6.1 ECRMs

The main objective of this energy audit is to identify potential Energy Conservation and Retrofit Measures and to determine whether or not the identified ECRM's are economically feasible to warrant the cost for planning and implementation of each measure. Economic feasibility of each identified measure was evaluated through a simple payback analysis. The simple payback analysis consists of establishing the Engineer's Opinion of Probable Construction Cost estimates, O&M cost savings estimates, projected annual energy savings estimates, and the potential value of New Jersey Clean Energy rebates or Renewable Energy Credits, if applicable. The simple payback period is then determined as the amount of time (years) until the energy savings associated with each measure amounts to the capital investment cost.

As discussed is Section 3, aggregate unit costs for electrical energy delivery and usage and natural gas delivery and usage, which accounts for all demand and tariff charges at each facility, was determined and utilized in the simple payback analyses.

In general, ECRMs having a payback period of 20 years or less have been recommended and only those recommended ECRMs within Section 4 of the report have been ranked for possible implementation. The most attractive rankings are those with the lowest simple payback period.

Ranking of ECRMs has been broken down into the following categories:

- Lighting Systems
- HVAC Systems
- Solar Energy
- Miscellaneous Plug Loads

6.1.1 Lighting Systems

Table 6.1-1 includes the recommended ECRM (Options 1&2) to provide energy savings for all building lighting systems, which include the installation of energy-efficient lighting retrofit kits, electronic ballasts, reflectors, energy-efficient luminaires and occupancy sensors. Option 1 also includes parking lot and exterior lighting, presenting a greater annual savings. A detailed discussion on building lighting systems is presented in Section 4.1.

Table 6.1-1
Ranking of Energy Savings Measures Summary – Lighting System Retrofits Option 1

Site	Retrofit Cost	Incentives	Total Cost	Annual Fiscal Savings	Simple Payback (Years)
Vineland City Hall Option 2	$26,813	$7,090	$19,723	$8,560	**2.3**
Vineland Police Station	$17,360	$4,470	$12,890	$4,428	**2.9**
Vineland City Hall Option 1	$93,158	$7,090	$86,068	$10,730	**8.0**

6.1.2 HVAC Systems

Table 6.1-2 includes the recommended ECRM to provide energy savings for building HVAC systems, which provide a simple payback of less than 20 years. A detailed discussion on building HVAC systems is presented in Section 4.2.

Table 6.1-2
Ranking of Energy Savings Measures Summary – HVAC System Upgrade

Building & Measure	Retrofit Cost	Incentives	Total Cost	Annual Fiscal Savings	Simple Payback (Years)
Police Station – Building Management System	$19,355	-	$19,355	$12,289	**1.6**
City Hall – Night Setback	$27,816	-	$27,816	$11,507	**2.4**
City Hall – Building Management System	$57,500	-	$57,500	$19,944	**2.9**
City Hall – Variable Frequency Drives	$38,273	-	$38,273	$7,367	**5.2**
City Hall – Boiler Upgrade	$114,281	$4,000	$110,281	$11,199	**9.8**

6.1.3 Solar Energy

Implementation of a new solar energy system has been evaluated to determine the economic feasibility for furnishing and installing such systems for the City of Vineland. Based on the simple payback modeling performed, it would benefit the City to further investigate installing the solar energy systems at the City Hall and Police Station. This is primarily based on the initial upfront capital investment required for a solar energy system installation and an acceptable payback period.

Two major factors influencing the project financial evaluation is the variance of the prevailing energy market conditions and Solar Renewable Energy Credit (SREC) rates, with the largest impact to the simple payback model being the SREC credit pricing.

Table 6.1-3, includes a summary of the solar energy ECRM for the City Hall and Police Station.

Table 6.1-3
Ranking of Energy Savings Measures – Solar Energy

Building	Installation Cost	Annual SREC Credit	Annual Fiscal Savings	Payback Period (Years)
Vineland Police Station	$1,237,050	$114,426	$29,385	**8.6**
Vineland City Hall	$1,688,850	$156,217	$40,118	**8.6**

It should be noted that Federal and other tax incentives were not included in this simple payback model. Refer to Appendix E for more detailed solar energy models.

Section 7
Available Grants, Incentives and Funding Sources

7.1 Solar Energy Incentives and Financial Options

7.1.1 Solar Renewable Energy Certificates

As part of New Jersey's Renewable Portfolio Standards (RPS), electric suppliers are required to have an annually-increasing percentage of their retail sales generated by solar energy. Electric suppliers fulfill this obligation by purchasing SRECs from the owners of solar generating systems. One SREC is created for every 1,000 kWh (1 MWh) of solar electricity generated. Although solar systems generate electricity and SRECs in tandem, the two are independent commodities and sold separately. The RPS, and creation of SRECs, is intended to provide additional revenue flow and financial support for solar projects in New Jersey.

We have assumed what we believe to be a conservative estimate of the market value of SRECs over a 15 year period. Over the first 5 years, we have assumed that the SREC value would be at 80% of the NJBPU market forecast. For years 6 through 9, we have assumed that the SREC value would be at 75% of the NJBPU market forecast. Finally, for the balance of the term, we have assumed that the SREC value would be at a floor of $350 per SREC. We believe these values to be conservative compared to recent market transactions. We know of recent transactions in excess of $650 for 1 year, $550 for 4 years and $375 for 12 years. Should the winning developer have contracts in place, or a view of the market that SRECs will exceed our assumptions; the economics of the project will improve.

In addition, state law now requires that the utility must interconnect and net meter your photovoltaic system provided your system passes the local electrical inspection (National Electric Code) and meets the utility safety requirements as outlined in the law. Net metering is the term given which allows your utility meter to literally "spin backward" when the solar panels are producing more electricity than the building is using. However, given the high electrical demand of the facility at most times, this scenario is unlikely to happen.

7.1.2 Financing Options for Solar Projects

1. Direct Purchase – under this model, the City would fund the project directly, and receive all of the financial benefits of a PV system directly.

2. Power Purchase Agreement (PPA) – under this model, a private, third party would invest all of the capital necessary to build, own, operate, and maintain the PV system. The third party would claim all of the financial benefits of the project, including federal tax incentives and accelerated depreciation benefits that public sector entities are not entitled to. The City would enter into a 15 or 20 year

agreement to purchase power from the PV system at a rate guaranteed to be less than the cost of power from the utility. It should be noted that most PPAs require a minimum system size of approximately 300 kW on one building.

Additional Potential Financial Incentives:

Clean Renewable Energy Bonds – The federal government made available $750 Million in federal income tax credit allotments in 2007-08 for local governments to support the installation of green energy generation systems including solar photovoltaic. Such allotments may provide for an interest- free loan for the issuer. The recent energy bill for 2008-09 did not include any provisions for this energy bond. However, industry experts expect some allotments will be included prior to execution of the final plan. Although there is no guarantee that the City will be awarded such allotments, we have included the calculation for illustration purposes. If the program is approved for 2008-09 an application will be submitted on behalf of the City.

7.2 New Jersey Clean Energy Program

7.2.1 Introduction

New Jersey's Clean Energy Program (N JCEP) promotes increased energy efficiency and the use of clean, renewable sources of energy including solar, wind, geothermal, and sustainable biomass. The results for New Jersey are a stronger economy, less pollution, lower costs, and reduced demand for electricity. NJCEP offers financial incentives, programs, and services for residential, commercial, and municipal customers.

NJCEP reduces the need to generate electricity and burn natural gas which eliminates the pollution that would have been caused by such electric generation or natural gas usage. The benefits of these programs continue for the life of the measures installed, which on average is about 15 years. Thus, the public receives substantial environmental and public health benefits from programs that also lower energy bills and benefit the economy.

7.2.2 New Jersey Smart Start Program

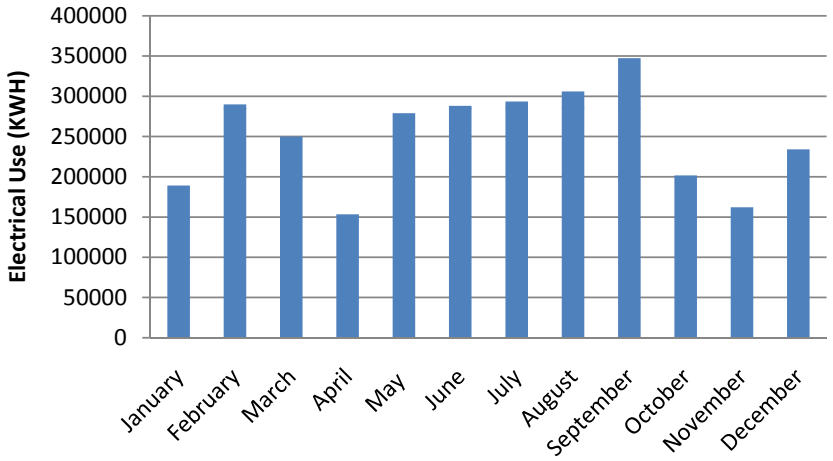
The New Jersey Smart Start Program offers rebate incentives for several qualifying equipment such as high efficient premium motors and lighting, and lighting controls.

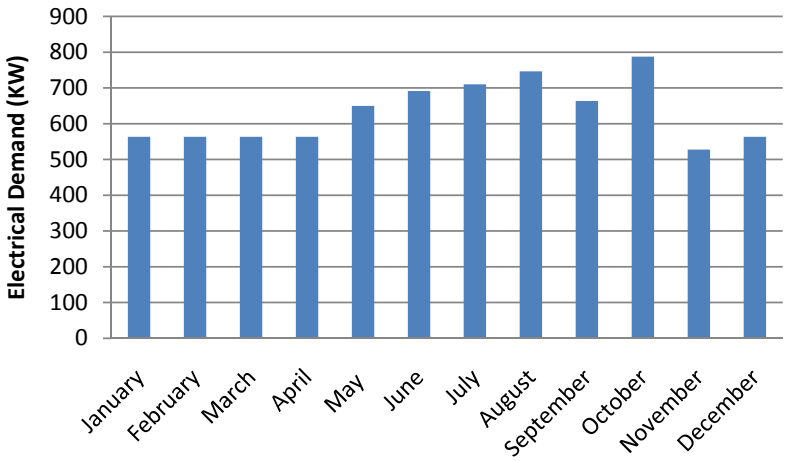
Incentive information and incentive calculation worksheets are provided for the various new equipment installation identified in this report and are included in Appendix F.

APPENDIX A

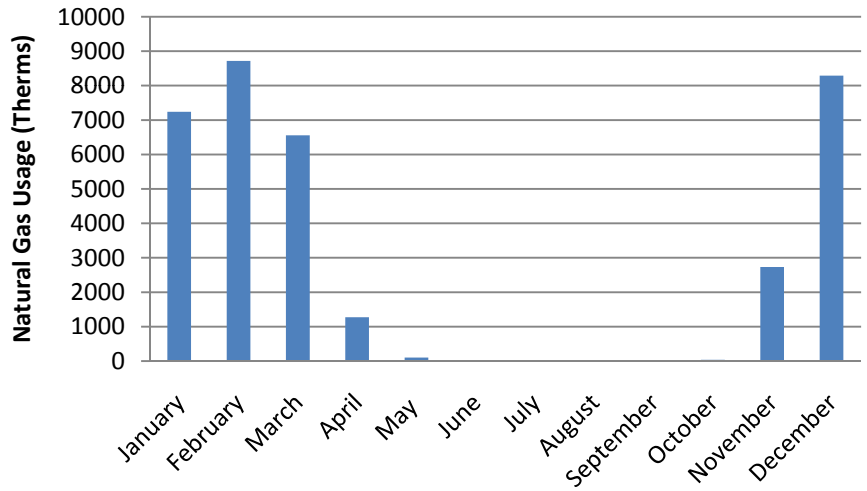
UTILITY BILL INFORMATION

Electric Bills						
Account # 083603722						
Date	Year	Total Electric Charges	KWH	Overall Cost Per KWH	Measured Demand	Cost Per KW Demand
December	2007	$29,994.70	234000	$0.12818	563.5	$6.00
January	2008	$25,216.15	189000	$0.13342	563.5	$6.00
February	2008	$35,920.10	289800	$0.12395	563.5	$6.00
March	2008	$31,692.04	249984	$0.12678	563.5	$6.00
April	2008	$21,416.25	153216	$0.13978	563.5	$6.00
May	2008	$35,291.83	279000	$0.12649	650	$6.00
June	2008	$42,958.26	288000	$0.14916	691.5	$6.50
July	2008	$43,783.83	293400	$0.14923	710.3	$6.50
August	2008	$45,659.51	306000	$0.14921	746.5	$6.50
September	2008	$50,512.83	347400	$0.14540	663.7	$6.50
October	2008	$30,420.06	201600	$0.15089	787.9	$6.00
November	2008	$24,159.94	162000	$0.14914	527.9	$6.00

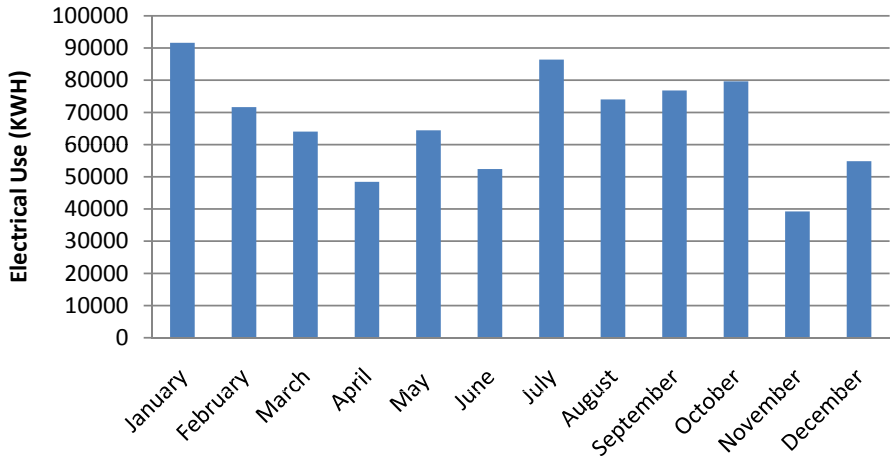


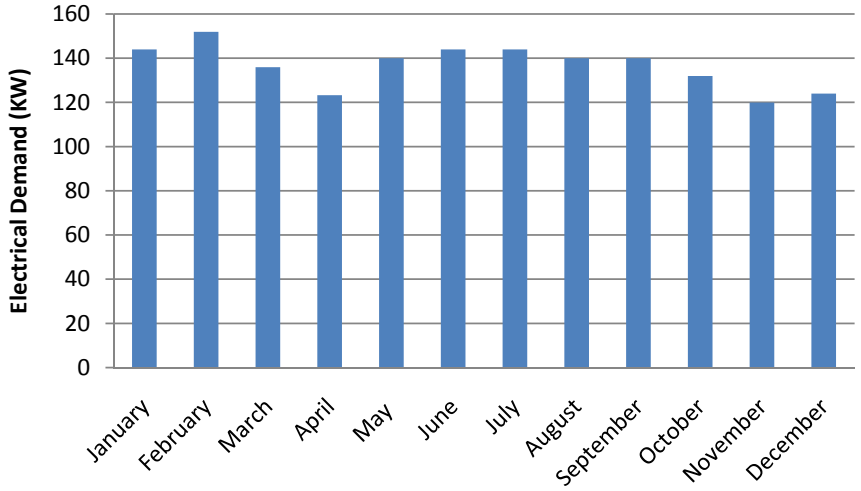


Natural Gas Bills				
City Hall Account # 3 02 15 02 11 03				
Date	Year	Therms	Total Charges	Cost/Therm
December	2007	8291	$12,896.43	$1.56
January	2007	7242	$11,269.04	$1.56
February	2008	8716	$13,558.13	$1.56
March	2008	6559	$10,226.27	$1.56
April	2008	1271	$2,006.49	$1.58
May	2008	103	$192.32	$1.87
June	2008	0	$31.68	
July	2008	0	$35.42	
August	2008	0	$53.52	
September	2008	0	$34.17	
October	2008	38	$75.09	$1.98
November	2008	2731	$3,665.15	$1.34



Electricity Use						
Vineland Police Dept Acct # 39357						
Date	Year	kWh	Total Charges	Price/kWh	Demand kW	Demand Charge
December	2007	54800	$8,178.80	$0.149	124.00	$775.00
January	2008	91600	$12,600.60	$0.138	144.00	$900.00
February	2008	71600	$10,480.60	$0.146	152.00	$950.00
March	2008	64000	$9,436.00	$0.147	136.00	$850.00
April	2008	48400	$7,351.90	$0.152	123.28	$770.50
May	2008	64400	$9,512.40	$0.148	140.00	$875.00
June	2008	52400	$8,722.40	$0.166	144.00	$972.00
July	2008	86400	$13,385.20	$0.155	144.00	$972.00
August	2008	74000	$11,709.00	$0.158	140.00	$945.00
September	2008	76800	$12,081.40	$0.157	140.00	$945.00
October	2008	79600	$12,081.60	$0.152	132.00	$825.00
November	2008	39200	$6,639.20	$0.169	120.00	$750.00





APPENDIX B

STATEMENT OF ENERGY PERFORMANCE SUMMARY SHEETS

PORTFOLIO MANAGER REFERENCE GUIDE

OMB No. 2060-0347

STATEMENT OF ENERGY PERFORMANCE
Vineland City Hall

Building ID: 1852111
For 12-month Period Ending: October 31, 2008[1]
Date SEP becomes ineligible: N/A
Date SEP Generated: September 15, 2009

Facility
Vineland City Hall
640 E. Wood Street
Vineland, NJ 08360

Facility Owner
N/A

Primary Contact for this Facility
N/A

Year Built: 1971
Gross Floor Area (ft²): 100,000

Energy Performance Rating[2] (1-100) 15

Site Energy Use Summary[3]

Electricity - Grid Purchase(kBtu)	10,450,203
Natural Gas (kBtu)[4]	34,600
Total Energy (kBtu)	10,484,803

Energy Intensity[5]

Site (kBtu/ft²/yr)	105
Source (kBtu/ft²/yr)	349

Emissions (based on site energy use)

Greenhouse Gas Emissions ($MtCO_2e$/year)	1,593

Electric Distribution Utility
Vineland City of

National Average Comparison

National Average Site EUI	70
National Average Source EUI	232
% Difference from National Average Source EUI	50%
Building Type	Office

Stamp of Certifying Professional

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

Certifying Professional
N/A

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

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

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

ENERGY STAR® Data Checklist for Commercial Buildings

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

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

CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	☑
Building Name	Vineland City Hall	Is this the official building name to be displayed in the ENERGY STAR Registry of Labeled Buildings?		☐
Type	Office	Is this an accurate description of the space in question?		☐
Location	640 E. Wood Street, Vineland, NJ 08360	Is this address accurate and complete? Correct weather normalization requires an accurate zip code.		☐
Single Structure	Single Facility	Does this SEP represent a single structure? SEPs cannot be submitted for multiple-building campuses (with the exception of acute care or children's hospitals) nor can they be submitted as representing only a portion of a building		☐
CRITERION	**VALUE AS ENTERED IN PORTFOLIO MANAGER**	**VERIFICATION QUESTIONS**	**NOTES**	☑
Gross Floor Area	100,000 Sq. Ft.	Does this square footage include all supporting functions such as kitchens and break rooms used by staff, storage areas, administrative areas, elevators, stairwells, atria, vent shafts, etc. Also note that existing atriums should only include the base floor area that it occupies. Interstitial (plenum) space between floors should not be included in the total. Finally gross floor area is not the same as leasable space. Leasable space is a subset of gross floor area.		☐
Weekly operating hours	60 Hours	Is this the total number of hours per week that the Office space is 75% occupied? This number should exclude hours when the facility is occupied only by maintenance, security, or other support personnel. For facilities with a schedule that varies during the year, "operating hours/week" refers to the total weekly hours for the schedule most often followed.		☐
Workers on Main Shift	150	Is this the number of employees present during the main shift? Note this is not the total number of employees or visitors who are in a building during an entire 24 hour period. For example, if there are two daily 8 hour shifts of 100 workers each, the Workers on Main Shift value is 100. The normal worker density ranges between 0.3 and 10 workers per 1000 square feet (92.8 square meters)		☐
Number of PCs	150	Is this the number of personal computers in the Office?		☐
Percent Cooled	50% or more	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		☐
Percent Heated	50% or more	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		☐

ENERGY STAR® Data Checklist for Commercial Buildings

Power Generation Plant or Distribution Utility: Vineland City of

Meter: Electricity Meter (kWh (thousand Watt-hours))
Space(s): Entire Facility
Generation Method: Grid Purchase

Start Date	End Date	Energy Use (kWh (thousand Watt-hours))
09/26/2008	10/28/2008	201,600.00
08/27/2008	09/25/2008	347,400.00
07/28/2008	08/26/2008	306,000.00
06/27/2008	07/28/2008	293,400.00
05/27/2008	06/26/2008	288,000.00
04/24/2008	05/26/2008	279,000.00
03/27/2008	04/24/2008	153,216.00
02/27/2008	03/26/2008	249,984.00
01/28/2008	02/26/2008	289,800.00
12/27/2007	01/28/2008	189,000.00
11/27/2007	12/26/2007	234,000.00
Electricity Meter Consumption (kWh (thousand Watt-hours))		**2,831,400.00**
Electricity Meter Consumption (kBtu (thousand Btu))		**9,660,736.80**
Total Electricity (Grid Purchase) Consumption (kBtu (thousand Btu))		**9,660,736.80**
Is this the total Electricity (Grid Purchase) consumption at this building including all Electricity meters?		■

Meter: Gas Meter (cf (cubic feet))
Space(s): Entire Facility

Start Date	End Date	Energy Use (cf (cubic feet))
09/23/2008	10/23/2008	38.00
08/22/2008	09/23/2008	0.00
07/24/2008	08/22/2008	0.00
06/20/2008	07/24/2008	0.00
05/23/2008	06/20/2008	0.00
04/24/2008	05/23/2008	100.00
03/26/2008	04/24/2008	1,233.00
02/25/2008	03/26/2008	6,356.00
01/23/2008	02/25/2008	8,429.00
12/21/2007	01/23/2008	7,011.00
11/21/2007	12/21/2007	8,042.00

Gas Meter Consumption (cf (cubic feet))	**31,209.00**
Gas Meter Consumption (kBtu (thousand Btu))	**32,114.06**
Total Natural Gas Consumption (kBtu (thousand Btu))	**32,114.06**
Is this the total Natural Gas consumption at this building including all Natural Gas meters?	■

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

On-Site Solar and Wind Energy	
Do the fuel consumption totals shown above include all on-site solar and/or wind power located at your facility? Please confirm that no on-site solar or wind installations have been omitted from this list. All on-site systems must be reported.	■

Certifying Professional

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

Name: _____ Date: _____

Signature: _____

Signature is required when applying for the ENERGY STAR.

FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

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

Facility
Vineland City Hall
640 E. Wood Street
Vineland, NJ 08360

Facility Owner
N/A

Primary Contact for this Facility
N/A

General Information

Gross Floor Area Excluding Parking: (ft²)	100,000
Year Built	1971
For 12-month Evaluation Period Ending Date:	October 31, 2008

Facility Space Use Summary

Space Type	Office
Gross Floor Area(ft²)	100,000
Weekly operating hours	60
Workers on Main Shift	150
Number of PCs	150
Percent Cooled	50% or more
Percent Heated	50% or more

Energy Performance Comparison

	Evaluation Periods		Comparisons		
Energy Performance Rating	15	15	75	N/A	50
Site (kBtu/ft²)	105	105	52	N/A	70
Source (kBtu/ft²)	349	349	172	N/A	232
$/year	$ 447,326.64	$ 447,326.64	$ 220,100.92	N/A	$ 297,577.81
$/ft²/year	$ 4.47	$ 4.47	$ 2.20	N/A	$ 2.97
$MtCO_2e$/year	1,593	1,593	784	N/A	1,060
$kgCO_2e$/ft²/year	16	16	8	N/A	11

More than 50% of your building is defined as Office. Please note that your rating accounts for all of the spaces listed. The National Average column presents energy performance data your building would have if your building had an average rating of 50.

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

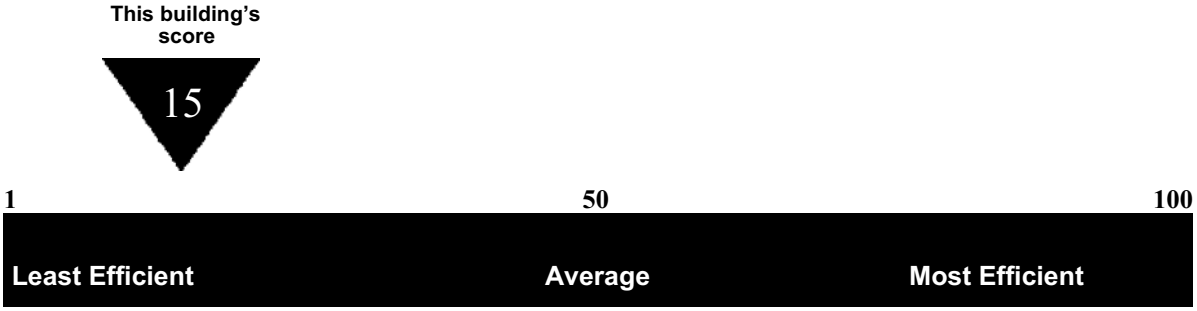
Statement of Energy Performance

2008

Vineland City Hall
640 E. Wood Street
Vineland, NJ 08360

Portfolio Manager Building ID: 1852111

The energy use of this building has been measured and compared to other similar buildings using the Environmental Protection Agency's (EPA's) Energy Performance Scale of 1–100, with 1 being the least energy efficient and 100 the most energy efficient. For more information, visit energystar.gov/benchmark.



This building uses 349 kBtu per square foot per year.*

*Based on source energy intensity for the 12 month period ending October 2008

Buildings with a score of 75 or higher may qualify for EPA's ENERGY STAR.

I certify that the information contained within this statement is accurate and in accordance with U.S. Environmental Protection Agency's measurement standards, found at energystar.gov

Date of certification

Date Generated: 09/15/2009

OMB No. 2060-0347

STATEMENT OF ENERGY PERFORMANCE
Vineland Police Building

Building ID: 1852138
For 12-month Period Ending: October 31, 2008[1]
Date SEP becomes ineligible: N/A
Date SEP Generated: September 15, 2009

Facility
Vineland Police Building
111 N. Sixth Street
Vineland, NJ 08360

Facility Owner
N/A

Primary Contact for this Facility
N/A

Year Built: 1968
Gross Floor Area (ft²): 37,152

Energy Performance Rating[2] (1-100) 71

Site Energy Use Summary[3]

Electricity - Grid Purchase(kBtu)	2,821,601
Natural Gas - (kBtu)[4]	0
Total Energy (kBtu)	2,821,601

Energy Intensity[5]

Site (kBtu/ft²/yr)	76
Source (kBtu/ft²/yr)	254

Emissions (based on site energy use)

Greenhouse Gas Emissions ($MtCO_2e$/year)	430

Electric Distribution Utility
Vineland City of

National Average Comparison

National Average Site EUI	97
National Average Source EUI	325
% Difference from National Average Source EUI	-22%
Building Type	Office

Stamp of Certifying Professional

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

Certifying Professional
N/A

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

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

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

ENERGY STAR® Data Checklist for Commercial Buildings

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

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

CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	☑
Building Name	Vineland Police Building	Is this the official building name to be displayed in the ENERGY STAR Registry of Labeled Buildings?		☐
Type	Office	Is this an accurate description of the space in question?		☐
Location	111 N. Sixth Street, Vineland, NJ 08360	Is this address accurate and complete? Correct weather normalization requires an accurate zip code.		☐
Single Structure	Single Facility	Does this SEP represent a single structure? SEPs cannot be submitted for multiple-building campuses (with the exception of acute care or children's hospitals) nor can they be submitted as representing only a portion of a building		☐
CRITERION	**VALUE AS ENTERED IN PORTFOLIO MANAGER**	**VERIFICATION QUESTIONS**	**NOTES**	☑
Gross Floor Area	37,152 Sq. Ft.	Does this square footage include all supporting functions such as kitchens and break rooms used by staff, storage areas, administrative areas, elevators, stairwells, atria, vent shafts, etc. Also note that existing atriums should only include the base floor area that it occupies. Interstitial (plenum) space between floors should not be included in the total. Finally gross floor area is not the same as leasable space. Leasable space is a subset of gross floor area.		☐
Weekly operating hours	168 Hours	Is this the total number of hours per week that the Office space is 75% occupied? This number should exclude hours when the facility is occupied only by maintenance, security, or other support personnel. For facilities with a schedule that varies during the year, "operating hours/week" refers to the total weekly hours for the schedule most often followed.		☐
Workers on Main Shift	190	Is this the number of employees present during the main shift? Note this is not the total number of employees or visitors who are in a building during an entire 24 hour period. For example, if there are two daily 8 hour shifts of 100 workers each, the Workers on Main Shift value is 100. The normal worker density ranges between 0.3 and 10 workers per 1000 square feet (92.8 square meters)		☐
Number of PCs	190	Is this the number of personal computers in the Office?		☐
Percent Cooled	50% or more	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		☐
Percent Heated	50% or more	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		☐

ENERGY STAR® Data Checklist for Commercial Buildings

Power Generation Plant or Distribution Utility: Vineland City of

Meter: Electricity Meter (kWh (thousand Watt-hours))
Space(s): Entire Facility
Generation Method: Grid Purchase

Start Date	End Date	Energy Use (kWh (thousand Watt-hours))
09/25/2008	10/27/2008	79,600.00
08/27/2008	09/25/2008	76,800.00
07/28/2008	08/26/2008	74,000.00
06/25/2008	07/28/2008	86,400.00
05/23/2008	06/25/2008	52,400.00
04/24/2008	05/23/2008	64,400.00
03/27/2008	04/24/2008	48,400.00
02/27/2008	03/26/2008	64,000.00
01/27/2008	02/26/2008	71,600.00
12/27/2007	01/26/2008	91,600.00
11/27/2007	12/26/2007	54,800.00
Electricity Meter Consumption (kWh (thousand Watt-hours))		**764,000.00**
Electricity Meter Consumption (kBtu (thousand Btu))		**2,606,768.00**
Total Electricity (Grid Purchase) Consumption (kBtu (thousand Btu))		**2,606,768.00**
Is this the total Electricity (Grid Purchase) consumption at this building including all Electricity meters?		☑

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

On-Site Solar and Wind Energy	
Do the fuel consumption totals shown above include all on-site solar and/or wind power located at your facility? Please confirm that no on-site solar or wind installations have been omitted from this list. All on-site systems must be reported.	☑

Certifying Professional

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

Name: _____ Date: _____

Signature: _____

Signature is required when applying for the ENERGY STAR.

FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

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

Facility
Vineland Police Building
111 N. Sixth Street
Vineland, NJ 08360

Facility Owner
N/A

Primary Contact for this Facility
N/A

General Information

Gross Floor Area Excluding Parking: (ft^2)	37,152
Year Built	1968
For 12-month Evaluation Period Ending Date:	October 31, 2008

Facility Space Use Summary

Space Type	Office
Gross Floor Area(ft^2)	37,152
Weekly operating hours	168
Workers on Main Shift	190
Number of PCs	190
Percent Cooled	50% or more
Percent Heated	50% or more

Energy Performance Comparison

	Evaluation Periods		Comparisons		
Energy Performance Rating	71	71	75	N/A	50
Site (kBtu/ft^2)	76	76	72	N/A	97
Source (kBtu/ft^2)	254	254	240	N/A	325
$/year	$ 116,747.74	$ 116,747.74	$ 110,614.45	N/A	$ 149,566.23
$/$ft^2$/year	$ 3.14	$ 3.14	$ 2.98	N/A	$ 4.02
$MtCO_2e$/year	430	430	407	N/A	551
$kgCO_2e/ft^2$/year	12	12	11	N/A	15

More than 50% of your building is defined as Office. Please note that your rating accounts for all of the spaces listed. The National Average column presents energy performance data your building would have if your building had an average rating of 50.

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

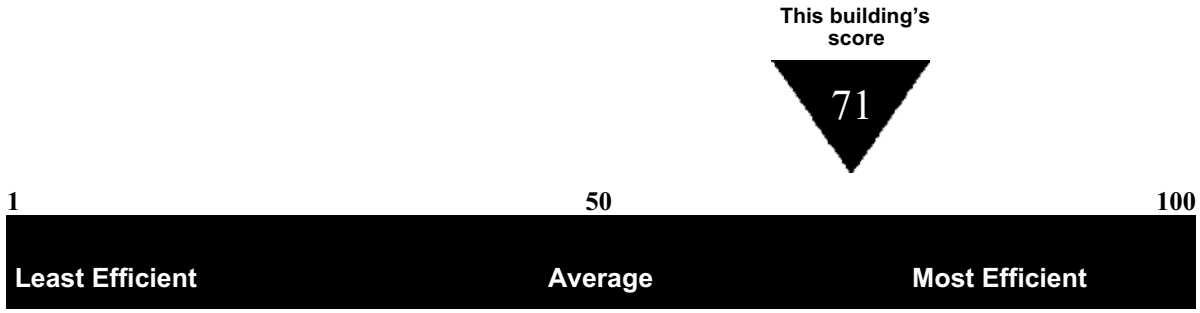
Statement of Energy Performance

2008

Vineland Police Building
111 N. Sixth Street
Vineland, NJ 08360

Portfolio Manager Building ID: 1852138

The energy use of this building has been measured and compared to other similar buildings using the Environmental Protection Agency's (EPA's) Energy Performance Scale of 1–100, with 1 being the least energy efficient and 100 the most energy efficient. For more information, visit energystar.gov/benchmark.



This building uses 254 kBtu per square foot per year.*

*Based on source energy intensity for the 12 month period ending October 2008

Buildings with a score of 75 or higher may qualify for EPA's ENERGY STAR.

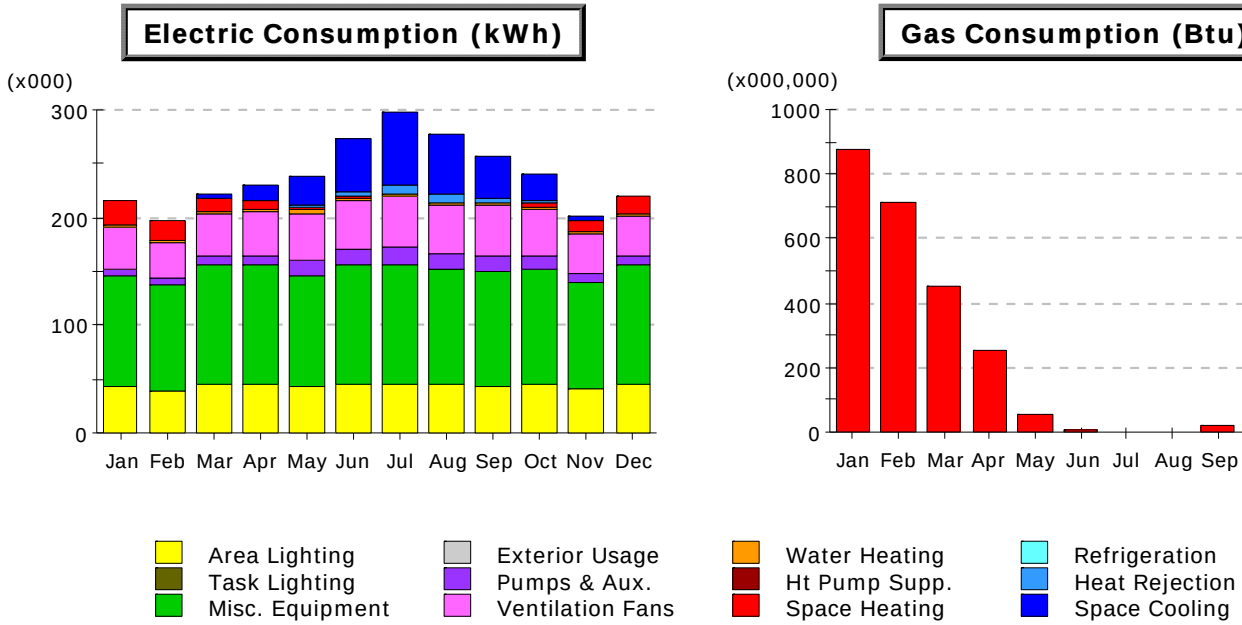
I certify that the information contained within this statement is accurate and in accordance with U.S. Environmental Protection Agency's measurement standards, found at energystar.gov

Date of certification

Date Generated: 09/15/2009

APPENDIX C

eQUEST MODEL RESULTS

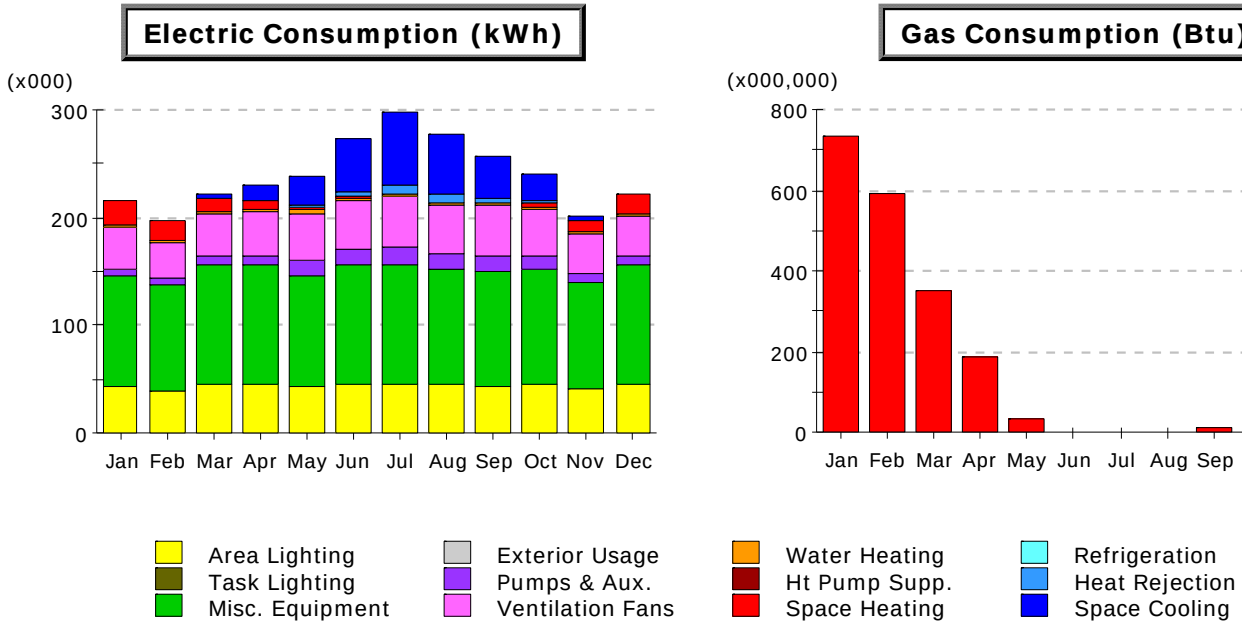


Electric Consumption (kWh x000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	0.1	-	3.7	13.6	26.6	49.2	66.9	56.5	39.2	23.9	3.5	0.6	283.7
Heat Reject.	0.0	-	0.2	1.2	2.4	5.6	8.6	6.9	4.1	2.3	0.2	0.0	31.4
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	22.1	18.2	12.1	7.0	2.1	0.4	0.0	0.2	0.7	3.8	11.1	16.5	94.2
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	2.5	2.4	2.7	2.6	2.3	2.2	2.1	1.9	1.9	2.1	2.1	2.5	27.0
Vent. Fans	37.9	33.5	38.0	40.2	44.7	45.4	47.0	44.8	46.3	43.9	36.8	37.8	496.3
Pumps & Aux.	6.4	5.7	7.6	9.8	13.1	15.7	16.7	15.7	14.9	12.6	7.4	6.7	132.3
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	104.2	97.2	110.7	109.4	104.2	109.4	110.7	107.5	106.2	107.5	99.7	110.7	1,277.5
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	42.4	40.0	46.1	45.9	42.4	45.9	46.1	44.3	44.1	44.3	40.4	46.1	528.1
Total	215.6	197.0	221.1	229.6	237.8	273.7	298.0	277.8	257.5	240.4	201.2	220.9	2,870.6

Gas Consumption (Btu x000,000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	873.6	713.6	453.6	253.6	53.7	4.5	-	1.5	23.3	133.2	400.7	624.2	3,535.4
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent. Fans	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps & Aux.	-	-	-	-	-	-	-	-	-	-	-	-	-
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	-	-	-	-	-	-	-	-	-	-	-	-	-
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	873.6	713.6	453.6	253.6	53.7	4.5	-	1.5	23.3	133.2	400.7	624.2	3,535.4

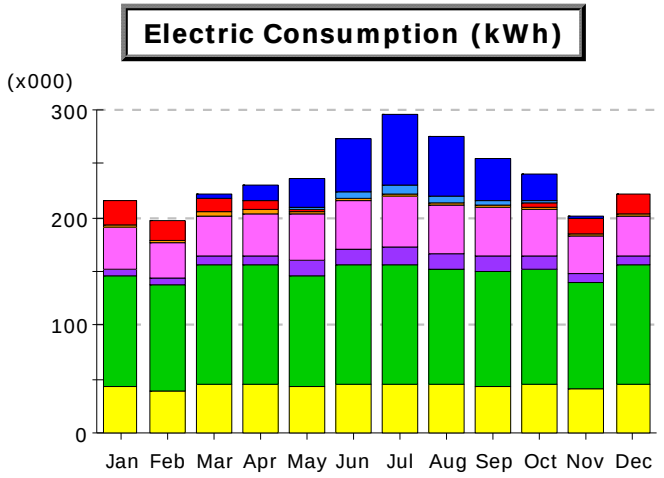


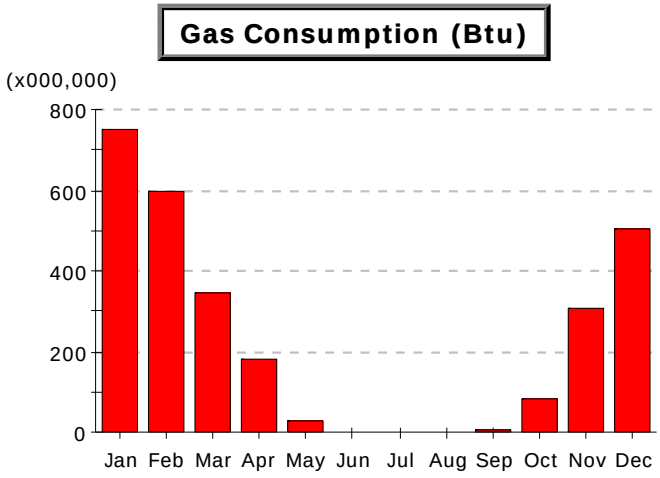
Electric Consumption (kWh x000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	0.1	-	3.7	13.6	26.6	49.2	66.9	56.5	39.2	23.9	3.5	0.6	283.7
Heat Reject.	0.0	-	0.2	1.2	2.4	5.6	8.6	6.9	4.1	2.3	0.2	0.0	31.4
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	22.9	18.8	12.6	7.3	2.2	0.4	0.0	0.2	0.7	4.0	11.6	17.1	97.8
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	2.5	2.4	2.7	2.6	2.3	2.2	2.1	1.9	1.9	2.1	2.1	2.5	27.0
Vent. Fans	38.2	33.7	38.0	40.2	44.7	45.4	47.0	44.8	46.3	43.9	36.9	37.8	497.0
Pumps & Aux.	6.4	5.7	7.6	9.8	13.1	15.7	16.7	15.7	14.9	12.6	7.4	6.7	132.3
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	104.2	97.2	110.7	109.4	104.2	109.4	110.7	107.5	106.2	107.5	99.7	110.7	1,277.5
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	42.4	40.0	46.1	45.9	42.4	45.9	46.1	44.3	44.1	44.3	40.4	46.1	528.1
Total	216.7	197.9	221.6	229.9	237.9	273.7	298.0	277.8	257.5	240.5	201.7	221.5	2,874.8

Gas Consumption (Btu x000,000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	734.6	591.4	350.4	186.5	34.1	2.5	-	0.8	13.7	94.2	308.8	500.6	2,817.6
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent. Fans	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps & Aux.	-	-	-	-	-	-	-	-	-	-	-	-	-
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	-	-	-	-	-	-	-	-	-	-	-	-	-
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	734.6	591.4	350.4	186.5	34.1	2.5	-	0.8	13.7	94.2	308.8	500.6	2,817.6



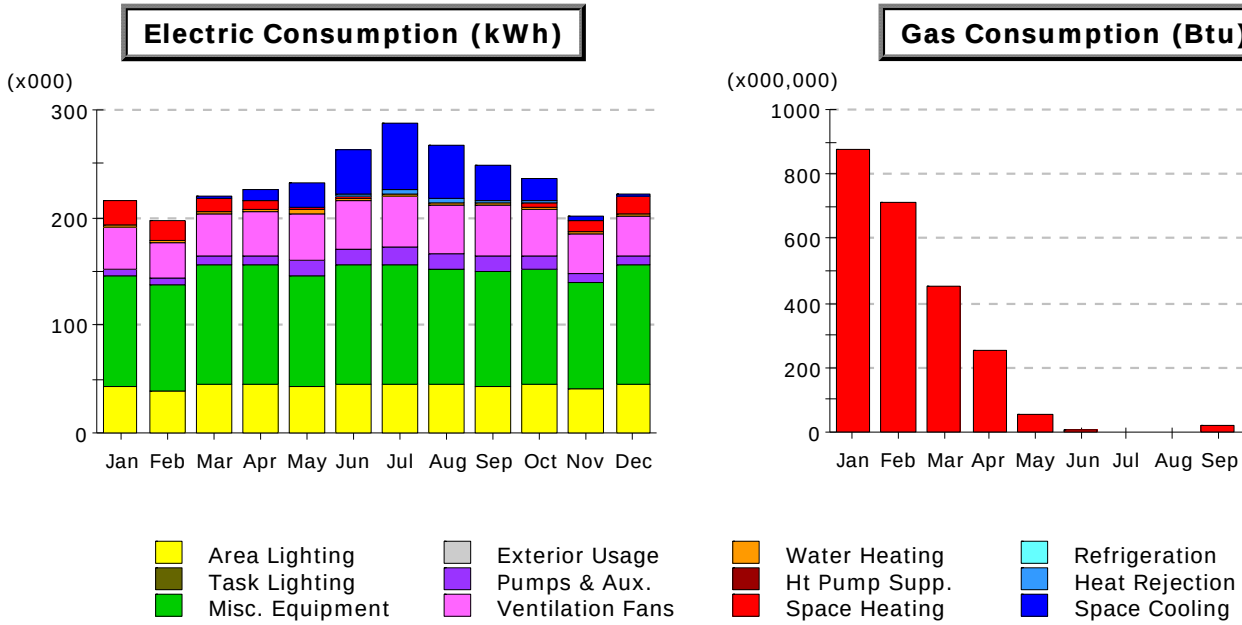


Electric Consumption (kWh x000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	0.1	-	3.7	13.5	26.4	49.0	66.6	56.2	38.7	23.7	3.5	0.6	282.0
Heat Reject.	0.0	-	0.2	1.1	2.4	5.5	8.5	6.8	4.0	2.2	0.2	0.0	31.0
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	23.6	19.5	13.6	8.2	3.0	0.6	0.1	0.4	1.2	4.9	12.6	17.9	105.8
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	2.5	2.4	2.7	2.6	2.3	2.2	2.1	1.9	1.9	2.1	2.1	2.5	27.1
Vent. Fans	37.4	33.1	37.6	39.2	42.8	44.0	45.9	43.3	44.0	42.4	36.2	37.5	483.4
Pumps & Aux.	6.4	5.7	7.6	9.8	13.1	15.7	16.7	15.7	14.9	12.6	7.4	6.7	132.4
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	104.2	97.2	110.7	109.4	104.2	109.4	110.7	107.5	106.2	107.5	99.7	110.7	1,277.5
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	42.4	40.0	46.1	45.9	42.4	45.9	46.1	44.3	44.1	44.3	40.4	46.1	528.1
Total	216.7	198.0	222.2	229.8	236.7	272.4	296.7	276.2	255.0	239.7	202.1	222.0	2,867.3

Gas Consumption (Btu x000,000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	750.0	597.5	343.7	181.1	25.8	1.0	-	0.8	7.4	82.6	306.5	501.5	2,798.0
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent. Fans	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps & Aux.	-	-	-	-	-	-	-	-	-	-	-	-	-
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	-	-	-	-	-	-	-	-	-	-	-	-	-
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	750.0	597.5	343.7	181.1	25.8	1.0	-	0.8	7.4	82.6	306.5	501.5	2,798.0

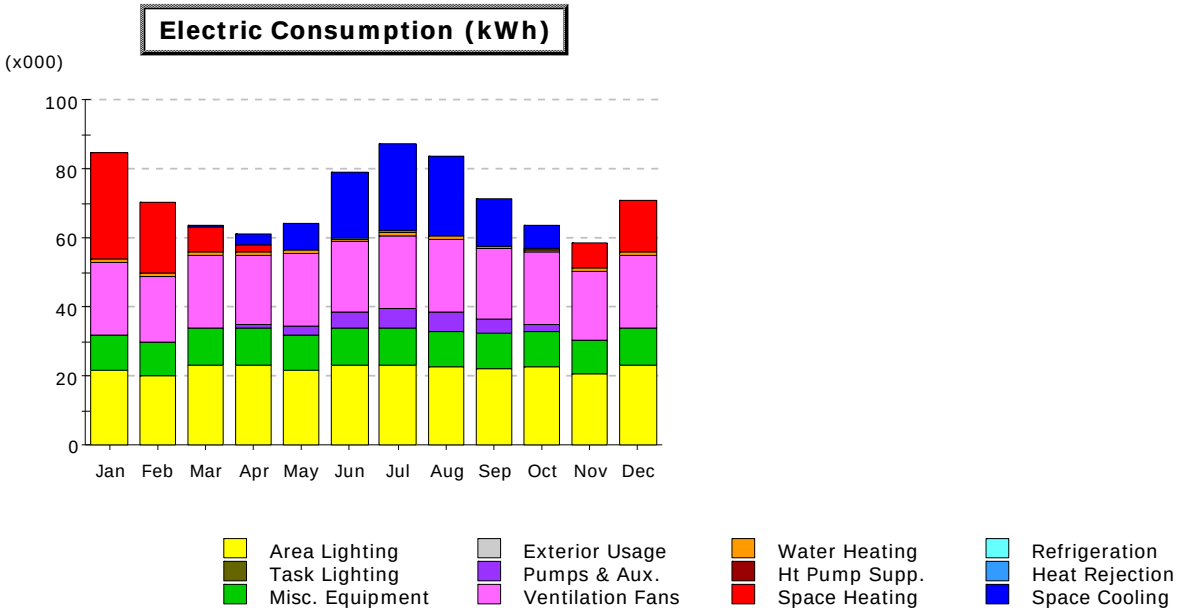


Electric Consumption (kWh x000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	0.2	-	3.6	11.8	23.2	42.5	60.1	50.2	33.1	21.0	3.5	0.6	249.8
Heat Reject.	0.0	-	0.1	0.3	0.7	2.1	4.1	3.1	1.2	0.7	0.1	0.0	12.3
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	22.1	18.2	12.1	7.0	2.1	0.4	0.0	0.2	0.7	3.8	11.1	16.5	94.2
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	2.5	2.4	2.7	2.6	2.3	2.2	2.1	1.9	1.9	2.1	2.1	2.5	27.0
Vent. Fans	37.9	33.5	38.0	40.2	44.7	45.4	47.0	44.8	46.3	43.9	36.8	37.8	496.3
Pumps & Aux.	6.4	5.7	7.6	9.8	13.1	15.7	16.7	15.7	14.9	12.6	7.4	6.7	132.3
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	104.2	97.2	110.7	109.4	104.2	109.4	110.7	107.5	106.2	107.5	99.7	110.7	1,277.5
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	42.4	40.0	46.1	45.9	42.4	45.9	46.1	44.3	44.1	44.3	40.4	46.1	528.1
Total	215.6	197.0	220.8	227.0	232.8	263.6	286.8	267.7	248.4	236.0	201.1	220.9	2,817.7

Gas Consumption (Btu x000,000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	873.6	713.6	453.6	253.6	53.7	4.5	-	1.5	23.3	133.2	400.7	624.2	3,535.4
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent. Fans	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps & Aux.	-	-	-	-	-	-	-	-	-	-	-	-	-
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	-	-	-	-	-	-	-	-	-	-	-	-	-
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	873.6	713.6	453.6	253.6	53.7	4.5	-	1.5	23.3	133.2	400.7	624.2	3,535.4



Electric Consumption (kWh x000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	-	-	0.42	2.95	8.10	19.21	25.48	22.70	13.62	6.32	0.06	-	98.85
Heat Reject.	-	-	-	0.01	0.04	0.22	0.49	0.34	0.07	0.05	-	-	1.22
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	31.00	20.65	6.82	1.91	0.00	-	-	-	0.00	0.43	7.07	15.09	82.98
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	0.89	0.86	0.99	0.97	0.84	0.83	0.78	0.72	0.71	0.75	0.73	0.89	9.96
Vent. Fans	21.04	19.01	21.04	20.37	21.04	20.37	21.04	21.04	20.37	21.04	20.37	21.04	247.78
Pumps & Aux.	-	-	0.17	0.86	2.48	4.80	5.76	5.57	3.84	1.81	0.04	-	25.33
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	10.22	9.48	10.76	10.65	10.22	10.64	10.75	10.54	10.33	10.52	9.70	10.76	124.57
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	21.58	20.21	23.15	23.11	21.58	23.08	23.13	22.51	22.17	22.46	20.34	23.15	266.45
Total	84.73	70.21	63.35	60.82	64.30	79.15	87.42	83.42	71.10	63.39	58.31	70.93	857.14

Gas Consumption (Btu)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool													
Heat Reject.													
Refrigeration													
Space Heat													
HP Supp.													
Hot Water													
Vent. Fans													
Pumps & Aux.													
Ext. Usage													
Misc. Equip.													
Task Lights													
Area Lights													
Total													

APPENDIX D

LIGHTING SPREADSHEET - OPTION 1

ATTACHMENT A

Lighting Spreadsheets

Seq. #	Building	Floor #	Location/Room #	Existing Fixture/Lamp & Ballast Description	Exist. Qty of Fixtures	Exist. Watts	Exist. kW Base	Oper. Hrs.	Exist. kWh	Annual Cost of Energy Existing	Proposed Replacement Solution	Prop. Qty of Fixtures	Prop. Watts	Prop. kW Base	Prop. Oper. Hrs. w/ Sensors	Prop. kWh w/o Sensors	Prop. kWh w/ Sensors	Proposed Occupancy Sensor	Sensor Qtys	Total kWh Saved Lighting Only	kWh Saved Sensors Only	Total kW Saved	Total kWh Saved	Energy Cost Savings	Ballast/Fixture/Reflector	Bulb	Labor	OS Cost	OS Labor	Subtotal	Total
	Police Station	000	Basement Area	2X4 Troffers/4-T8 Lamps/Electronic Ballasts	8	896.0	0.90	2,400	2,150	$ 430.08	NONE PROPOSED	8	896.0	0.90	2,400	2150	2150	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Police Station	000	Basement Area	2X4 Troffers/4-T12 Lamps/Magnetic Ballasts	5	856.0	0.86	2,400	2,054	$ 410.88	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	5	507.0	0.51	2,400	1217	1217	NONE PROPOSED	0	838	-	0.35	838	$ 167.52	110	20	40	0	0	170	850
	Police Station	000	Basement Area	1x8 2-T12 Lamps/Magnetic Ballasts	1	172.0	0.17	2,400	413	$ 82.56	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	1	112.0	0.11	2,400	269	269	NONE PROPOSED	0	144	-	0.06	144	$ 28.80	110	20	40	0	0	170	170
	Police Station	000	Basement Area	42W CFL	18	882.0	0.88	2,400	2,117	$ 423.36	NONE PROPOSED	18	882.0	0.88	2,400	2117	2117	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Police Station	000	Basement Area	150W Incandescent Fixture	25	3750.0	3.75	2,400	9,000	$ 1,800.00	Replace 150W Incandescent Fixture with 25W CFL	25	625.0	0.63	2,400	1500	1500	NONE PROPOSED	0	7,500	-	3.13	7,500	$ 1,500.00	0	7	20	0	0	27	675
	Police Station	000	Basement Area	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	44	2230.8	2.23	2,400	5,354	$ 1,070.78	NONE PROPOSED	44	2230.8	2.23	2,400	5354	5354	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Police Station	000	Basement Area	40W Incandescent Fixture	17	680.0	0.68	2,400	1,632	$ 326.40	Replace 40W Incandescent Fixture with 13W CFL	17	221.0	0.22	2,400	530	530	NONE PROPOSED	0	1,102	-	0.46	1,102	$ 220.32	0	5	20	0	0	25	425
	Police Station	000	Basement Area	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	12	660.0	0.66	2,400	1,584	$ 316.80	NONE PROPOSED	12	660.0	0.66	2,400	1584	1584	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Police Station	000	Basement Area	1x8 2-T8 Lamps/Electronic Ballasts	12	1344.0	1.34	2,400	3,226	$ 645.12	NONE PROPOSED	12	1344.0	1.34	2,400	3226	3226	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Police Station	000	Basement Area	2X4 Troffers/2-T12 Lamps/Magnetic Ballasts	60	5136.0	5.14	2,400	12,326	$ 2,465.28	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	60	3042.0	3.04	2,400	7301	7301	NONE PROPOSED	0	5,026	-	2.09	5,026	$ 1,005.12	55	10	40	0	0	105	6300
	Police Station	000	Exterior	2X4 Troffers/4-T8 Lamps/Electronic Ballasts	7	784.0	0.78	2,400	1,882	$ 376.32	NONE PROPOSED	7	784.0	0.78	2,400	1882	1882	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Police Station	010	First Floor Area	2X4 Troffers/4-T8 Lamps/Electronic Ballasts	45	5040.0	5.04	2,400	12,096	$ 2,419.20	NONE PROPOSED	45	5040.0	5.04	2,400	12096	12096	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Police Station	010	First Floor Area	42W CFL	39	1911.0	1.91	2,400	4,586	$ 917.28	NONE PROPOSED	39	1911.0	1.91	2,400	4586	4586	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Police Station	010	First Floor Area	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	64	3244.8	3.24	2,400	7,788	$ 1,557.50	NONE PROPOSED	64	3244.8	3.24	2,400	7788	7788	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Police Station	010	First Floor Area	40W Incandescent Fixture	9	360.0	0.36	2,400	864	$ 172.80	Replace 40W Incandescent Fixture with 13W CFL	9	117.0	0.12	2,400	281	281	NONE PROPOSED	0	583	-	0.24	583	$ 116.64	0	5	20	0	0	25	225
	Police Station	010	First Floor Area	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	21	1155.0	1.16	2,400	2,772	$ 554.40	NONE PROPOSED	21	1155.0	1.16	2,400	2772	2772	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Police Station	010	First Floor Area	1X4 Troffers/2-T12 Lamps/Magnetic Ballasts	83	7104.8	7.10	2,400	17,052	$ 3,410.30	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	83	4208.1	4.21	2,400	10099	10099	NONE PROPOSED	0	6,952	-	2.90	6,952	$ 1,390.42	55	10	40	0	0	105	8715
	Vineland Town Hall	000	Basement Area	2X4 Troffers/2-T12 Lamps/Magnetic Ballasts	49	4194.4	4.19	2,400	10,067	$ 2,013.31	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	49	2484.3	2.48	2,400	5962	5962	NONE PROPOSED	0	4,104	-	1.71	4,104	$ 820.85	55	10	40	0	0	105	5145
	Vineland Town Hall	000	Basement Area	2X4 Troffers/2-T8 Lamps/Electronic Ballasts	24	1216.8	1.22	2,400	2,920	$ 584.06	NONE PROPOSED	24	1216.8	1.22	2,400	2920	2920	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Vineland Town Hall	000	Basement Area	1X4 Fixtures/1-T8 Lamps/Electronic Ballasts	1	25.4	0.03	2,400	61	$ 12.19	NONE PROPOSED	1	25.4	0.03	2,400	61	61	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Vineland Town Hall	000	Basement Area	Incandescent Exit Sign	3	48.0	0.05	2,400	115	$ 23.04	Replace Incandescent Exit Sign with Energy Efficient LED Exit Sign	3	15.0	0.02	2,400	36	36	NONE PROPOSED	0	79	-	0.03	79	$ 15.84	0	61	63	0	0	124	372
	Vineland Town Hall	000	Elevator 1	1-T12 Lamp/Magnetic Ballast	8	342.4	0.34	2,400	822	$ 164.35	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	8	203.2	0.20	2,400	488	488	NONE PROPOSED	0	334	-	0.14	334	$ 66.82	27.5	5	40	0	0	72.5	580
	Vineland Town Hall	000	Elevator 2	1-T12 Lamp/Magnetic Ballast	8	342.4	0.34	2,400	822	$ 164.35	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	8	203.2	0.20	2,400	488	488	NONE PROPOSED	0	334	-	0.14	334	$ 66.82	27.5	5	40	0	0	72.5	580
	Vineland Town Hall	000	Elevator 3	1-T12 Lamp/Magnetic Ballast	8	342.4	0.34	2,400	822	$ 164.35	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	8	203.2	0.20	2,400	488	488	NONE PROPOSED	0	334	-	0.14	334	$ 66.82	27.5	5	40	0	0	72.5	580
	Vineland Town Hall	010	Boiler Room	2X4 Troffers/2-T8 Lamps/Electronic Ballasts	2	101.4	0.10	2,400	243	$ 48.67	NONE PROPOSED	2	101.4	0.10	2,400	243	243	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Vineland Town Hall	010	Collections Department	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	120	6600.0	6.60	2,400	15,840	$ 3,168.00	NONE PROPOSED	120	6600.0	6.60	2,400	15840	15840	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Vineland Town Hall	010	Collections Department	2X2 Troffers/2-T12 Lamps/Magnetic Ballasts	8	684.8	0.68	2,400	1,644	$ 328.70	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	8	405.6	0.41	2,400	973	973	NONE PROPOSED	0	670	-	0.28	670	$ 134.02	55	10	40	0	0	105	840
	Vineland Town Hall	010	Collections Department	42W CFL	1	49.0	0.05	2,400	118	$ 23.52	NONE PROPOSED	1	49.0	0.05	2,400	118	118	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Vineland Town Hall	010	Electrical/Mechanical Room	42W CFL	2	98.0	0.10	2,400	235	$ 47.04	NONE PROPOSED	2	98.0	0.10	2,400	235	235	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Vineland Town Hall	010	Entryway	Pendant Mounted 42W CFL Fixture	128	6272.0	6.27	2,400	15,053	$ 3,010.56	NONE PROPOSED	128	6272.0	6.27	2,400	15053	15053	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Vineland Town Hall	010	Entryway	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	2,400	365	$ 73.01	NONE PROPOSED	3	152.1	0.15	2,400	365	365	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Vineland Town Hall	010	Exterior	Flood Lights (Assume 400W MH)	9	4122.0	4.12	2,400	9,893	$ 1,978.56	Replace 400W MH fixture with LED Area Light	9	2088.0	2.09	2,400	5011	5011	NONE PROPOSED	0	4,882	-	2.03	4,882	$ 976.32	0	2000	671	0	0	2671	24039
	Vineland Town Hall	010	Exterior	42W CFL	22	1078.0	1.08	2,400	2,587	$ 517.44	NONE PROPOSED	22	1078.0	1.08	2,400	2587	2587	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Vineland Town Hall	010	Exterior	Pole Mounted Lights (Assume 400W MH)	11	5038.0	5.04	2,400	12,091	$ 2,418.24	Replace 400W MH fixture with LED Area Light	11	2552.0	2.55	2,400	6125	6125	NONE PROPOSED	0	5,966	-	2.49	5,966	$ 1,193.28	1175	2000	671	0	0	3846	42306
	Vineland Town Hall	010	Loading Dock Area	2X4 Troffers/2-T8 Lamps/Electronic Ballasts	1	50.7	0.05	2,400	122	$ 24.34	NONE PROPOSED	1	50.7	0.05	2,400	122	122	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Vineland Town Hall	010	Loading Dock Area	2X4 Troffers/2-T12 Lamps/Magnetic Ballasts	3	256.8	0.26	2,400	616	$ 123.26	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	3	152.1	0.15	2,400	365	365	NONE PROPOSED	0	251	-	0.10	251	$ 50.26	55	10	40	0	0	105	315
	Vineland Town Hall	010	Men's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	010	Tax Department	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	155	8525.0	8.53	2,400	20,460	$ 4,092.00	NONE PROPOSED	155	8525.0	8.53	2,400	20460	20460	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Vineland Town Hall	010	Tax Department	2X2 Troffers/2-T12 Lamps/Magnetic Ballasts	1	85.6	0.09	2,400	205	$ 41.09	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	1	50.7	0.05	2,400	122	122	NONE PROPOSED	0	84	-	0.03	84	$ 16.75	55	10	40	0	0	105	105
	Vineland Town Hall	010	Women's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	020	City Clerk	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	141	7755.0	7.76	2,400	18,612	$ 3,722.40	NONE PROPOSED	141	7755.0	7.76	2,400	18612	18612	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Vineland Town Hall	020	City Clerk	2X2 Troffers/2-T12 Lamps/Magnetic Ballasts	25	2140.0	2.14	2,400	5,136	$ 1,027.20	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	25	1267.5	1.27	2,400	3042	3042	NONE PROPOSED	0	2,094	-	0.87	2,094	$ 418.80	55	10	40	0	0	105	2625
	Vineland Town Hall	020	City Counsel	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	75	4125.0	4.13	2,400	9,900	$ 1,980.00	NONE PROPOSED	75	4125.0	4.13	2,400	9900	9900	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0
	Vineland Town Hall	020	Community Development	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	48	2640.0	2.64	2,400	6,336	$ 1,267.20	NONE PROPOSED	48	2640.0	2.64	2,400	6336	6336	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0	0

ATTACHMENT A

Lighting Spreadsheets

Seq. #	Building	Floor #	Location/Room #	Existing Fixture/Lamp & Ballast Description	Exist. Qty of Fixtures	Exist. Watts	Exist. kW Base	Oper. Hrs.	Exist. kWh	Annual Cost of Energy Existing	Proposed Replacement Solution	Prop. Qty of Fixtures	Prop. Watts	Prop. kW Base	Prop. Oper. Hrs. w/ Sensors	Prop. kWh w/o Sensors	Prop. kWh w/ Sensors	Proposed Occupancy Sensor	Sensor Qtys	Total kWh Saved Lighting Only	kWh Saved Sensors Only	Total kW Saved	Total kWh Saved	Energy Cost Savings	Ballast/Fixture/Reflector	Bulb	Labor	OS Cost	OS Labor	Subtotal	Total
	Vineland Town Hall	020	Electrical/Mechanical Room	42W CFL	2	98.0	0.10	500	49	$ 9.80	NONE PROPOSED	2	98.0	0.10	375	49	37	Automatic Wall Switch Occupancy Sensor	1	-	12.25	-	12	$ 2.45	0	0	0	103	73.5	0	0
	Vineland Town Hall	020	Entryway	300W Incandescent Fixture	2	600.0	0.60	2,400	1,440	$ 288.00	Replace 300W Incandescent Fixture with 65W CFL	2	130.0	0.13	2,400	312	312	NONE PROPOSED	0	1,128	-	0.47	1,128	$ 225.60	0	25	20	0	0	45	90
	Vineland Town Hall	020	Entryway	400W Pendant Mount Metal Halide	27	12366.0	12.37	2,400	29,678	$ 5,935.68	NONE PROPOSED	27	12366.0	12.37	2,400	29678	29678	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	020	Entryway	Pendant Mounted 42W CFL Fixture	80	3920.0	3.92	2,400	9,408	$ 1,881.60	NONE PROPOSED	80	3920.0	3.92	2,400	9408	9408	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	020	Men's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	020	Women's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	030	3F	1X4 Troffers/2-T12 Lamps/Magnetic Ballasts	2	171.2	0.17	2,400	411	$ 82.18	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	2	101.4	0.10	2,400	243	243	NONE PROPOSED	0	168	-	0.07	168	$ 33.50	55	10	40	0	0	105	210
	Vineland Town Hall	030	Break Room	1X4 Suspended Fixtures/2-T8 Lamps/Electronic Ballasts	6	304.2	0.30	500	152	$ 30.42	NONE PROPOSED	6	304.2	0.30	375	152	114	Automatic Wall Switch Occupancy Sensor	1	-	38.03	-	38	$ 7.61	0	0	0	103	73.5	0	0
	Vineland Town Hall	030	Electrical/Mechanical Room	42W CFL	2	98.0	0.10	500	49	$ 9.80	NONE PROPOSED	2	98.0	0.10	375	49	37	Automatic Wall Switch Occupancy Sensor	1	-	12.25	-	12	$ 2.45	0	0	0	103	73.5	0	0
	Vineland Town Hall	030	Entryway	Pendant Mounted 42W CFL Fixture	110	5390.0	5.39	2,400	12,936	$ 2,587.20	NONE PROPOSED	110	5390.0	5.39	2,400	12936	12936	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	030	Entryway	300W Incandescent Fixture	40	12000.0	12.00	2,400	28,800	$ 5,760.00	Replace 300W Incandescent Fixture with 65W CFL	40	2600.0	2.60	2,400	6240	6240	NONE PROPOSED	0	22,560	-	9.40	22,560	$ 4,512.00	0	25	20	0	0	45	1800
	Vineland Town Hall	030	Hallway	1X4 Suspended Fixtures/2-T8 Lamps/Electronic Ballasts	2	101.4	0.10	2,400	243	$ 48.67	NONE PROPOSED	2	101.4	0.10	2,400	243	243	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	030	IS	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	118	6490.0	6.49	2,400	15,576	$ 3,115.20	NONE PROPOSED	118	6490.0	6.49	2,400	15576	15576	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	030	IS	2X2 Troffers/2-T12 Lamps/Magnetic Ballasts	24	2054.4	2.05	2,400	4,931	$ 986.11	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	24	1216.8	1.22	2,400	2920	2920	NONE PROPOSED	0	2,010	-	0.84	2,010	$ 402.05	55	10	40	0	0	105	2520
	Vineland Town Hall	030	LNI	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	146	8030.0	8.03	2,400	19,272	$ 3,854.40	NONE PROPOSED	146	8030.0	8.03	2,400	19272	19272	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	030	LNI	2X2 Troffers/2-T12 Lamps/Magnetic Ballasts	12	1027.2	1.03	2,400	2,465	$ 493.06	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	12	608.4	0.61	2,400	1460	1460	NONE PROPOSED	0	1,005	-	0.42	1,005	$ 201.02	55	10	40	0	0	105	1260
	Vineland Town Hall	030	Men's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	030	Women's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	040	301	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	16	880.0	0.88	2,400	2,112	$ 422.40	NONE PROPOSED	16	880.0	0.88	2,400	2112	2112	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Break Room	1X4 Suspended Fixtures/2-T8 Lamps/Electronic Ballasts	6	304.2	0.30	2,400	730	$ 146.02	NONE PROPOSED	6	304.2	0.30	2,400	730	730	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Conference Room	2X4 Troffers/4-T8 Lamps/Electronic Ballasts	12	1344.0	1.34	2,400	3,226	$ 645.12	NONE PROPOSED	12	1344.0	1.34	2,400	3226	3226	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Electrical/Mechanical Room	42W CFL	2	98.0	0.10	500	49	$ 9.80	NONE PROPOSED	2	98.0	0.10	375	49	37	Automatic Wall Switch Occupancy Sensor	1	-	12.25	-	12	$ 2.45	0	0	0	103	73.5	0	0
	Vineland Town Hall	040	Engineering	2X4 Troffers/2-T8 Lamps/Electronic Ballasts	174	8821.8	8.82	2,400	21,172	$ 4,234.46	NONE PROPOSED	174	8821.8	8.82	2,400	21172	21172	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Engineering	2X2 Troffers/2-T12 Lamps/Magnetic Ballasts	12	1027.2	1.03	2,400	2,465	$ 493.06	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	12	608.4	0.61	2,400	1460	1460	NONE PROPOSED	0	1,005	-	0.42	1,005	$ 201.02	55	10	40	0	0	105	1260
	Vineland Town Hall	040	Engineering	2X4 Troffers/4-T8 Lamps/Electronic Ballasts	9	1008.0	1.01	2,400	2,419	$ 483.84	NONE PROPOSED	9	1008.0	1.01	2,400	2419	2419	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Engineering	2X4 Troffers/4-T12 Lamps/Magnetic Ballasts	24	4108.8	4.11	2,400	9,861	$ 1,972.22	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	24	2433.6	2.43	2,400	5841	5841	NONE PROPOSED	0	4,020	-	1.68	4,020	$ 804.10	110	20	40	0	0	170	4080
	Vineland Town Hall	040	Entryway	Pendant Mounted 42W CFL Fixture	72	3528.0	3.53	2,400	8,467	$ 1,693.44	NONE PROPOSED	72	3528.0	3.53	2,400	8467	8467	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Fire Department	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	16	880.0	0.88	2,400	2,112	$ 422.40	NONE PROPOSED	16	880.0	0.88	2,400	2112	2112	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Fire Department	1X4 Suspended Fixtures/2-T8 Lamps/Electronic Ballasts	2	101.4	0.10	2,400	243	$ 48.67	NONE PROPOSED	2	101.4	0.10	2,400	243	243	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Hallway	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	2	101.4	0.10	2,400	243	$ 48.67	NONE PROPOSED	2	101.4	0.10	2,400	243	243	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Health Department	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	151	8305.0	8.31	2,400	19,932	$ 3,986.40	NONE PROPOSED	151	8305.0	8.31	2,400	19932	19932	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Men's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	040	Women's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	050	402	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	27	1485.0	1.49	2,400	3,564	$ 712.80	NONE PROPOSED	27	1485.0	1.49	2,400	3564	3564	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	405	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	6	330.0	0.33	2,400	792	$ 158.40	NONE PROPOSED	6	330.0	0.33	2,400	792	792	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Break Room	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	2	101.4	0.10	500	51	$ 10.14	NONE PROPOSED	2	101.4	0.10	375	51	38	Automatic Wall Switch Occupancy Sensor	1	-	12.68	-	13	$ 2.54	0	0	0	103	73.5	0	0
	Vineland Town Hall	050	Break Room	1X4 Troffers/2-T12 Lamps/Magnetic Ballasts	6	513.6	0.51	500	257	$ 51.36	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	6	304.2	0.30	375	152	114	Automatic Wall Switch Occupancy Sensor	1	105	38.03	0.21	143	$ 28.55	55	10	40	103	73.5	105	630
	Vineland Town Hall	050	Conference Room	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	12	660.0	0.66	2,400	1,584	$ 316.80	NONE PROPOSED	12	660.0	0.66	2,400	1584	1584	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Electrical/Mechanical Room	42W CFL	2	98.0	0.10	500	49	$ 9.80	NONE PROPOSED	2	98.0	0.10	375	49	37	Automatic Wall Switch Occupancy Sensor	1	-	12.25	-	12	$ 2.45	0	0	0	103	73.5	0	0
	Vineland Town Hall	050	Entryway	Pendant Mounted 42W CFL Fixture	78	3822.0	3.82	2,400	9,173	$ 1,834.56	NONE PROPOSED	78	3822.0	3.82	2,400	9173	9173	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Hallway	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	2	101.4	0.10	2,400	243	$ 48.67	NONE PROPOSED	2	101.4	0.10	2,400	243	243	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Hallway	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	22	1210.0	1.21	2,400	2,904	$ 580.80	NONE PROPOSED	22	1210.0	1.21	2,400	2904	2904	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Mayors Office	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	28	1540.0	1.54	2,400	3,696	$ 739.20	NONE PROPOSED	28	1540.0	1.54	2,400	3696	3696	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Mayors Office	2X2 Troffers/2-T12 Lamps/Magnetic Ballasts	8	684.8	0.68	2,400	1,644	$ 328.70	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	8	405.6	0.41	2,400	973	973	NONE PROPOSED	0	670	-	0.28	670	$ 134.02	55	10	40	0	0	105	840

ATTACHMENT A

Lighting Spreadsheets

Seq. #	Building	Floor #	Location/Room #	Existing Fixture/Lamp & Ballast Description	Exist. Qty of Fixtures	Exist. Watts	Exist. kW Base	Oper. Hrs.	Exist. kWh	Annual Cost of Energy Existing	Proposed Replacement Solution	Prop. Qty of Fixtures	Prop. Watts	Prop. kW Base	Prop. Oper. Hrs. w/ Sensors	Prop. kWh w/o Sensors	Prop. kWh w/ Sensors	Proposed Occupancy Sensor	Sensor Qtys	Total kWh Saved Lighting Only	kWh Saved Sensors Only	Total kW Saved	Total kWh Saved	Energy Cost Savings	Ballast/Fixture/Reflector	Bulb	Labor	OS Cost	OS Labor	Subtotal	Total
	Vineland Town Hall	050	Mayors Office	1X4 Troffers/2-T12 Lamps/Magnetic Ballasts	1	85.6	0.09	2,400	205	$ 41.09	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	1	50.7	0.05	2,400	122	122	NONE PROPOSED	0	84	-	0.03	84	$ 16.75	55	10	40	0	0	105	105
	Vineland Town Hall	050	Men's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	500	76	76	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Office	2X4 Troffers/4-T8 Lamps/Electronic Ballasts	266	29792.0	29.79	2,400	71,501	$ 14,300.16	NONE PROPOSED	266	29792.0	29.79	2,400	71501	71501	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Personel Office	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	10	550.0	0.55	2,400	1,320	$ 264.00	NONE PROPOSED	10	550.0	0.55	2,400	1320	1320	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Personel Supervisor	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	6	330.0	0.33	2,400	792	$ 158.40	NONE PROPOSED	6	330.0	0.33	2,400	792	792	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Storage	2X2 Troffers/2-T12 Lamps/Magnetic Ballasts	16	1369.6	1.37	500	685	$ 136.96	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	16	811.2	0.81	375	406	304	Automatic Wall Switch Occupancy Sensor	0	279	101.40	0.56	381	$ 76.12	55	10	40	0	0	105	1680
	Vineland Town Hall	050	Women's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	060	Electrical/Mechanical Room	42W CFL	2	98.0	0.10	500	49	$ 9.80	NONE PROPOSED	2	98.0	0.10	375	49	37	Automatic Wall Switch Occupancy Sensor	1	-	12.25	-	12	$ 2.45	0	0	0	103	73.5	0	0
	Vineland Town Hall	060	Elevator Room	1X4 Troffers/2-T12 Lamps/Magnetic Ballasts	7	599.2	0.60	500	300	$ 59.92	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	7	354.9	0.35	375	177	133	Automatic Wall Switch Occupancy Sensor	1	122	44.36	0.24	167	$ 33.30	55	10	40	103	73.5	105	735
	Vineland Town Hall	060	Exterior	100W Incandescent Fixture	2	200.0	0.20	2,400	480	$ 96.00	Replace 100W Incandescent Fixture with 25W CFL	2	50.0	0.05	2,400	120	120	NONE PROPOSED	0	360	-	0.15	360	$ 72.00	0	7	20	0	0	27	54
	Vineland Town Hall	060	GC	100W Incandescent Fixture	2	200.0	0.20	2,400	480	$ 96.00	Replace 100W Incandescent Fixture with 25W CFL	2	50.0	0.05	2,400	120	120	NONE PROPOSED	0	360	-	0.15	360	$ 72.00	0	7	20	0	0	27	54
	Vineland Town Hall	060	Hallway	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	7	385.0	0.39	2,400	924	$ 184.80	NONE PROPOSED	7	385.0	0.39	2,400	924	924	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	060	Hallway	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	2	101.4	0.10	2,400	243	$ 48.67	NONE PROPOSED	2	101.4	0.10	2,400	243	243	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	060	Hallway	2X2 Troffers/2-T12 Lamps/Magnetic Ballasts	1	85.6	0.09	2,400	205	$ 41.09	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	1	50.7	0.05	2,400	122	122	NONE PROPOSED	0	84	-	0.03	84	$ 16.75	55	10	40	0	0	105	105
	Vineland Town Hall	060	ITS	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	2,400	365	$ 73.01	NONE PROPOSED	3	152.1	0.15	2,400	365	365	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	060	Men's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	040	Hallway	Incandescent Exit Sign	1	16.0	0.02	2,400	38	$ 7.68	Replace Incandescent Exit Sign with Energy Efficient LED Exit Sign	1	5.0	0.01	2,400	12	12	NONE PROPOSED	0	26	-	0.01	26	$ 5.28	0	61	63	0	0	124	124
	Vineland Town Hall	060	Hallway	Incandescent Exit Sign	1	16.0	0.02	2,400	38	$ 7.68	Replace Incandescent Exit Sign with Energy Efficient LED Exit Sign	1	5.0	0.01	2,400	12	12	NONE PROPOSED	0	26	-	0.01	26	$ 5.28	0	61	63	0	0	124	124
	Vineland Town Hall	060	Women's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
					2,953		222.00		522,918			2,953		189.83	110518	447,628				75,290		32.17	75,795	$15,159	$2,523	$4,509	$2,591			$9,623	$110,518

APPENDIX D

LIGHTING SPREADSHEET - OPTION 2

ATTACHMENT A

Lighting Spreadsheets

Seq. #	Building	Floor #	Location/Room #	Existing Fixture/Lamp & Ballast Description	Exist. Qty of Fixtures	Exist. Watts	Exist. kW Base	Oper. Hrs.	Exist. kWh	Annual Cost of Energy Existing	Proposed Replacement Solution	Prop. Qty of Fixtures	Prop. Watts	Prop. kW Base	Prop. Oper. Hrs. w/ Sensors	Prop. kWh w/o Sensors	Prop. kWh w/ Sensors	Proposed Occupancy Sensor	Sensor Qtys	Total kWh Saved Lighting Only	kWh Saved Sensors Only	Total kW Saved	Total kWh Saved	Energy Cost Savings	Ballast/Fixture/Reflector	Bulb	Labor	OS Cost	OS Labor	Subtotal	Total
	Police Station	000	Basement Area	2X4 Troffers/4-T8 Lamps/Electronic Ballasts	8	896.0	0.90	2,400	2,150	$ 430.08	NONE PROPOSED	8	896.0	0.90	2,400	2150	2150	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Police Station	000	Basement Area	2X4 Troffers/4-T12 Lamps/Magnetic Ballasts	5	856.0	0.86	2,400	2,054	$ 410.88	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	5	507.0	0.51	2,400	1217	1217	NONE PROPOSED	0	838	-	0.35	838	$ 167.52	110	20	40	0	0	170	850
	Police Station	000	Basement Area	1x8 2-T12 Lamps/Magnetic Ballasts	1	172.0	0.17	2,400	413	$ 82.56	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	1	112.0	0.11	2,400	269	269	NONE PROPOSED	0	144	-	0.06	144	$ 28.80	110	20	40	0	0	170	170
	Police Station	000	Basement Area	42W CFL	18	882.0	0.88	2,400	2,117	$ 423.36	NONE PROPOSED	18	882.0	0.88	2,400	2117	2117	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Police Station	000	Basement Area	150W Incandescent Fixture	25	3750.0	3.75	2,400	9,000	$ 1,800.00	Replace 150W Incandescent Fixture with 25W CFL	25	625.0	0.63	2,400	1500	1500	NONE PROPOSED	0	7,500	-	3.13	7,500	$ 1,500.00	0	7	20	0	0	27	675
	Police Station	000	Basement Area	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	44	2230.8	2.23	2,400	5,354	$ 1,070.78	NONE PROPOSED	44	2230.8	2.23	2,400	5354	5354	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Police Station	000	Basement Area	40W Incandescent Fixture	17	680.0	0.68	2,400	1,632	$ 326.40	Replace 40W Incandescent Fixture with 13W CFL	17	221.0	0.22	2,400	530	530	NONE PROPOSED	0	1,102	-	0.46	1,102	$ 220.32	0	5	20	0	0	25	425
	Police Station	000	Basement Area	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	12	660.0	0.66	2,400	1,584	$ 316.80	NONE PROPOSED	12	660.0	0.66	2,400	1584	1584	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Police Station	000	Basement Area	1x8 2-T8 Lamps/Electronic Ballasts	12	1344.0	1.34	2,400	3,226	$ 645.12	NONE PROPOSED	12	1344.0	1.34	2,400	3226	3226	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Police Station	000	Basement Area	2X4 Troffers/2-T12 Lamps/Magnetic Ballasts	60	5136.0	5.14	2,400	12,326	$ 2,465.28	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	60	3042.0	3.04	2,400	7301	7301	NONE PROPOSED	0	5,026	-	2.09	5,026	$ 1,005.12	55	10	40	0	0	105	6300
	Police Station	000	Exterior	2X4 Troffers/4-T8 Lamps/Electronic Ballasts	7	784.0	0.78	2,400	1,882	$ 376.32	NONE PROPOSED	7	784.0	0.78	2,400	1882	1882	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Police Station	010	First Floor Area	2X4 Troffers/4-T8 Lamps/Electronic Ballasts	45	5040.0	5.04	2,400	12,096	$ 2,419.20	NONE PROPOSED	45	5040.0	5.04	2,400	12096	12096	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Police Station	010	First Floor Area	42W CFL	39	1911.0	1.91	2,400	4,586	$ 917.28	NONE PROPOSED	39	1911.0	1.91	2,400	4586	4586	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Police Station	010	First Floor Area	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	64	3244.8	3.24	2,400	7,788	$ 1,557.50	NONE PROPOSED	64	3244.8	3.24	2,400	7788	7788	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Police Station	010	First Floor Area	40W Incandescent Fixture	9	360.0	0.36	2,400	864	$ 172.80	Replace 40W Incandescent Fixture with 13W CFL	9	117.0	0.12	2,400	281	281	NONE PROPOSED	0	583	-	0.24	583	$ 116.64	0	5	20	0	0	25	225
	Police Station	010	First Floor Area	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	21	1155.0	1.16	2,400	2,772	$ 554.40	NONE PROPOSED	21	1155.0	1.16	2,400	2772	2772	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Police Station	010	First Floor Area	1X4 Troffers/2-T12 Lamps/Magnetic Ballasts	83	7104.8	7.10	2,400	17,052	$ 3,410.30	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	83	4208.1	4.21	2,400	10099	10099	NONE PROPOSED	0	6,952	-	2.90	6,952	$ 1,390.42	55	10	40	0	0	105	8715
	Vineland Town Hall	000	Basement Area	2X4 Troffers/2-T12 Lamps/Magnetic Ballasts	49	4194.4	4.19	2,400	10,067	$ 2,013.31	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	49	2484.3	2.48	2,400	5962	5962	NONE PROPOSED	0	4,104	-	1.71	4,104	$ 820.85	55	10	40	0	0	105	5145
	Vineland Town Hall	000	Basement Area	2X4 Troffers/2-T8 Lamps/Electronic Ballasts	24	1216.8	1.22	2,400	2,920	$ 584.06	NONE PROPOSED	24	1216.8	1.22	2,400	2920	2920	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	000	Basement Area	1X4 Fixtures/1-T8 Lamps/Electronic Ballasts	1	25.4	0.03	2,400	61	$ 12.19	NONE PROPOSED	1	25.4	0.03	2,400	61	61	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	000	Basement Area	Incandescent Exit Sign	3	48.0	0.05	2,400	115	$ 23.04	Replace Incandescent Exit Sign with Energy Efficient LED Exit Sign	3	15.0	0.02	2,400	36	36	NONE PROPOSED	0	79	-	0.03	79	$ 15.84	0	61	63	0	0	124	372
	Vineland Town Hall	000	Elevator 1	1-T12 Lamp/Magnetic Ballast	8	342.4	0.34	2,400	822	$ 164.35	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	8	203.2	0.20	2,400	488	488	NONE PROPOSED	0	334	-	0.14	334	$ 66.82	27.5	5	40	0	0	72.5	580
	Vineland Town Hall	000	Elevator 2	1-T12 Lamp/Magnetic Ballast	8	342.4	0.34	2,400	822	$ 164.35	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	8	203.2	0.20	2,400	488	488	NONE PROPOSED	0	334	-	0.14	334	$ 66.82	27.5	5	40	0	0	72.5	580
	Vineland Town Hall	000	Elevator 3	1-T12 Lamp/Magnetic Ballast	8	342.4	0.34	2,400	822	$ 164.35	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	8	203.2	0.20	2,400	488	488	NONE PROPOSED	0	334	-	0.14	334	$ 66.82	27.5	5	40	0	0	72.5	580
	Vineland Town Hall	010	Boiler Room	2X4 Troffers/2-T8 Lamps/Electronic Ballasts	2	101.4	0.10	2,400	243	$ 48.67	NONE PROPOSED	2	101.4	0.10	2,400	243	243	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	010	Collections Department	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	120	6600.0	6.60	2,400	15,840	$ 3,168.00	NONE PROPOSED	120	6600.0	6.60	2,400	15840	15840	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	010	Collections Department	2X2 Troffers/2-T12 Lamps/Magnetic Ballasts	8	684.8	0.68	2,400	1,644	$ 328.70	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	8	405.6	0.41	2,400	973	973	NONE PROPOSED	0	670	-	0.28	670	$ 134.02	55	10	40	0	0	105	840
	Vineland Town Hall	010	Collections Department	42W CFL	1	49.0	0.05	2,400	118	$ 23.52	NONE PROPOSED	1	49.0	0.05	2,400	118	118	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	010	Electrical/Mechanical Room	42W CFL	2	98.0	0.10	2,400	235	$ 47.04	NONE PROPOSED	2	98.0	0.10	2,400	235	235	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	010	Entryway	Pendant Mounted 42W CFL Fixture	128	6272.0	6.27	2,400	15,053	$ 3,010.56	NONE PROPOSED	128	6272.0	6.27	2,400	15053	15053	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	010	Entryway	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	2,400	365	$ 73.01	NONE PROPOSED	3	152.1	0.15	2,400	365	365	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	010	Exterior	Flood Light (Assume 400W MH)	9	4122.0	4.12	2,400	9,893	$ 1,978.56	NONE PROPOSED	9	4122.0	4.12	2,400	9893	9893	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	010	Exterior	42W CFL	22	1078.0	1.08	2,400	2,587	$ 517.44	NONE PROPOSED	22	1078.0	1.08	2,400	2587	2587	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	010	Exterior	Pole Mounted Light (Assume 400W MH)	11	5038.0	5.04	2,400	12,091	$ 2,418.24	NONE PROPOSED	11	5038.0	5.04	2,400	12091	12091	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	010	Loading Dock Area	2X4 Troffers/2-T8 Lamps/Electronic Ballasts	1	50.7	0.05	2,400	122	$ 24.34	NONE PROPOSED	1	50.7	0.05	2,400	122	122	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	010	Loading Dock Area	2X4 Troffers/2-T12 Lamps/Magnetic Ballasts	3	256.8	0.26	2,400	616	$ 123.26	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	3	152.1	0.15	2,400	365	365	NONE PROPOSED	0	251	-	0.10	251	$ 50.26	55	10	40	0	0	105	315
	Vineland Town Hall	010	Men's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	010	Tax Department	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	155	8525.0	8.53	2,400	20,460	$ 4,092.00	NONE PROPOSED	155	8525.0	8.53	2,400	20460	20460	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	010	Tax Department	2X2 Troffers/2-T12 Lamps/Magnetic Ballasts	1	85.6	0.09	2,400	205	$ 41.09	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	1	50.7	0.05	2,400	122	122	NONE PROPOSED	0	84	-	0.03	84	$ 16.75	55	10	40	0	0	105	105
	Vineland Town Hall	010	Women's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	020	City Clerk	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	141	7755.0	7.76	2,400	18,612	$ 3,722.40	NONE PROPOSED	141	7755.0	7.76	2,400	18612	18612	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	020	City Clerk	2X2 Troffers/2-T12 Lamps/Magnetic Ballasts	25	2140.0	2.14	2,400	5,136	$ 1,027.20	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	25	1267.5	1.27	2,400	3042	3042	NONE PROPOSED	0	2,094	-	0.87	2,094	$ 418.80	55	10	40	0	0	105	2625
	Vineland Town Hall	020	City Counsel	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	75	4125.0	4.13	2,400	9,900	$ 1,980.00	NONE PROPOSED	75	4125.0	4.13	2,400	9900	9900	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	020	Community Development	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	48	2640.0	2.64	2,400	6,336	$ 1,267.20	NONE PROPOSED	48	2640.0	2.64	2,400	6336	6336	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0

ATTACHMENT A

Lighting Spreadsheets

Seq. #	Building	Floor #	Location/Room #	Existing Fixture/Lamp & Ballast Description	Exist. Qty of Fixtures	Exist. Watts	Exist. kW Base	Oper. Hrs.	Exist. kWh	Annual Cost of Energy Existing	Proposed Replacement Solution	Prop. Qty of Fixtures	Prop. Watts	Prop. kW Base	Prop. Oper. Hrs. w/ Sensors	Prop. kWh w/o Sensors	Prop. kWh w/ Sensors	Proposed Occupancy Sensor	Sensor Qtys	Total kWh Saved Lighting Only	kWh Saved Sensors Only	Total kW Saved	Total kWh Saved	Energy Cost Savings	Ballast/Fixture/Reflector	Bulb	Labor	OS Cost	OS Labor	Subtotal	Total
	Vineland Town Hall	020	Electrical/Mechanical Room	42W CFL	2	98.0	0.10	500	49	$ 9.80	NONE PROPOSED	2	98.0	0.10	375	49	37	Automatic Wall Switch Occupancy Sensor	1	-	12.25	-	12	$ 2.45	0	0	0	103	73.5	0	0
	Vineland Town Hall	020	Entryway	300W Incandescent Fixture	2	600.0	0.60	2,400	1,440	$ 288.00	Replace 300W Incandescent Fixture with 65W CFL	2	130.0	0.13	2,400	312	312	NONE PROPOSED	0	1,128	-	0.47	1,128	$ 225.60	0	25	20	0	0	45	90
	Vineland Town Hall	020	Entryway	400W Pendant Mount Metal Halide	27	12366.0	12.37	2,400	29,678	$ 5,935.68	NONE PROPOSED	27	12366.0	12.37	2,400	29678	29678	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	020	Entryway	Pendant Mounted 42W CFL Fixture	80	3920.0	3.92	2,400	9,408	$ 1,881.60	NONE PROPOSED	80	3920.0	3.92	2,400	9408	9408	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	020	Men's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	020	Women's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	030	3F	1X4 Troffers/2-T12 Lamps/Magnetic Ballasts	2	171.2	0.17	2,400	411	$ 82.18	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	2	101.4	0.10	2,400	243	243	NONE PROPOSED	0	168	-	0.07	168	$ 33.50	55	10	40	0	0	105	210
	Vineland Town Hall	030	Break Room	1X4 Suspended Fixtures/2-T8 Lamps/Electronic Ballasts	6	304.2	0.30	500	152	$ 30.42	NONE PROPOSED	6	304.2	0.30	375	152	114	Automatic Wall Switch Occupancy Sensor	1	-	38.03	-	38	$ 7.61	0	0	0	103	73.5	0	0
	Vineland Town Hall	030	Electrical/Mechanical Room	42W CFL	2	98.0	0.10	500	49	$ 9.80	NONE PROPOSED	2	98.0	0.10	375	49	37	Automatic Wall Switch Occupancy Sensor	1	-	12.25	-	12	$ 2.45	0	0	0	103	73.5	0	0
	Vineland Town Hall	030	Entryway	Pendant Mounted 42W CFL Fixture	110	5390.0	5.39	2,400	12,936	$ 2,587.20	NONE PROPOSED	110	5390.0	5.39	2,400	12936	12936	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	030	Entryway	300W Incandescent Fixture	40	12000.0	12.00	2,400	28,800	$ 5,760.00	Replace 300W Incandescent Fixture with 65W CFL	40	2600.0	2.60	2,400	6240	6240	NONE PROPOSED	0	22,560	-	9.40	22,560	$ 4,512.00	0	25	20	0	0	45	1800
	Vineland Town Hall	030	Hallway	1X4 Suspended Fixtures/2-T8 Lamps/Electronic Ballasts	2	101.4	0.10	2,400	243	$ 48.67	NONE PROPOSED	2	101.4	0.10	2,400	243	243	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	030	IS	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	118	6490.0	6.49	2,400	15,576	$ 3,115.20	NONE PROPOSED	118	6490.0	6.49	2,400	15576	15576	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	030	IS	2X2 Troffers/2-T12 Lamps/Magnetic Ballasts	24	2054.4	2.05	2,400	4,931	$ 986.11	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	24	1216.8	1.22	2,400	2920	2920	NONE PROPOSED	0	2,010	-	0.84	2,010	$ 402.05	55	10	40	0	0	105	2520
	Vineland Town Hall	030	LNI	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	146	8030.0	8.03	2,400	19,272	$ 3,854.40	NONE PROPOSED	146	8030.0	8.03	2,400	19272	19272	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	030	LNI	2X2 Troffers/2-T12 Lamps/Magnetic Ballasts	12	1027.2	1.03	2,400	2,465	$ 493.06	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	12	608.4	0.61	2,400	1460	1460	NONE PROPOSED	0	1,005	-	0.42	1,005	$ 201.02	55	10	40	0	0	105	1260
	Vineland Town Hall	030	Men's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	030	Women's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	040	301	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	16	880.0	0.88	2,400	2,112	$ 422.40	NONE PROPOSED	16	880.0	0.88	2,400	2112	2112	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Break Room	1X4 Suspended Fixtures/2-T8 Lamps/Electronic Ballasts	6	304.2	0.30	2,400	730	$ 146.02	NONE PROPOSED	6	304.2	0.30	2,400	730	730	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Conference Room	2X4 Troffers/4-T8 Lamps/Electronic Ballasts	12	1344.0	1.34	2,400	3,226	$ 645.12	NONE PROPOSED	12	1344.0	1.34	2,400	3226	3226	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Electrical/Mechanical Room	42W CFL	2	98.0	0.10	500	49	$ 9.80	NONE PROPOSED	2	98.0	0.10	375	49	37	Automatic Wall Switch Occupancy Sensor	1	-	12.25	-	12	$ 2.45	0	0	0	103	73.5	0	0
	Vineland Town Hall	040	Engineering	2X4 Troffers/2-T8 Lamps/Electronic Ballasts	174	8821.8	8.82	2,400	21,172	$ 4,234.46	NONE PROPOSED	174	8821.8	8.82	2,400	21172	21172	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Engineering	2X2 Troffers/2-T12 Lamps/Magnetic Ballasts	12	1027.2	1.03	2,400	2,465	$ 493.06	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	12	608.4	0.61	2,400	1460	1460	NONE PROPOSED	0	1,005	-	0.42	1,005	$ 201.02	55	10	40	0	0	105	1260
	Vineland Town Hall	040	Engineering	2X4 Troffers/4-T8 Lamps/Electronic Ballasts	9	1008.0	1.01	2,400	2,419	$ 483.84	NONE PROPOSED	9	1008.0	1.01	2,400	2419	2419	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Engineering	2X4 Troffers/4-T12 Lamps/Magnetic Ballasts	24	4108.8	4.11	2,400	9,861	$ 1,972.22	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	24	2433.6	2.43	2,400	5841	5841	NONE PROPOSED	0	4,020	-	1.68	4,020	$ 804.10	110	20	40	0	0	170	4080
	Vineland Town Hall	040	Entryway	Pendant Mounted 42W CFL Fixture	72	3528.0	3.53	2,400	8,467	$ 1,693.44	NONE PROPOSED	72	3528.0	3.53	2,400	8467	8467	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Fire Department	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	16	880.0	0.88	2,400	2,112	$ 422.40	NONE PROPOSED	16	880.0	0.88	2,400	2112	2112	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Fire Department	1X4 Suspended Fixtures/2-T8 Lamps/Electronic Ballasts	2	101.4	0.10	2,400	243	$ 48.67	NONE PROPOSED	2	101.4	0.10	2,400	243	243	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Hallway	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	2	101.4	0.10	2,400	243	$ 48.67	NONE PROPOSED	2	101.4	0.10	2,400	243	243	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Health Department	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	151	8305.0	8.31	2,400	19,932	$ 3,986.40	NONE PROPOSED	151	8305.0	8.31	2,400	19932	19932	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	040	Men's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	040	Women's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	050	402	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	27	1485.0	1.49	2,400	3,564	$ 712.80	NONE PROPOSED	27	1485.0	1.49	2,400	3564	3564	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	405	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	6	330.0	0.33	2,400	792	$ 158.40	NONE PROPOSED	6	330.0	0.33	2,400	792	792	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Break Room	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	2	101.4	0.10	500	51	$ 10.14	NONE PROPOSED	2	101.4	0.10	375	51	38	Automatic Wall Switch Occupancy Sensor	1	-	12.68	-	13	$ 2.54	0	0	0	103	73.5	0	0
	Vineland Town Hall	050	Break Room	1X4 Troffers/2-T12 Lamps/Magnetic Ballasts	6	513.6	0.51	500	257	$ 51.36	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	6	304.2	0.30	375	152	114	Automatic Wall Switch Occupancy Sensor	1	105	38.03	0.21	143	$ 28.55	55	10	40	103	73.5	105	630
	Vineland Town Hall	050	Conference Room	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	12	660.0	0.66	2,400	1,584	$ 316.80	NONE PROPOSED	12	660.0	0.66	2,400	1584	1584	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Electrical/Mechanical Room	42W CFL	2	98.0	0.10	500	49	$ 9.80	NONE PROPOSED	2	98.0	0.10	375	49	37	Automatic Wall Switch Occupancy Sensor	1	-	12.25	-	12	$ 2.45	0	0	0	103	73.5	0	0
	Vineland Town Hall	050	Entryway	Pendant Mounted 42W CFL Fixture	78	3822.0	3.82	2,400	9,173	$ 1,834.56	NONE PROPOSED	78	3822.0	3.82	2,400	9173	9173	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Hallway	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	2	101.4	0.10	2,400	243	$ 48.67	NONE PROPOSED	2	101.4	0.10	2,400	243	243	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Hallway	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	22	1210.0	1.21	2,400	2,904	$ 580.80	NONE PROPOSED	22	1210.0	1.21	2,400	2904	2904	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Mayors Office	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	28	1540.0	1.54	2,400	3,696	$ 739.20	NONE PROPOSED	28	1540.0	1.54	2,400	3696	3696	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Mayors Office	2X2 Troffers/2-T12 Lamps/Magnetic Ballasts	8	684.8	0.68	2,400	1,644	$ 328.70	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	8	405.6	0.41	2,400	973	973	NONE PROPOSED	0	670	-	0.28	670	$ 134.02	55	10	40	0	0	105	840

ATTACHMENT A

Lighting Spreadsheets

Seq. #	Building	Floor #	Location/Room #	Existing Fixture/Lamp & Ballast Description	Exist. Qty of Fixtures	Exist. Watts	Exist. kW Base	Oper. Hrs.	Exist. kWh	Annual Cost of Energy Existing	Proposed Replacement Solution	Prop. Qty of Fixtures	Prop. Watts	Prop. kW Base	Prop. Oper. Hrs. w/ Sensors	Prop. kWh w/o Sensors	Prop. kWh w/ Sensors	Proposed Occupancy Sensor	Sensor Qtys	Total kWh Saved Lighting Only	kWh Saved Sensors Only	Total kW Saved	Total kWh Saved	Energy Cost Savings	Ballast/Fixture/Reflector	Bulb	Labor	OS Cost	OS Labor	Subtotal	Total
	Vineland Town Hall	050	Mayors Office	1X4 Troffers/2-T12 Lamps/Magnetic Ballasts	1	85.6	0.09	2,400	205	$ 41.09	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	1	50.7	0.05	2,400	122	122	NONE PROPOSED	0	84	-	0.03	84	$ 16.75	55	10	40	0	0	105	105
	Vineland Town Hall	050	Men's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	500	76	76	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Office	2X4 Troffers/4-T8 Lamps/Electronic Ballasts	266	29792.0	29.79	2,400	71,501	$ 14,300.16	NONE PROPOSED	266	29792.0	29.79	2,400	71501	71501	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Personel Office	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	10	550.0	0.55	2,400	1,320	$ 264.00	NONE PROPOSED	10	550.0	0.55	2,400	1320	1320	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Personel Supervisor	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	6	330.0	0.33	2,400	792	$ 158.40	NONE PROPOSED	6	330.0	0.33	2,400	792	792	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	050	Storage	2X2 Troffers/2-T12 Lamps/Magnetic Ballasts	16	1369.6	1.37	500	685	$ 136.96	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	16	811.2	0.81	375	406	304	Automatic Wall Switch Occupancy Sensor	0	279	101.40	0.56	381	$ 76.12	55	10	40	0	0	105	1680
	Vineland Town Hall	050	Women's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	060	Electrical/Mechanical Room	42W CFL	2	98.0	0.10	500	49	$ 9.80	NONE PROPOSED	2	98.0	0.10	375	49	37	Automatic Wall Switch Occupancy Sensor	1	-	12.25	-	12	$ 2.45	0	0	0	103	73.5	0	0
	Vineland Town Hall	060	Elevator Room	1X4 Troffers/2-T12 Lamps/Magnetic Ballasts	7	599.2	0.60	500	300	$ 59.92	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	7	354.9	0.35	375	177	133	Automatic Wall Switch Occupancy Sensor	1	122	44.36	0.24	167	$ 33.30	55	10	40	103	73.5	105	735
	Vineland Town Hall	060	Exterior	100W Incandescent Fixture	2	200.0	0.20	2,400	480	$ 96.00	Replace 100W Incandescent Fixture with 25W CFL	2	50.0	0.05	2,400	120	120	NONE PROPOSED	0	360	-	0.15	360	$ 72.00	0	7	20	0	0	27	54
	Vineland Town Hall	060	GC	100W Incandescent Fixture	2	200.0	0.20	2,400	480	$ 96.00	Replace 100W Incandescent Fixture with 25W CFL	2	50.0	0.05	2,400	120	120	NONE PROPOSED	0	360	-	0.15	360	$ 72.00	0	7	20	0	0	27	54
	Vineland Town Hall	060	Hallway	2X2 Troffers/2-T8 Lamps/Electronic Ballasts	7	385.0	0.39	2,400	924	$ 184.80	NONE PROPOSED	7	385.0	0.39	2,400	924	924	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	060	Hallway	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	2	101.4	0.10	2,400	243	$ 48.67	NONE PROPOSED	2	101.4	0.10	2,400	243	243	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	060	Hallway	2X2 Troffers/2-T12 Lamps/Magnetic Ballasts	1	85.6	0.09	2,400	205	$ 41.09	Replace T12 Lamps with T8 Lamps, Add Reflector Kit & Replace Magnetic Ballast(s) with Electronic Ballast(s)	1	50.7	0.05	2,400	122	122	NONE PROPOSED	0	84	-	0.03	84	$ 16.75	55	10	40	0	0	105	105
	Vineland Town Hall	060	ITS	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	2,400	365	$ 73.01	NONE PROPOSED	3	152.1	0.15	2,400	365	365	NONE PROPOSED	0	-	-	-	-	$ -	0	0	0	0	0	0	0
	Vineland Town Hall	060	Men's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
	Vineland Town Hall	040	Hallway	Incandescent Exit Sign	1	16.0	0.02	2,400	38	$ 7.68	Replace Incandescent Exit Sign with Energy Efficient LED Exit Sign	1	5.0	0.01	2,400	12	12	NONE PROPOSED	0	26	-	0.01	26	$ 5.28	0	61	63	0	0	124	124
	Vineland Town Hall	060	Hallway	Incandescent Exit Sign	1	16.0	0.02	2,400	38	$ 7.68	Replace Incandescent Exit Sign with Energy Efficient LED Exit Sign	1	5.0	0.01	2,400	12	12	NONE PROPOSED	0	26	-	0.01	26	$ 5.28	0	61	63	0	0	124	124
	Vineland Town Hall	060	Women's Restroom	1X4 Fixtures/2-T8 Lamps/Electronic Ballasts	3	152.1	0.15	500	76	$ 15.21	NONE PROPOSED	3	152.1	0.15	375	76	57	Automatic Wall Switch Occupancy Sensor	1	-	19.01	-	19	$ 3.80	0	0	0	103	73.5	0	0
					2,953		222.00		522,918			2,953		194.35	44173	458,476				64,442		27.65	64,947	$12,989	$1,348	$509	$1,249			$3,106	$44,173

APPENDIX E

SOLAR ENERGY FINANCING WORKSHEET

Vineland City Hall

Design Goal: Provide 10% of average annual electricity

Solar Rating (Zip Code: 08362)	4.95 kWh/sq-m/day
Solar Capacity Required	188 kW
Roof Space Needed	18,765 sq-ft
Annual kWh	247,792
Gross System Installation Cost	$1,688,850
Federal Tax Credit	$506,655
Net System installation Cost	$1,182,195
Assumptions	
Annual System Degredation	0.50%
Annual Utility Inflation	3.78%
Federal Tax %	28.00%
State Tax %	7.80%
Annual Maintenance Costs	2%

Year	Utility Price	Solar kWh	Utility Savings	SRECS	Maintenance Costs	Annual Cash Flow	Cummulative Cash Flow	15 year G.O. Bond	Remaining Cash Flow	Plus DSA	Remaining Cash Flow
Install											
1	0.1619	247792.0	$40,117.5	$156,217	($4,956)	$191,378.9	$191,378.9	($106,734.0)	$84,644.9	$42,693.6	$127,338.5
2	0.1680	246553.0	$41,425.8	$151,550	($4,931)	$188,045.0	$379,423.9	($106,734.0)	$272,689.9	$42,693.6	$315,383.5
3	0.1744	245320.3	$42,776.7	$146,977	($4,906)	$184,847.8	$564,271.7	($106,734.0)	$457,537.7	$42,693.6	$500,231.3
4	0.1810	244093.7	$44,171.7	$141,855	($4,882)	$181,145.1	$745,416.8	($106,734.0)	$638,682.8	$42,693.6	$681,376.4
5	0.1878	242873.2	$45,612.2	$136,912	($4,857)	$177,666.4	$923,083.2	($106,734.0)	$816,349.2	$42,693.6	$859,042.8
6	0.1949	241658.8	$47,099.7	$132,140	($4,833)	$174,406.8	$1,097,490.0	($106,734.0)	$990,756.0	$42,693.6	$1,033,449.6
7	0.2023	240450.5	$48,635.6	$127,535	($4,809)	$171,361.8	$1,268,851.8	($106,734.0)	$1,162,117.8	$42,693.6	$1,204,811.4
8	0.2099	239248.3	$50,221.7	$123,091	($4,785)	$168,527.3	$1,437,379.1	($106,734.0)	$1,330,645.1	$42,693.6	$1,373,338.7
9	0.2178	238052.1	$51,859.5	$118,801	($4,761)	$165,899.3	$1,603,278.4	($106,734.0)	$1,496,544.4	$42,693.6	$1,539,238.0
10	0.2261	236861.8	$53,550.7	$114,661	($4,737)	$163,474.1	$1,766,752.5	($106,734.0)	$1,660,018.5	$42,693.6	$1,702,712.1
11	0.2346	235677.5	$55,297.0	$110,665	($4,714)	$161,248.2	$1,928,000.6	($106,734.0)	$1,821,266.6	$42,693.6	$1,863,960.2
12	0.2435	234499.1	$57,100.3	$106,808	($4,690)	$159,218.4	$2,087,219.0	($106,734.0)	$1,980,485.0	$42,693.6	$2,023,178.6
13	0.2527	233326.6	$58,962.4	$103,086	($4,667)	$157,381.7	$2,244,600.7	($106,734.0)	$2,137,866.7	$42,693.6	$2,180,560.3
14	0.2623	232160.0	$60,885.2	$99,493	($4,643)	$155,735.3	$2,400,336.0	($106,734.0)	$2,293,602.0	$42,693.6	$2,336,295.6
15	0.2722	230999.2	$62,870.7	$96,026	($4,620)	$154,276.7	$2,554,612.7	($106,734.0)	$2,447,878.7	$42,693.6	$2,490,572.3
16	0.2825	229844.2	$64,921.0	0	($4,597)	$60,324.1	$2,614,936.8		$2,614,936.8		$2,614,936.8
17	0.2931	228694.9	$67,038.2	0	($4,574)	$62,464.3	$2,677,401.1		$2,677,401.1		$2,677,401.1
18	0.3042	227551.5	$69,224.3	0	($4,551)	$64,673.3	$2,742,074.4		$2,742,074.4		$2,742,074.4
19	0.3157	226413.7	$71,481.8	0	($4,528)	$66,953.5	$2,809,027.9		$2,809,027.9		$2,809,027.9
20	0.3276	225281.6	$73,812.9	0	($4,506)	$69,307.3	$2,878,335.2		$2,878,335.2		$2,878,335.2
21	0.3400	224155.2	$76,220.0	0	($4,483)	$71,736.9	$2,950,072.1		$2,950,072.1		$2,950,072.1
22	0.3529	223034.5	$78,705.6	0	($4,461)	$74,244.9	$3,024,317.0		$3,024,317.0		$3,024,317.0
23	0.3662	221919.3	$81,272.3	0	($4,438)	$76,833.9	$3,101,151.0		$3,101,151.0		$3,101,151.0
24	0.3801	220809.7	$83,922.7	0	($4,416)	$79,506.5	$3,180,657.4		$3,180,657.4		$3,180,657.4
25	0.3944	219705.6	$86,659.5	0	($4,394)	$82,265.4	$3,262,922.8		$3,262,922.8		$3,262,922.8

Vineland Police Station

Design Goal: Provide 25% of average annual electricity

Solar Rating (Zip Code: 08362)	4.95 kWh/sq-m/day
Solar Capacity Required	137.45
Roof Space Needed	13,745 sq-ft
Annual kWh	181,503
Gross System Installation Cost	$1,237,050
Federal Tax Credit	$371,115
Net System installation Cost	$865,935

Assumptions

Annual System Degredation	0.50%
Annual Utility Inflation	3.78%
Federal Tax %	28.00%
State Tax %	7.80%
Annual Maintenance Costs	2%

Year	Utility Price	Solar kWh	Utility Savings	SRECS	Maintenance Costs	Annual Cash Flow	Cummulative Cash Flow	15 year G.O. Bond	Remaining Cash Flow	Plus DSA	Remaining Cash Flow
Install											
1	0.1619	181503.0	$29,385.3	$114,426	($3,630)	$140,181.5	$140,181.5	($81,633.0)	$58,548.5	$32,653.2	$91,201.7
2	0.1680	180595.5	$30,343.6	$111,008	($3,612)	$137,739.4	$277,920.9	($81,633.0)	$196,287.9	$32,653.2	$228,941.1
3	0.1744	179692.5	$31,333.2	$107,658	($3,594)	$135,397.5	$413,318.5	($81,633.0)	$331,685.5	$32,653.2	$364,338.7
4	0.1810	178794.0	$32,355.0	$103,906	($3,576)	$132,685.4	$546,003.9	($81,633.0)	$464,370.9	$32,653.2	$497,024.1
5	0.1878	177900.1	$33,410.1	$100,285	($3,558)	$130,137.3	$676,141.2	($81,633.0)	$594,508.2	$32,653.2	$627,161.4
6	0.1949	177010.6	$34,499.6	$96,790	($3,540)	$127,749.7	$803,890.9	($81,633.0)	$722,257.9	$32,653.2	$754,911.1
7	0.2023	176125.5	$35,624.7	$93,417	($3,523)	$125,519.3	$929,410.2	($81,633.0)	$847,777.2	$32,653.2	$880,430.4
8	0.2099	175244.9	$36,786.5	$90,162	($3,505)	$123,443.1	$1,052,853.3	($81,633.0)	$971,220.3	$32,653.2	$1,003,873.5
9	0.2178	174368.7	$37,986.1	$87,019	($3,487)	$121,518.1	$1,174,371.4	($81,633.0)	$1,092,738.4	$32,653.2	$1,125,391.6
10	0.2261	173496.8	$39,224.9	$83,987	($3,470)	$119,741.7	$1,294,113.1	($81,633.0)	$1,212,480.1	$32,653.2	$1,245,133.3
11	0.2346	172629.3	$40,504.0	$81,060	($3,453)	$118,111.3	$1,412,224.4	($81,633.0)	$1,330,591.4	$32,653.2	$1,363,244.6
12	0.2435	171766.2	$41,824.9	$78,235	($3,435)	$116,624.5	$1,528,848.9	($81,633.0)	$1,447,215.9	$32,653.2	$1,479,869.1
13	0.2527	170907.4	$43,188.8	$75,508	($3,418)	$115,279.1	$1,644,128.0	($81,633.0)	$1,562,495.0	$32,653.2	$1,595,148.2
14	0.2623	170052.8	$44,597.3	$72,877	($3,401)	$114,073.2	$1,758,201.2	($81,633.0)	$1,676,568.2	$32,653.2	$1,709,221.4
15	0.2722	169202.6	$46,051.6	$70,337	($3,384)	$113,004.8	$1,871,205.9	($81,633.0)	$1,789,572.9	$32,653.2	$1,822,226.1
16	0.2825	168356.6	$47,553.4	0	($3,367)	$44,186.3	$1,915,392.2		$1,915,392.2		$1,915,392.2
17	0.2931	167514.8	$49,104.2	0	($3,350)	$45,753.9	$1,961,146.1		$1,961,146.1		$1,961,146.1
18	0.3042	166677.2	$50,705.5	0	($3,334)	$47,372.0	$2,008,518.1		$2,008,518.1		$2,008,518.1
19	0.3157	165843.8	$52,359.1	0	($3,317)	$49,042.2	$2,057,560.3		$2,057,560.3		$2,057,560.3
20	0.3276	165014.6	$54,066.6	0	($3,300)	$50,766.3	$2,108,326.6		$2,108,326.6		$2,108,326.6
21	0.3400	164189.5	$55,829.7	0	($3,284)	$52,545.9	$2,160,872.6		$2,160,872.6		$2,160,872.6
22	0.3529	163368.6	$57,650.4	0	($3,267)	$54,383.0	$2,215,255.6		$2,215,255.6		$2,215,255.6
23	0.3662	162551.7	$59,530.4	0	($3,251)	$56,279.4	$2,271,535.0		$2,271,535.0		$2,271,535.0
24	0.3801	161739.0	$61,471.8	0	($3,235)	$58,237.0	$2,329,772.0		$2,329,772.0		$2,329,772.0
25	0.3944	160930.3	$63,476.4	0	($3,219)	$60,257.8	$2,390,029.9		$2,390,029.9		$2,390,029.9

APPENDIX F

NJ SMARTSTART INCENTIVES INFORMATION AND WORKSHEETS

New Jersey's Clean Energy PROGRAM™
Your Power to Save
njcleanenergy.com

New Jersey SmartStart BUILDINGS®

BPU

2009 Prescriptive Lighting Application

Customer Information

Company	Electric Utility Serving Applicant	Electric Account No.	Installation Date
Facility Address	City	State	Zip
Type of Project ❑ New Construction ❑ Renovation ❑ Equipment Replacement ❑ School		Size of Building	
Company Mailing Address	City	State	Zip
Contact Person (Name/Title)	Telephone No. ( )	Fax No. ( )	
Incorporated? ❑ Yes ❑ No ❑ Exempt	Federal Tax ID# or SSN	Email Address	
Incentive Payment to ❑ Customer ❑ Contractor ❑ Other	Please assign payment to contractor/vendor/other indicated below Customer Signature		

Payee Information (Must submit W-9 form with application)

Company	Contact Name		Incorporated? ❑ Yes ❑ No	Federal Tax ID#
Street Address	City	State	Zip	Telephone No. ( )

Email Address

Contractor/Vendor Information (if different from Payee)

Company	Contact Name		Incorporated? ❑ Yes ❑ No	Federal Tax ID#
Street Address	City	State	Zip	Telephone No. ( )

Email Address

Prescriptive Lighting Information

Total Incentives (per attached Worksheet calculations):

$_____

Note: Prescriptive Lighting Worksheet must accompany this application.

Specific Program Requirements* These requirements are in addition to the Program Terms and Conditions.

1. Please refer to the program guide for additional applicable technical requirements.
2. Include the manufacturer's specification sheet with the application package and mail or fax directly to the Commercial/Industrial Market Manager.
3. Incentives for T-5 and T-8 lamps with electronic ballasts are available only for fixtures with a Total Harmonic Distortion of ≤ 20%.
4. All eligible lighting devices must be UL listed.
5. Requirements for CFL fixtures (must meet all requirements):
   - Fixtures must be new and Energy Star qualified
   - Fixtures must have replaceable electronic ballasts
   - Total Harmonic Distortion (THD) must not exceed 33%
   - Power factor of the ballast must be no less than 90%
   - The manufacturer must warrant all fixtures for a minimum of 3 years. Warranty does not pertain to lamps or photocells not physically part of the fixture.
   - The installer must warrant installation of fixtures for a minimum of 1 year.
6. Pulse Start Metal Halide (including pole-mounted parking lot lighting) must have a 12% minimum wattage reduction.
7. T-5 or T-8 Fixtures replacing incandescent or T-12 fluorescent fixtures greater than 250 watt or High Intensity Discharge shall comply as follows:

7.1 T-5 fixtures replacing T-12 fluorescent or incandescent fixtures 250 watts or greater, or HID fixtures shall have a ballast factor greater than or equal to 1.0; have reflectivity greater than or equal to 91%; have a minimum 2 lamps; and be designated as F54T5 HO.

7.2 T-8 fixtures replacing T-12 fluorescent or incandescent fixtures 250 watts or greater, or HID fixtures shall have a ballast factor greater than or equal to 1.14; have reflectivity greater than or equal to 91%; have a minimum of 4 lamps; and be designated as F32T8, minimum 32 watts.

7.3 T-8 to T-8 replacement requires delamping and new reflectors resulting in a more efficient light system with maintained light levels.

ACKNOWLEDGEMENT

_____

CUSTOMER'S SIGNATURE

By signing, I certify that I have read, understand and agree to the Specific Program Requirements/Terms and Conditions listed on this application form, I will also submit for approval a properly completed application package, which includes this signed application, worksheet (if applicable), manufacturer's specification sheets and complete utility bill (name and address on utility bill must match name and address on application).

Prescriptive Lighting Measures and Incentives*

Type of Fixture	Incentive
Recessed and Surface-Mounted Compact Fluorescents (New Fixtures Replacing Incandescent Fixtures Only): Only available for hard-wired, electronically ballasted new fixtures with rare earth phosphor lamps and 4-pin based tubes (including: twin tube, quad tube, triple tube, 2D or circline lamps), THD<33% and BF>0.9	$25 per 1-lamp fixture $30 per 2-lamp or more fixture
High-Efficiency Fluorescent Fixtures:	
For retrofit of T-12 fixtures to T-5 or T-8 with electronic ballasts	$10 per fixture (1 & 2 lamps retrofit) $20 per fixture (3 & 4 lamps retrofit)

For replacement of fixtures with new T-5 or T-8 fixtures

Type of Old Fixture	Wattage of Old Fixture	Type of New Fixture	Incentive Per Fixture Removed
HID, T-12, Incandescent	≥ 1000 Watts	T-5, T-8	$284
HID, T-12, Incandescent	400-999 Watt	T-5, T-8	$100
HID, T-12, Incandescent	250-399 Watt	T-5, T-8	$50
HID only	175-249 Watt	T-5, T-8	$43
HID only	100-174 Watt	T-5, T-8	$30
HID only	75-99 Watt	T-5, T-8	$16
T-12 only	<250 Watt	T-5, T-8 (1 & 2 lamp)	$25
T-12 only	<250 Watt	T-5, T-8 (3 & 4 lamp)	$30

For retrofit of T-8 fixtures by permanent delamping & new reflectors	**$20 per fixture**
New Construction & Complete Renovation	**Performance based only**
LED Exit Signs (new fixtures only): For existing facilities with connected load ≤75 kW	**$20 per fixture**
For existing facilities with connected load ≥ 75 kW	**$10 per fixture**
Pulse Start Metal Halide (for fixtures ≥ 150 watts)	**$25 per fixture (includes parking lot lighting)**
Parking lot low bay - LED	**$43 per fixture**
T-12 to T-8 fixtures by permanent delamping & new reflectors	**$30 per fixture**

Mail or fax your application package DIRECTLY to the Commercial/Industrial Market Manager.

New Jersey's Clean Energy Program
c/o TRC Energy Services
900 Route 9 North, Suite 104 · Woodbridge, NJ 07095

Phone: 866-657-6278 · Fax: 732-855-0422

Visit our web site: www.NJCleanEnergy.com

*Incentives/Requirements subject to change.

NJ SmartStart Buildings®

Program Terms and Conditions

Definitions:

Design Incentives – Incentives that may be offered to design professionals by the Program.

Design Services – Services that may be offered to design professionals under the Program.

Energy-Efficient Measures – Any device eligible to receive a Program Incentive payment through the NJ Clean Energy Commercial and Industrial Program (New Jersey SmartStart Buildings).

New Jersey Utilities – The regulated electric and/or gas utilities in the State of New Jersey. They are: Atlantic City Electric, Jersey Central Power & Light, Rockland Electric Company, New Jersey Natural Gas, Elizabethtown Gas, PSE&G, and South Jersey Gas.

Administrator – New Jersey Board of Public Utilities, Office of Clean Energy

Participating Customers – Those non-residential electric and/or gas service customers of the New Jersey Utilities who participate in this Program.

Product Installation or Equipment Installation – Installation of the Energy-Efficient Measures.

Market Manager – TRC Energy Services (see below). The NJ Board of Public Utilities has transferred responsibility for the NJ SmartStart Buildings Program from the NJ Utilities to TRC.

Program – The Commercial and Industrial Energy-Efficient Construction Program (New Jersey SmartStart Buildings) offered herein by the New Jersey Board of Public Utilities, Office of Clean Energy pursuant to state regulatory approval under the New Jersey Electric Discount and Energy Competition Act, NJSA 48:3-49, et seq.

Program Incentives – Refers to the amount or level of incentive that the Program provides to participating customers pursuant to the Program offered herein (see description below under "Incentive Amount" heading).

Program Offer – Program Incentives are available to non-residential retail electric and/or gas service customers of the New Jersey Utilities identified above. Program Incentives for new construction are available only for projects in areas designated for growth in the State Plan. Public school (K-12) new construction projects are exempted from this restriction and are eligible for new Program incentives throughout the State. Customers, or their trade allies, can determine if a location is in a designated growth area by referring to the Smart Growth Locator available from the HMFA website or contact the Market Manager if you are uncertain about project eligibility.

Application and Eligibility Process – The Program pays incentives after the installation of qualified energy efficient measures that were pre-approved (for exceptions to this condition, please refer to "exceptions for approval".) In order to be eligible for Program Incentives, a Customer, or an agent (contractor/vendor) authorized by a Customer, must submit a properly completed application package. The package must include an application signed by the customer; a complete (current) utility bill; and technology worksheet and manufacturer's cut sheets (where appropriate). This information must be submitted to the Market Manager before equipment is installed. Applications for measures that are self installed by customers must be submitted by the customer and not the sales vendor of the measure, however, the customer may elect to assign payment of the incentives to the sales vendor. This application package must be received by the Market Manager on or before December 31, 2009 in order to be eligible for 2009 incentives. The Market Manager will review the application package to determine if the project is eligible for a Program Incentive. If eligible, the Customer will receive an approval letter with the estimated authorized incentive amount and the date by which the equipment must be installed in order for the approval to remain in effect. Upon receipt of an approval letter, the Customer may then proceed to install the equipment listed on the approved application. Equipment installed prior to the date of the Market Manager's approval letter is not eligible for an incentive. The Market Manager reserves the right to conduct a pre-inspection of the facility prior to the installation of equipment. This will be done prior to the issuance of the approval letter. All equipment must be purchased within 12 months of date of application. **Any Customer and/or Agent who purchases equipment prior to the receipt of an incentive approval letter does so at his/her own risk.**

Exceptions for Approval – The Application and Eligibility Process pertains to all projects except for those involving either Unitary HVAC or Motors having an incentive amount less than $5,000. These measures, at this incentive level, may be installed without prior approval. In addition, but at the sole discretion of the Market Manager, emergency replacement of equipment may not require a prior approval determination and letter. **In such cases, please notify the Market Manager of such emergencies as early as possible, that an application will soon be sent in that was not pre-approved.**

Post Installation Approval – After installation is completed, the Customer, or an agent authorized by the Customer, must finalize and submit an invoice for the purchase of the equipment (material cost must be broken out from labor costs), and any other required documentation as specified on the equipment application or in the Market Manager's initial approval letter.

Please refer to the Program Guide on the NJCleanEnergy.com/ssb website for the complete Application and Eligibility Process.

The Market Manager reserves the right to verify sales transactions and to have reasonable access to Participating Customer's facility to inspect both pre-existing product or equipment (if applicable) and the Energy-Efficient Measures installed under this Program, either prior to issuing incentives or at a later time.

Energy-Efficient Measures must be installed in buildings located within a New Jersey Utilities' service territory and designated on the Participating Customer's incentive application. Program Incentives are available for qualified Energy-Efficient Measures as listed and described in the Program materials and incentive applications. The Participating Customer must ultimately own the equipment, either through an up-front purchase or at the end of a short-term lease. (Design Incentives are available to design professionals as described in the Program materials and applications. A different and separate agreement must be executed by participating design professionals to be eligible for this type of incentive. The design professional does not need to be based in New Jersey.)

Equipment procured by Participating Customers through another program offered by New Jersey's Clean Energy Program or the New Jersey Utilities, as applicable, is not eligible for incentives through this program. Customers who have not contributed to the Societal Benefits Charge of the applicable New Jersey Utility are not be eligible for incentives offered through this program.

Incentive Amount – Program Incentives will equal either: a) the approved Program Incentive amount, or b) the actual equipment cost of the Energy-Efficient Measure, whichever is less, as determined by the Market Manager. Products offered at no direct cost to the customer are ineligible. Incomplete application submissions, applications requiring inspections and unanticipated high volume of activities may cause processing delays. Program Incentives are limited to $500,000 per utility account in a calendar year. Contact the Market Manager regarding any questions.

Tax Liability – The Market Manager will not be responsible for any tax liability that may be imposed on any Participating Customer as a result of the payment of Program Incentives. All Participating Customers must supply their Federal Tax Identification number or social security number to the Market Manager on the application form in order to receive a Program Incentive. In addition, Participating Customers must also provide a Tax Clearance Form (Business Assistance or Incentive Clearance Certificate) that is dated within 90 days of equipment installation

Endorsement – The Market Manager and Administrator do not endorse, support or recommend any particular manufacturer, product or system design in promoting this Program.

Warranties – THE MARKET MANAGER AND ADMINISTRATOR DO NOT WARRANT THE PERFORMANCE OF INSTALLED EQUIPMENT, AND/OR SERVICES RENDERED AS PART OF THIS PROGRAM, EITHER EXPRESSLY OR IMPLICITLY. NO WARRANTIES OR REPRESENTATIONS OF ANY KIND, WHETHER STATUTORY, EXPRESSED, OR IMPLIED, INCLUDING, WITHOUT LIMITATIONS, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE REGARDING EQUIPMENT OR SERVICES PROVIDED BY A MANUFACTURER OR VENDOR. CONTACT YOUR VENDOR/SERVICES PROVIDER FOR DETAILS REGARDING PERFORMANCE AND WARRANTIES.

Limitation of Liability – By virtue of participating in this Program, Participating Customers agree to waive any and all claims or damages against the Market Manager or the Administrator, except the receipt of the Program Incentive. Participating Customers agree that the Market Manager's and Administrator's liability, in connection with this Program, is limited to paying the Program Incentive specified. Under no circumstances shall the Market Manager, its representatives, or subcontractors, or the Administrator, be liable for any lost profits, special, punitive, consequential or incidental damages or for any other damages or claims connected with or resulting from participation in this Program. Further, any liability attributed to the Market Manager under this Program shall be individual, and not joint and/or several.

Assignment – The Participating Customer may assign Program Incentive payments to a specified vendor.

Participating Customer's Certification – Participating Customer certifies that he/she purchased and installed the equipment listed in their application at their defined New Jersey location. Participating Customer agrees that all information is true and that he/she has conformed to all of the Program and equipment requirements listed in the application.

Termination – The New Jersey Board of Public Utilities reserves the right to extend, modify (this includes modification of Program Incentive levels) or terminate this Program without prior or further notice.

Acknowledgement – I have read, understood and am in compliance with all rules and regulations concerning this incentive program. I certify that all information provided is correct to the best of my knowledge, and I give the Market Manager permission to share my records with the New Jersey Board of Public Utilities, and contractors it selects to manage, coordinate or evaluate the NJ SmartStart Buildings Program. Additionally, I allow reasonable access to my property to inspect the installation and performance of the technologies and installations that are eligible for incentives under the guidelines of New Jersey's Clean Energy Program.

New Jersey's Clean Energy PROGRAM™ Your Power to Save njcleanenergy.com

New Jersey SmartStart BUILDINGS®

BPU New Jersey Board of Public Utilities

2009 Prescriptive Lighting Incentive Worksheet

Customer Information

Company	Facility Address
☐ Check here if multiple worksheets are being submitted for one project/building.	Date Submitted

Prescriptive Lighting Information

For additional fixtures, attach additional sheets and check here ☐

Reason N–New R–Replaced	**Fixture Type Installed**	**Fixture Type Removed**	**Location** (Bldg/Rm)	**Size of Replaced Lamps in Watts**	**A Incentive Per Fixture** (Table)	**B # of Units**	**Total Incentives (AxB)**
(Examples) R	2x4 3L T-5	2x4 3L T-12	Office		$20	8	$20 x 8 = $160
R	2x2 2L T-8	2x2 2L T-12	Office		$10	10	$10 x 10 = $100
R	28w CFL	100w Incan.	Supply Room		$25	3	$25 x 3 = $75
R	250w Pulse Start Metal Halide	400w Mercury Vapor	Warehouse		$45	3	$45 x 3 = $135
					Total (including additional sheets)		

Specific Program Requirements* These requirements are in addition to the Program Terms and Conditions.

1. Please refer to the program guide for additional applicable technical requirements.
2. Include the manufacturer's specification sheet with the application package and mail or fax directly to the Commercial/Industrial Market Manager.
3. Incentives for T-5 and T-8 lamps with electronic ballasts are available only for fixtures with a Total Harmonic Distortion of ≤ 20%.
4. All eligible lighting devices must be UL listed.
5. Requirements for CFL fixtures (must meet all requirements):
   - Fixtures must be new and Energy Star qualified
   - Fixtures must have replaceable electronic ballasts
   - Total Harmonic Distortion (THD) must not exceed 33%
   - Power factor of the ballast must be no less than 90%
   - The manufacturer must warrant all fixtures for a minimum of 3 years. Warranty does not pertain to lamps or photocells not physically part of the fixture.
   - The installer must warrant installation of fixtures for a minimum of 1 year.
6. Pulse Start Metal Halide (including pole-mounted parking lot lighting) must have a 12% minimum wattage reduction.
7. T-5 or T-8 Fixtures replacing incandescent or T-12 fluorescent fixtures greater than 250 watt or High Intensity Discharge shall comply as follows:

7.1 T-5 fixtures replacing T-12 fluorescent or incandescent fixtures 250 watts or greater, or HID fixtures shall have a ballast factor greater than or equal to 1.0; have reflectivity greater than or equal to 91%; have a minimum 2 lamps; and be designated as F54T5 HO.

7.2 T-8 fixtures replacing T-12 fluorescent or incandescent fixtures 250 watts or greater, or HID fixtures shall have a ballast factor greater than or equal to 1.14; have reflectivity greater than or equal to 91%; have a minimum of 4 lamps; and be designated as F32T8, minimum 32 watts.

7.3 T-8 to T-8 replacement requires delamping and new reflectors resulting in a more efficient light system with maintained light levels.

ACKNOWLEDGEMENT

_____

CUSTOMER'S SIGNATURE

By signing, I certify that I have read, understand and agree to the Specific Program Requirements/Terms and Conditions listed on this application form, I will also submit for approval a properly completed application package, which includes this signed application, worksheet (if applicable), manufacturer's specification sheets and complete utility bill (name and address on utility bill must match name and address on application).

Prescriptive Lighting Measures and Incentives*

Type of Fixture	Incentive
Recessed and Surface-Mounted Compact Fluorescents (New Fixtures Replacing Incandescent Fixtures Only): Only available for hard-wired, electronically ballasted new fixtures with rare earth phosphor lamps and 4-pin based tubes (including: twin tube, quad tube, triple tube, 2D or circline lamps), THD<33% and BF>0.9	$25 per 1-lamp fixture $30 per 2-lamp or more fixture
High-Efficiency Fluorescent Fixtures:	
For retrofit of T-12 fixtures to T-5 or T-8 with electronic ballasts	$10 per fixture (1 & 2 lamps retrofit) $20 per fixture (3 & 4 lamps retrofit)

For replacement of fixtures with new T-5 or T-8 fixtures

Type of Old Fixture	Wattage of Old Fixture	Type of New Fixture	Incentive Per Fixture Removed
HID, T-12, Incandescent	≥ 1000 Watts	T-5, T-8	$284
HID, T-12, Incandescent	400-999 Watt	T-5, T-8	$100
HID, T-12, Incandescent	250-399 Watt	T-5, T-8	$50
HID only	175-249 Watt	T-5, T-8	$43
HID only	100-174 Watt	T-5, T-8	$30
HID only	75-99 Watt	T-5, T-8	$16
T-12 only	<250 Watt	T-5, T-8 (1 & 2 lamp)	$25
T-12 only	<250 Watt	T-5, T-8 (3 & 4 lamp)	$30

For retrofit of T-8 fixtures by permanent delamping & new reflectors	**$20 per fixture**
New Construction & Complete Renovation	**Performance based only**
LED Exit Signs (new fixtures only): For existing facilities with connected load ≤75 kW	**$20 per fixture**
For existing facilities with connected load ≥ 75 kW	**$10 per fixture**
Pulse Start Metal Halide (for fixtures ≥ 150 watts)	**$25 per fixture (includes parking lot lighting)**
Parking lot low bay - LED	**$43 per fixture**
T-12 to T-8 fixtures by permanent delamping & new reflectors	**$30 per fixture**

Mail or fax your application package DIRECTLY to the Commercial/Industrial Market Manager.

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*Incentives/Requirements subject to change.

NJ SmartStart Buildings®

Program Terms and Conditions

Definitions:

Design Incentives – Incentives that may be offered to design professionals by the Program.

Design Services – Services that may be offered to design professionals under the Program.

Energy-Efficient Measures – Any device eligible to receive a Program Incentive payment through the NJ Clean Energy Commercial and Industrial Program (New Jersey SmartStart Buildings).

New Jersey Utilities – The regulated electric and/or gas utilities in the State of New Jersey. They are: Atlantic City Electric, Jersey Central Power & Light, Rockland Electric Company, New Jersey Natural Gas, Elizabethtown Gas, PSE&G, and South Jersey Gas.

Administrator – New Jersey Board of Public Utilities, Office of Clean Energy

Participating Customers – Those non-residential electric and/or gas service customers of the New Jersey Utilities who participate in this Program.

Product Installation or Equipment Installation – Installation of the Energy-Efficient Measures.

Market Manager – TRC Energy Services (see below). The NJ Board of Public Utilities has transferred responsibility for the NJ SmartStart Buildings Program from the NJ Utilities to TRC.

Program – The Commercial and Industrial Energy-Efficient Construction Program (New Jersey SmartStart Buildings) offered herein by the New Jersey Board of Public Utilities, Office of Clean Energy pursuant to state regulatory approval under the New Jersey Electric Discount and Energy Competition Act, NJSA 48:3-49, et seq.

Program Incentives – Refers to the amount or level of incentive that the Program provides to participating customers pursuant to the Program offered herein (see description below under "Incentive Amount" heading).

Program Offer – Program Incentives are available to non-residential retail electric and/or gas service customers of the New Jersey Utilities identified above. Program Incentives for new construction are available only for projects in areas designated for growth in the State Plan. Public school (K-12) new construction projects are exempted from this restriction and are eligible for new Program incentives throughout the State. Customers, or their trade allies, can determine if a location is in a designated growth area by referring to the Smart Growth Locator available from the HMFA website or contact the Market Manager if you are uncertain about project eligibility.

Application and Eligibility Process – The Program pays incentives after the installation of qualified energy efficient measures that were pre-approved (for exceptions to this condition, please refer to "exceptions for approval".) In order to be eligible for Program Incentives, a Customer, or an agent (contractor/vendor) authorized by a Customer, must submit a properly completed application package. The package must include an application signed by the customer; a complete (current) utility bill; and technology worksheet and manufacturer's cut sheets (where appropriate). This information must be submitted to the Market Manager before equipment is installed. Applications for measures that are self installed by customers must be submitted by the customer and not the sales vendor of the measure, however, the customer may elect to assign payment of the incentives to the sales vendor. This application package must be received by the Market Manager on or before December 31, 2009 in order to be eligible for 2009 incentives. The Market Manager will review the application package to determine if the project is eligible for a Program Incentive. If eligible, the Customer will receive an approval letter with the estimated authorized incentive amount and the date by which the equipment must be installed in order for the approval to remain in effect. Upon receipt of an approval letter, the Customer may then proceed to install the equipment listed on the approved application. Equipment installed prior to the date of the Market Manager's approval letter is not eligible for an incentive. The Market Manager reserves the right to conduct a pre-inspection of the facility prior to the installation of equipment. This will be done prior to the issuance of the approval letter. All equipment must be purchased within 12 months of date of application. **Any Customer and/or Agent who purchases equipment prior to the receipt of an incentive approval letter does so at his/her own risk.**

Exceptions for Approval – The Application and Eligibility Process pertains to all projects except for those involving either Unitary HVAC or Motors having an incentive amount less than $5,000. These measures, at this incentive level, may be installed without prior approval. In addition, but at the sole discretion of the Market Manager, emergency replacement of equipment may not require a prior approval determination and letter. **In such cases, please notify the Market Manager of such emergencies as early as possible, that an application will soon be sent in that was not pre-approved.**

Post Installation Approval – After installation is completed, the Customer, or an agent authorized by the Customer, must finalize and submit an invoice for the purchase of the equipment (material cost must be broken out from labor costs), and any other required documentation as specified on the equipment application or in the Market Manager's initial approval letter.

Please refer to the Program Guide on the NJCleanEnergy.com/ssb website for the complete Application and Eligibility Process.

The Market Manager reserves the right to verify sales transactions and to have reasonable access to Participating Customer's facility to inspect both pre-existing product or equipment (if applicable) and the Energy-Efficient Measures installed under this Program, either prior to issuing incentives or at a later time.

Energy-Efficient Measures must be installed in buildings located within a New Jersey Utilities' service territory and designated on the Participating Customer's incentive application. Program Incentives are available for qualified Energy-Efficient Measures as listed and described in the Program materials and incentive applications. The Participating Customer must ultimately own the equipment, either through an up-front purchase or at the end of a short-term lease. (Design Incentives are available to design professionals as described in the Program materials and applications. A different and separate agreement must be executed by participating design professionals to be eligible for this type of incentive. The design professional does not need to be based in New Jersey.)

Equipment procured by Participating Customers through another program offered by New Jersey's Clean Energy Program or the New Jersey Utilities, as applicable, is not eligible for incentives through this program. Customers who have not contributed to the Societal Benefits Charge of the applicable New Jersey Utility are not be eligible for incentives offered through this program.

Incentive Amount – Program Incentives will equal either: a) the approved Program Incentive amount, or b) the actual equipment cost of the Energy-Efficient Measure, whichever is less, as determined by the Market Manager. Products offered at no direct cost to the customer are ineligible. Incomplete application submissions, applications requiring inspections and unanticipated high volume of activities may cause processing delays. Program Incentives are limited to $500,000 per utility account in a calendar year. Contact the Market Manager regarding any questions.

Tax Liability – The Market Manager will not be responsible for any tax liability that may be imposed on any Participating Customer as a result of the payment of Program Incentives. All Participating Customers must supply their Federal Tax Identification number or social security number to the Market Manager on the application form in order to receive a Program Incentive. In addition, Participating Customers must also provide a Tax Clearance Form (Business Assistance or Incentive Clearance Certificate) that is dated within 90 days of equipment installation

Endorsement – The Market Manager and Administrator do not endorse, support or recommend any particular manufacturer, product or system design in promoting this Program.

Warranties – THE MARKET MANAGER AND ADMINISTRATOR DO NOT WARRANT THE PERFORMANCE OF INSTALLED EQUIPMENT, AND/OR SERVICES RENDERED AS PART OF THIS PROGRAM, EITHER EXPRESSLY OR IMPLICITLY. NO WARRANTIES OR REPRESENTATIONS OF ANY KIND, WHETHER STATUTORY, EXPRESSED, OR IMPLIED, INCLUDING, WITHOUT LIMITATIONS, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE REGARDING EQUIPMENT OR SERVICES PROVIDED BY A MANUFACTURER OR VENDOR. CONTACT YOUR VENDOR/SERVICES PROVIDER FOR DETAILS REGARDING PERFORMANCE AND WARRANTIES.

Limitation of Liability – By virtue of participating in this Program, Participating Customers agree to waive any and all claims or damages against the Market Manager or the Administrator, except the receipt of the Program Incentive. Participating Customers agree that the Market Manager's and Administrator's liability, in connection with this Program, is limited to paying the Program Incentive specified. Under no circumstances shall the Market Manager, its representatives, or subcontractors, or the Administrator, be liable for any lost profits, special, punitive, consequential or incidental damages or for any other damages or claims connected with or resulting from participation in this Program. Further, any liability attributed to the Market Manager under this Program shall be individual, and not joint and/or several.

Assignment – The Participating Customer may assign Program Incentive payments to a specified vendor.

Participating Customer's Certification – Participating Customer certifies that he/she purchased and installed the equipment listed in their application at their defined New Jersey location. Participating Customer agrees that all information is true and that he/she has conformed to all of the Program and equipment requirements listed in the application.

Termination – The New Jersey Board of Public Utilities reserves the right to extend, modify (this includes modification of Program Incentive levels) or terminate this Program without prior or further notice.

Acknowledgement – I have read, understood and am in compliance with all rules and regulations concerning this incentive program. I certify that all information provided is correct to the best of my knowledge, and I give the Market Manager permission to share my records with the New Jersey Board of Public Utilities, and contractors it selects to manage, coordinate or evaluate the NJ SmartStart Buildings Program. Additionally, I allow reasonable access to my property to inspect the installation and performance of the technologies and installations that are eligible for incentives under the guidelines of New Jersey's Clean Energy Program.

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2009 Lighting Controls Application

Customer Information

Company	Electric Utility Serving Applicant	Electric Account No.	Installation Date
Facility Address	City	State	Zip
Type of Project ❑ New Construction ❑ Renovation ❑ Equipment Replacement ❑ School		Size of Building	
Company Mailing Address	City	State	Zip
Contact Person (Name/Title)	Telephone No. ( )	Fax No. ( )	
Incorporated? ❑ Yes ❑ No ❑ Exempt	Federal Tax ID# or SSN	Email Address	
Incentive Payment to ❑ Customer ❑ Contractor ❑ Other	Please assign payment to contractor/vendor/other indicated below Customer Signature		

Payee Information (Must submit W-9 form with application)

Company	Contact Name		Incorporated? ❑ Yes ❑ No	Email Address Federal Tax ID#
Street Address	City	State	Zip	Telephone No. ( )

Contractor/Vendor Information (if different from Payee)

Company	Contact Name		Incorporated? ❑ Yes ❑ No	Email Address Federal Tax ID#
Street Address	City	State	Zip	Telephone No. ( )

Lighting Control Information

Total Incentives (per attached Worksheet calculations):

$_____

Use Lighting Controls Incentive Worksheet.

Specific Program Requirements* These requirements are in addition to the Program Terms and Conditions.

1. Please refer to the program guide for additional applicable technical requirements, including special requirements for lighting controls.
2. Include the manufacturer's specification sheet with the application package and mail or fax directly to the Commercial/Industrial Market Manager.
3. All lighting controls eligible for incentives must be UL listed.
4. Lighting control incentives are only available for control of eligible energy efficient lighting fixtures.
5. If more than one eligible lighting control device is associated with the same eligible fixture, the incentive paid will be for the lighting control device that yields the largest incentive only.
6. Occupancy Sensor Controls (Existing Facilities Only):
   - There is no incentive available for occupancy sensors installed in a space where they are prohibited by state or local building or safety code. Additionally, no incentive is eligible for occupancy sensors in the following specific spaces in all cases: stairways, restrooms (remote mounted only allowed), elevators, corridors/hallways, lobbies, and closets/storage areas.
   - Incentives will only be paid for eligible occupancy sensors (OSW & OSR) controlling at least 2 eligible lighting fixtures and, for OSR installations, a minimum total connected load of 180 watts.
   - Incentives will only be paid for eligible OSRH occupancy sensors controlling eligible fixtures when the controlled wattage is greater than 180 watts.
   - Occupancy sensors with manual override to the "ON" position are ineligible for incentive.
7. High-Low Controls (OHLF and OHLH):
   - Incentives will not be paid for high-low controls on eligible fluorescent fixtures where daylight dimming controls can be effectively employed.
   - Incentives will not be paid for spaces where the bottom of the fixture does not comply with the appropriate Prescriptive Lighting 2008 incentives, nor in spaces smaller than 250 square feet.
   - Incentives available only when "low level" is no more than 60% of "high level."
   - Incentives are not available for the following spaces: stairways, elevators, corridors/hallways, or lobbies.
   - OHLF will control fixtures that have a ballast factor less than 1.0 for T-5s and 1.14 for T-8s.
   - OHLH will control fixtures that have a ballast factor greater than or equal to 1.0 for T-5s and 1.14 for T-8s.
8. Daylight Dimming Controls for Eligible Fixtures:
   - Incentives will only be paid for eligible daylight dimming controls operating at least 4 eligible ballasts with a minimum total connected load of 240 watts.
   - Dimming shall be continuous or stepped at 4 or more levels.
   - Incentives will be paid only for eligible daylight dimming control systems designed in accordance with IESNA practice as delineated in "RP-5-99, IESNA Recommended Practice of Daylighting."
   - DLD will control fixtures that have a ballast factor less than 1.0 for T-5s and 1.14 for T-8s.
   - DDH will control fixtures that have a ballast factor greater than or equal to 1.0 for T-5s and 1.14 for T-8s.

ACKNOWLEDGEMENT

_____

CUSTOMER'S SIGNATURE

By signing, I certify that I have read, understand and agree to the Specific Program Requirements/Terms and Conditions listed on this application form, I will also submit for approval a properly completed application package, which includes this signed application, worksheet (if applicable), manufacturer's specification sheets and complete utility bill (name and address on utility bill must match name and address on application).

Lighting Control Prescriptive Incentives*

Control Device Type	Incentive per Unit
OSW – Occupancy Sensor Wall Mounted (Existing facilities only)	$20 per control
OSR – Occupancy Sensor Remote Mounted (Existing facilities only)	$35 per control
DLD – Fluorescent Daylight Dimming	$25 per fixture controlled
OHLF – Occupancy Controlled High-Low with Step Ballast	$25 per fixture controlled
OSRH – Occupancy Sensor Remote Mounted	$35 per control
OHLH – Occupancy Controlled High-Low with Step Ballast	$75 per fixture controlled
DDH – Daylight Dimming	$75 per fixture controlled

Mail or fax your application package DIRECTLY to the Commercial/Industrial Market Manager.

New Jersey's Clean Energy Program
c/o TRC Energy Services
900 Route 9 North, Suite 104
Woodbridge, NJ 07095

Phone: 866-657-6278
Fax: 732-855-0422

Visit our web site: www.NJCleanEnergy.com

NJ SmartStart Buildings®

Program Terms and Conditions

Definitions:

Design Incentives – Incentives that may be offered to design professionals by the Program.

Design Services – Services that may be offered to design professionals under the Program.

Energy-Efficient Measures – Any device eligible to receive a Program Incentive payment through the NJ Clean Energy Commercial and Industrial Program (New Jersey SmartStart Buildings).

New Jersey Utilities – The regulated electric and/or gas utilities in the State of New Jersey. They are: Atlantic City Electric, Jersey Central Power & Light, Rockland Electric Company, New Jersey Natural Gas, Elizabethtown Gas, PSE&G, and South Jersey Gas.

Administrator – New Jersey Board of Public Utilities, Office of Clean Energy

Participating Customers – Those non-residential electric and/or gas service customers of the New Jersey Utilities who participate in this Program.

Product Installation or Equipment Installation – Installation of the Energy-Efficient Measures.

Market Manager – TRC Energy Services (see below). The NJ Board of Public Utilities has transferred responsibility for the NJ SmartStart Buildings Program from the NJ Utilities to TRC.

Program – The Commercial and Industrial Energy-Efficient Construction Program (New Jersey SmartStart Buildings) offered herein by the New Jersey Board of Public Utilities, Office of Clean Energy pursuant to state regulatory approval under the New Jersey Electric Discount and Energy Competition Act, NJSA 48:3-49, et seq.

Program Incentives – Refers to the amount or level of incentive that the Program provides to participating customers pursuant to the Program offered herein (see description below under "Incentive Amount" heading).

Program Offer – Program Incentives are available to non-residential retail electric and/or gas service customers of the New Jersey Utilities identified above. Program Incentives for new construction are available only for projects in areas designated for growth in the State Plan. Public school (K-12) new construction projects are exempted from this restriction and are eligible for new Program incentives throughout the State. Customers, or their trade allies, can determine if a location is in a designated growth area by referring to the Smart Growth Locator available from the HMFA website or contact the Market Manager if you are uncertain about project eligibility.

Application and Eligibility Process – The Program pays incentives after the installation of qualified energy efficient measures that were pre-approved (for exceptions to this condition, please refer to "exceptions for approval".) In order to be eligible for Program Incentives, a Customer, or an agent (contractor/vendor) authorized by a Customer, must submit a properly completed application package. The package must include an application signed by the customer; a complete (current) utility bill; and technology worksheet and manufacturer's cut sheets (where appropriate). This information must be submitted to the Market Manager before equipment is installed. Applications for measures that are self installed by customers must be submitted by the customer and not the sales vendor of the measure, however, the customer may elect to assign payment of the incentives to the sales vendor. This application package must be received by the Market Manager on or before December 31, 2009 in order to be eligible for 2009 incentives. The Market Manager will review the application package to determine if the project is eligible for a Program Incentive. If eligible, the Customer will receive an approval letter with the estimated authorized incentive amount and the date by which the equipment must be installed in order for the approval to remain in effect. Upon receipt of an approval letter, the Customer may then proceed to install the equipment listed on the approved application. Equipment installed prior to the date of the Market Manager's approval letter is not eligible for an incentive. The Market Manager reserves the right to conduct a pre-inspection of the facility prior to the installation of equipment. This will be done prior to the issuance of the approval letter. All equipment must be purchased within 12 months of date of application. **Any Customer and/or Agent who purchases equipment prior to the receipt of an incentive approval letter does so at his/her own risk.**

Exceptions for Approval – The Application and Eligibility Process pertains to all projects except for those involving either Unitary HVAC or Motors having an incentive amount less than $5,000. These measures, at this incentive level, may be installed without prior approval. In addition, but at the sole discretion of the Market Manager, emergency replacement of equipment may not require a prior approval determination and letter. **In such cases, please notify the Market Manager of such emergencies as early as possible, that an application will soon be sent in that was not pre-approved.**

Post Installation Approval – After installation is completed, the Customer, or an agent authorized by the Customer, must finalize and submit an invoice for the purchase of the equipment (material cost must be broken out from labor costs), and any other required documentation as specified on the equipment application or in the Market Manager's initial approval letter.

Please refer to the Program Guide on the NJCleanEnergy.com/ssb website for the complete Application and Eligibility Process.

The Market Manager reserves the right to verify sales transactions and to have reasonable access to Participating Customer's facility to inspect both pre-existing product or equipment (if applicable) and the Energy-Efficient Measures installed under this Program, either prior to issuing incentives or at a later time.

Energy-Efficient Measures must be installed in buildings located within a New Jersey Utilities' service territory and designated on the Participating Customer's incentive application. Program Incentives are available for qualified Energy-Efficient Measures as listed and described in the Program materials and incentive applications. The Participating Customer must ultimately own the equipment, either through an up-front purchase or at the end of a short-term lease. (Design Incentives are available to design professionals as described in the Program materials and applications. A different and separate agreement must be executed by participating design professionals to be eligible for this type of incentive. The design professional does not need to be based in New Jersey.)

Equipment procured by Participating Customers through another program offered by New Jersey's Clean Energy Program or the New Jersey Utilities, as applicable, is not eligible for incentives through this program. Customers who have not contributed to the Societal Benefits Charge of the applicable New Jersey Utility are not be eligible for incentives offered through this program.

Incentive Amount – Program Incentives will equal either: a) the approved Program Incentive amount, or b) the actual equipment cost of the Energy-Efficient Measure, whichever is less, as determined by the Market Manager. Products offered at no direct cost to the customer are ineligible. Incomplete application submissions, applications requiring inspections and unanticipated high volume of activities may cause processing delays. Program Incentives are limited to $500,000 per utility account in a calendar year. Contact the Market Manager regarding any questions.

Tax Liability – The Market Manager will not be responsible for any tax liability that may be imposed on any Participating Customer as a result of the payment of Program Incentives. All Participating Customers must supply their Federal Tax Identification number or social security number to the Market Manager on the application form in order to receive a Program Incentive. In addition, Participating Customers must also provide a Tax Clearance Form (Business Assistance or Incentive Clearance Certificate) that is dated within 90 days of equipment installation

Endorsement – The Market Manager and Administrator do not endorse, support or recommend any particular manufacturer, product or system design in promoting this Program.

Warranties – THE MARKET MANAGER AND ADMINISTRATOR DO NOT WARRANT THE PERFORMANCE OF INSTALLED EQUIPMENT, AND/OR SERVICES RENDERED AS PART OF THIS PROGRAM, EITHER EXPRESSLY OR IMPLICITLY. NO WARRANTIES OR REPRESENTATIONS OF ANY KIND, WHETHER STATUTORY, EXPRESSED, OR IMPLIED, INCLUDING, WITHOUT LIMITATIONS, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE REGARDING EQUIPMENT OR SERVICES PROVIDED BY A MANUFACTURER OR VENDOR. CONTACT YOUR VENDOR/SERVICES PROVIDER FOR DETAILS REGARDING PERFORMANCE AND WARRANTIES.

Limitation of Liability – By virtue of participating in this Program, Participating Customers agree to waive any and all claims or damages against the Market Manager or the Administrator, except the receipt of the Program Incentive. Participating Customers agree that the Market Manager's and Administrator's liability, in connection with this Program, is limited to paying the Program Incentive specified. Under no circumstances shall the Market Manager, its representatives, or subcontractors, or the Administrator, be liable for any lost profits, special, punitive, consequential or incidental damages or for any other damages or claims connected with or resulting from participation in this Program. Further, any liability attributed to the Market Manager under this Program shall be individual, and not joint and/or several.

Assignment – The Participating Customer may assign Program Incentive payments to a specified vendor.

Participating Customer's Certification – Participating Customer certifies that he/she purchased and installed the equipment listed in their application at their defined New Jersey location. Participating Customer agrees that all information is true and that he/she has conformed to all of the Program and equipment requirements listed in the application.

Termination – The New Jersey Board of Public Utilities reserves the right to extend, modify (this includes modification of Program Incentive levels) or terminate this Program without prior or further notice.

Acknowledgement – I have read, understood and am in compliance with all rules and regulations concerning this incentive program. I certify that all information provided is correct to the best of my knowledge, and I give the Market Manager permission to share my records with the New Jersey Board of Public Utilities, and contractors it selects to manage, coordinate or evaluate the NJ SmartStart Buildings Program. Additionally, I allow reasonable access to my property to inspect the installation and performance of the technologies and installations that are eligible for incentives under the guidelines of New Jersey's Clean Energy Program.

New Jersey's Clean Energy PROGRAM™ Your Power to Save njcleanenergy.com

New Jersey SmartStart BUILDINGS®

New Jersey BPU Board of Public Utilities

2009 Lighting Controls Incentive Worksheet

Customer Information

Company	Facility Address
☐ Check here if multiple worksheets are being submitted for one project/building.	Date Submitted

Lighting Controls Information

For additional fixtures, attach additional sheets and check here ☐

Location	Reason N–New R–Replaced	Control Device Type	Fixture Type Controlled	Watts Controlled per Device	A # of Fixtures Controlled per Device	B # of Units*	C Incentive per Unit	Total Incentive (B x C)
	(Examples) R	OSW	4-lamp, T8		2	4	$20	4 x $20 = $80
	R	OSR	2-lamp, T8		6	2	$35	2 x $35 = $70
	R	DLD	2-lamp, T8			6	$25	6 x $25 = $150
	R	OHLF	4-lamp, T8			12	$25	12 x $25 = $300
	R	OHLH	150w MH		10	5	$75	5 x $75 = $375
	R	DDH	250w HPS		12	4	$75	4 x $75 = $300

*For OSW and OSR, insert number of control devices; for DLD and OHLF, insert total number of ballasts controlled; for OHLH and DDH, insert total number of fixtures controlled.

Total (including additional sheets) ______

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Post Installation Approval – After installation is completed, the Customer, or an agent authorized by the Customer, must finalize and submit an invoice for the purchase of the equipment (material cost must be broken out from labor costs), and any other required documentation as specified on the equipment application or in the Market Manager's initial approval letter.

Please refer to the Program Guide on the NJCleanEnergy.com/ssb website for the complete Application and Eligibility Process.

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Tax Liability – The Market Manager will not be responsible for any tax liability that may be imposed on any Participating Customer as a result of the payment of Program Incentives. All Participating Customers must supply their Federal Tax Identification number or social security number to the Market Manager on the application form in order to receive a Program Incentive. In addition, Participating Customers must also provide a Tax Clearance Form (Business Assistance or Incentive Clearance Certificate) that is dated within 90 days of equipment installation

Endorsement – The Market Manager and Administrator do not endorse, support or recommend any particular manufacturer, product or system design in promoting this Program.

Warranties – THE MARKET MANAGER AND ADMINISTRATOR DO NOT WARRANT THE PERFORMANCE OF INSTALLED EQUIPMENT, AND/OR SERVICES RENDERED AS PART OF THIS PROGRAM, EITHER EXPRESSLY OR IMPLICITLY. NO WARRANTIES OR REPRESENTATIONS OF ANY KIND, WHETHER STATUTORY, EXPRESSED, OR IMPLIED, INCLUDING, WITHOUT LIMITATIONS, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE REGARDING EQUIPMENT OR SERVICES PROVIDED BY A MANUFACTURER OR VENDOR. CONTACT YOUR VENDOR/SERVICES PROVIDER FOR DETAILS REGARDING PERFORMANCE AND WARRANTIES.

Limitation of Liability – By virtue of participating in this Program, Participating Customers agree to waive any and all claims or damages against the Market Manager or the Administrator, except the receipt of the Program Incentive. Participating Customers agree that the Market Manager's and Administrator's liability, in connection with this Program, is limited to paying the Program Incentive specified. Under no circumstances shall the Market Manager, its representatives, or subcontractors, or the Administrator, be liable for any lost profits, special, punitive, consequential or incidental damages or for any other damages or claims connected with or resulting from participation in this Program. Further, any liability attributed to the Market Manager under this Program shall be individual, and not joint and/or several.

Assignment – The Participating Customer may assign Program Incentive payments to a specified vendor.

Participating Customer's Certification – Participating Customer certifies that he/she purchased and installed the equipment listed in their application at their defined New Jersey location. Participating Customer agrees that all information is true and that he/she has conformed to all of the Program and equipment requirements listed in the application.

Termination – The New Jersey Board of Public Utilities reserves the right to extend, modify (this includes modification of Program Incentive levels) or terminate this Program without prior or further notice.

Acknowledgement – I have read, understood and am in compliance with all rules and regulations concerning this incentive program. I certify that all information provided is correct to the best of my knowledge, and I give the Market Manager permission to share my records with the New Jersey Board of Public Utilities, and contractors it selects to manage, coordinate or evaluate the NJ SmartStart Buildings Program. Additionally, I allow reasonable access to my property to inspect the installation and performance of the technologies and installations that are eligible for incentives under the guidelines of New Jersey's Clean Energy Program.

New Jersey Clean Energy Program

Technical Worksheet – Solar Electric Equipment Information

Please carefully read all of the following information. With the help of your Installation Contractor, fully complete Sections A through D, as applicable, of the attached Technical Worksheet for Solar Electric Equipment, as well as the New Jersey Clean Energy Program Rebate Application Form.

GENERAL TERMS AND CONDITIONS

Rebates will be processed based on the date the New Jersey Clean Energy Program (NJCEP) approves the Final Application Form, not on the purchase date of the equipment. Program procedures and rebates are subject to change or cancellation without notice.

To qualify for a rebate, Applicant must comply with all Program Eligibility Requirements, Terms and Conditions, and Installation Requirements, and submit a completed Pre-Installation Application Form. For more information about the New Jersey Clean Energy Program, or for assistance in completing applications or forms, please see www.njcleanenergy.com or call 866-NJSMART

INSTALLATION REQUIREMENTS

Equipment installation must meet the following minimum requirements in order to qualify for payment under the provisions of the New Jersey Clean Energy Program; proposed changes to the requirements will be considered, but they must be documented by the Applicant or Installation Contractor and approved by the NJCEP. These requirements are not all-encompassing and are intended only to address certain minimum safety and efficiency standards.

A: Code Requirements

1. The installation must comply with the provisions of the National Electrical Code and all other applicable local, state and federal codes or practices.
2. All required permits must be properly obtained and posted.
3. The NJCEP Inspection must be performed before the local Building Code Enforcement Office. If not, this may delay the processing of the rebate
4. All required inspections must be performed (i.e., Electrical/NEC, Local Building Codes Enforcement Office, etc.). Note: In order to ensure compliance with provisions of the NEC, an inspection by a state-licensed electrical inspector is mandatory.

B: Solar Electric Module Array

1. Modules must be UL Listed and must be properly installed according to manufacturer's instructions.
2. The maximum amount of sunlight available year-round on a daily basis should not be obstructed. All applications must include documentation of the impact from any obstruction on the annual performance of the solar electric array. This analysis can be performed by using the New Jersey Clean Power Estimator on the program website www.njcep.com.
3. In order to qualify for program incentives, the solar electric system must adhere to a minimum design threshold, relative to the estimated system production using PVWATTS:
    - Solar electric array orientations require that the calculated system output must be at least 80% of the default output calculated by PVWatts. Additionally, all individual series strings of modules output must be at least 70% of the default output calculated by PVWatts.
    - For building integrated solar electric systems (i.e., part of the building envelope materials are comprised of solar electric components), the estimated system output must be 40% of the default output estimated by PVWATTS.
4. System wiring must be installed in accordance with the provisions of the NEC.
5. All modules installed in a series string must be installed in the same plane.

C: Inverter and Controls

1. The inverter and controls must be properly installed according to manufacturer's instructions.
2. The inverter must be certified as compliant with the requirements of IEEE 929 for small photovoltaic systems and with UL 1741.
3. The system should be equipped with the following visual indicators and/or controls:
    - On/off switch • Operating mode setting indicator • AC/DC over current protection • Operating status indicator
4. Warning labels must be posted on the control panels and junction boxes indicating that the circuits are energized by an alternate power source independent of utility-provided power.
5. Operating instructions must be posted on or near the system, or on file with facilities operation and maintenance documents.
6. Systems must have monitoring capability that is readily accessible to the owner. This monitor (meter or display) must at minimum display instantaneous and cumulative production. All projects greater than 10kW must have an output meter that meets ANSI C.12 standards

D: Control Panel to Solar Electric Array Wire Runs

1. Areas where wiring passes through ceilings, walls or other areas of the building must be properly restored, booted and sealed.
2. All interconnecting wires must be copper. (Some provisions may be made for aluminum wiring; approval must be received from utility engineering departments prior to acceptance.)
3. Thermal insulation in areas where wiring is installed must be replaced to "as found or better condition." Access doors to these areas must be properly sealed and gasketed.
4. Wiring connections must be properly made, insulated and weather-protected.
5. All wiring must be attached to the system components by the use of strain relief's or cable clamps, unless enclosed in conduit.
6. All outside wiring must be rated for wet conditions and/or encased in liquid-tight conduit.
7. Insulation on any wiring located in areas with potential high ambient temperature must be rated at 90° C or higher.
8. All wiring splices must be contained in UL-approved workboxes.

E: Batteries (If Applicable)

1. The batteries must be installed according to the manufacturer's instructions.
2. Battery terminals must be adequately protected from accidental contact.
3. DC-rated over current protection must be provided in accordance with the provisions of the NEC.

New Jersey Clean Energy Program

Technical Worksheet – Solar Electric Equipment Information

Original Application Date: _____ Revised Application Date: _____

Customer Name: _____ Application Number: _____

(Corresponding to Rebate Application Form) (Assigned by the NJBPU)

A: EQUIPMENT INFORMATION

1. Solar Electric Module Manufacturer: _____ Module Model Number: _____
2. Power Rating per Module: _____ DC Watts (Refer to STC conditions) Number of Modules: _____
3. Total Array Output: _____ DC Watts (No. of Modules x Power Rating)
4. Inverter Manufacturer: _____ Inverter Model Number: _____
5. Inverter's Continuous AC Rating: _____ AC Watts Number of Inverters: _____
6. Total Inverter Output: _____ AC Watts (Inverter Continuous AC Rating x Number of Inverters)
7. Inverter's Peak Efficiency: _____ (Refer to manufacturer's peak efficiency rating)

B: PROPOSED INSTALLATION/INTERCONNECTION INFORMATION

1. Solar Electric Array Location: _ Rooftop _ Pole Mount or Ground Mount Location:
2. Solar Electric Module Orientation: _____ degrees (e.g., 180 degrees magnetic south)

   Note: in Central New Jersey, magnetic south compass reading is 10 degrees east of true south.
3. Solar Electric Module Tilt: _____ degrees (e.g., flat mount = 0 degrees; vertical mount = 90 degrees)
4. Solar Electric Module Tracking: _Fixed _Single-axis _Double-axis
5. Inverter Location: _ Indoor _ Outdoor Location: _____
6. Utility-Accessible AC Disconnect Switch Location: _____
7. System Type and Mode of Operation:
   - _ Utility interactive (parallel/capable of back feeding the meter) (_ with battery backup)
   - _ Dedicated circuit, utility power as backup (transfer switch) (_ with battery charging)
   - _ Stand-alone (system confined to an independent circuit, no utility backup) (_ with battery charging)

C: INCENTIVE REQUEST CALCULATION

1. System rated output (Section A, line 3 above): _____ DC Watts
2. Incentive Calculation (Calculate appropriate incentive based on System Rated Output):

Residential Applicants that perform Energy Efficiency Audit

a. 0 to 10,000 Watts x $1.75/Watt = $_____+

Residential Applicants that <u>do not</u> perform Energy Efficiency Audit

b. 0 to 10,000 Watts x $1.55/Watt = $_____+

Commercial, Farm, Public and Non-Profit

0 to 50,000 Watts x $1.00/Watt = $_____+

<u>Large PV Project Applications</u>

> 50,000 Watts = $____Not eligible for rebates_____

d. Total Rebate Calculation: $_____

Total Rebate Calculation: $_____

3. School Applicants: Maximum Annual School Rebate: $_____
   (For Public School applicants, enter the lesser value from no. 6 on the School Application form or $50,000)
4. Total Installed System Cost: $_____
   (Eligible installed system cost includes all equipment, installation, and applicable interconnection costs before the New Jersey Clean Energy Program incentive.)
5. **Requested Incentive** (Enter the appropriate value from C2. b or c): $_____

D: WARRANTY INFORMATION

1. Module: _____ Years at _____ Percent of Rated Power Output 2. Inverter: _____ Years 3. Installation: _____ Years

Revised January 2009

APPENDIX G

CONSTRUCTION ESTIMATES

CDM

15 British American Blvd
Latham, NY 12110
Phone (518) 782-4500
Fax (518) 786-3810

PROJECT CONSTRUCTION COST ESTIMATE

Location: City of Vineland
Estimate by: RKA
Checked by: MG

ITEM	DESCRIPTION	QTY	UNIT	MATERIAL UNIT COST	MATERIAL SUBTOTAL	QTY	UNIT	LABOR COST	LABOR SUBTOTAL	TOTAL
1	**Vineland City Hall** Boiler, Gas-Fired, Condensing High Efficiency 2,000 MBH	2	ea.		$ 68,000.00	2	ea.	$ 5,750.00	$ 11,500.00	$ 79,500.00
	Subtotal				68,000.00				11,500.00	

SUBTOTAL =	$	79,500.00
MARKUP % =	$	0.15
MARKUP =	$	11,925.00
SUB-TOTAL w/ OH & P =	$	91,425.00
CONTINGENCY % =		0.25
CONTINGENCY =	$	22,856.25
BUDGET COST ESTIMATE =	$	114,281.25

CDM

PROJECT CONSTRUCTION COST ESTIMATE

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Latham, NY 12110
Phone (518) 782-4500
Fax (518) 786-3810

Location: City of Vineland
Estimate by: RKA
Checked by: MG

ITEM	DESCRIPTION	QTY	UNIT	MATERIAL & LABOR UNIT COST	MATERIAL SUBTOTAL	TOTAL
	Vineland City Hall					
1	DDC Control System	100,000	SF	$ 0.40	$ 40,000.00	40,000.00
	Subtotal				40,000.00	

SUBTOTAL =	$	40,000.00
MARKUP % =	$	0.15
MARKUP =	$	6,000.00
SUB-TOTAL w/ OH & P =	$	46,000.00
CONTINGENCY % =		0.25
CONTINGENCY =	$	11,500.00
BUDGET COST ESTIMATE =	$	57,500.00

Notes:
1. DDC Control System Pricing is estimated at $0.40 per square foot
2. One control or sensor point is estimated at $500, thus this system would provide for approximately 92 points

CDM

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PROJECT CONSTRUCTION COST ESTIMATE

Location: City of Vineland
Estimate by: RKA
Checked by: MG

ITEM	DESCRIPTION	QTY	UNIT	MATERIAL UNIT COST	MATERIAL SUBTOTAL	QTY	UNIT	LABOR COST	LABOR SUBTOTAL	TOTAL
1	**Vineland City Hall** Thermostat - Heating/Cooling, low voltage, with clock	100	ea.	$ 140.00	$ 14,000.00	100	ea.	$ 53.50	$ 5,350.00	$ 19,350.00
	Subtotal				14,000.00				5,350.00	

SUBTOTAL =	$	19,350.00
MARKUP % =	$	0.15
MARKUP =	$	2,902.50
SUB-TOTAL w/ OH & P =	$	22,252.50
CONTINGENCY % =		0.25
CONTINGENCY =	$	5,563.13
BUDGET COST ESTIMATE =	$	27,815.63

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PROJECT CONSTRUCTION COST ESTIMATE

Location: City of Vineland
Estimate by: RKA
Checked by: MG

ITEM	DESCRIPTION	QTY	UNIT	MATERIAL UNIT COST	MATERIAL SUBTOTAL	QTY	UNIT	LABOR COST	LABOR SUBTOTAL	TOTAL
1	**Vineland City Hall** Variable Frequency Drives, Custom-engineered, 460 volt (30 HP motor)*	3	ea.	$ 6,725.00	$ 20,175.00	3	ea.	$ 2,150.00	$ 6,450.00	$ 26,625.00
	Subtotal				20,175.00				6,450.00	

SUBTOTAL =	$	26,625.00
MARKUP % =	$	0.15
MARKUP =	$	3,993.75
SUB-TOTAL w/ OH & P =	$	30,618.75
CONTINGENCY % =		0.25
CONTINGENCY =	$	7,654.69
BUDGET COST ESTIMATE =	$	38,273.44

*Motor size has been conservatively assumed to be 30 HP, with two VFDs for the cooling tower fans, and one VFD for the chiller

CDM

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Latham, NY 12110
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Fax (518) 786-3810

PROJECT CONSTRUCTION COST ESTIMATE

Location: City of Vineland
Estimate by: MRM
Checked by: MG

ITEM	DESCRIPTION	QTY	UNIT	MATERIAL & LABOR UNIT COST	MATERIAL SUBTOTAL	TOTAL
	Vineland Police Station					
1	DDC Control System	33,660	SF	$ 0.40	$ 13,464.00	13,464.00
	Subtotal				13,464.00	

SUBTOTAL =	$	13,464.00
MARKUP % =	$	0.15
MARKUP =	$	2,019.60
SUB-TOTAL w/ OH & P =	$	15,483.60
CONTINGENCY % =		0.25
CONTINGENCY =	$	3,870.90
BUDGET COST ESTIMATE =	$	19,354.50

Notes:
1. DDC Control System Pricing is estimated at $0.40 per square foot
2. One control or sensor point is estimated at $500, thus this system would provide for approximately 31 points

CDM

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PROJECT CONSTRUCTION COST ESTIMATE

Location: City of Vineland
Estimate by: RNG
Checked by: JM

ITEM	DESCRIPTION	QTY	UNIT	MATERIAL UNIT COST	MATERIAL SUBTOTAL	QTY	UNIT	LABOR COST	LABOR SUBTOTAL	TOTAL
1	**Vineland City Hall** Lighting Upgrades - Option 1	1	ls.	$ 69,583.00	$ 69,583.00	1	ls..	$ 23,575.00	$ 23,575.00	$ 93,158.00
	Subtotal				69,583.00				23,575.00	

SUBTOTAL =	$	93,158.00
MARKUP % =	$	0.43
MARKUP =	$	40,057.94
BUDGET COST ESTIMATE =	$	133,215.94

CDM

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PROJECT CONSTRUCTION COST ESTIMATE

Location: City of Vineland
Estimate by: RNG
Checked by: JM

ITEM	DESCRIPTION	QTY	UNIT	MATERIAL UNIT COST	MATERIAL SUBTOTAL	QTY	UNIT	LABOR COST	LABOR SUBTOTAL	TOTAL
1	**Vineland City Hall** Lighting Upgrades - Option 2	1	ls.	$ 16,658.00	$ 16,658.00	1	ls..	$ 10,155.00	$ 10,155.00	$ 26,813.00
	Subtotal				16,658.00				10,155.00	

SUBTOTAL =	$	26,813.00
MARKUP % =	$	0.43
MARKUP =	$	11,529.59
BUDGET COST ESTIMATE =	$	38,342.59

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PROJECT CONSTRUCTION COST ESTIMATE

Location: City of Vineland
Estimate by: RNG
Checked by: JM

ITEM	DESCRIPTION	QTY	UNIT	MATERIAL UNIT COST	MATERIAL SUBTOTAL	QTY	UNIT	LABOR COST	LABOR SUBTOTAL	TOTAL
	Vineland Police Station									
1	Lighting Upgrades	1	ls.	$ 10,380.00	$ 10,380.00	1	ls..	$ 6,980.00	$ 6,980.00	$ 17,360.00
	Subtotal				10,380.00				6,980.00	

SUBTOTAL =	$	17,360.00
MARKUP % =	$	0.43
MARKUP =	$	7,464.80
BUDGET COST ESTIMATE =	$	24,824.80

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PROJECT CONSTRUCTION COST ESTIMATE

Location: City of Vineland
Estimate by: RNG
Checked by: JM

ITEM	DESCRIPTION	QTY	UNIT	MATERIAL UNIT COST	MATERIAL SUBTOTAL	QTY	UNIT	LABOR COST	LABOR SUBTOTAL	TOTAL
1	**Vineland City Hall** PV System	1	ls.	$ 1,131,530.00	$1,131,530.00	1	ea.	$ 557,320.50	$ 557,320.50	$ 1,688,850.50
	Subtotal				1,131,530.00				557,320.50	

SUBTOTAL =	$ 1,688,850.50
MARKUP % =	$ 0.15
MARKUP =	$ 253,327.58
BUDGET COST ESTIMATE =	$ 1,942,178.08

CDM

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Latham, NY 12110
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PROJECT CONSTRUCTION COST ESTIMATE

Location: City of Vineland
Estimate by: RNG
Checked by: JM

ITEM	DESCRIPTION	QTY	UNIT	MATERIAL UNIT COST	MATERIAL SUBTOTAL	QTY	UNIT	LABOR COST	LABOR SUBTOTAL	TOTAL
	Vineland Police Station									
1	PV System	1	ls.	$ 828,823.50	$ 828,823.50	1	ea.	$ 408,226.50	$ 408,226.50	$ 1,237,050.00
	Subtotal				828,823.50				408,226.50	

SUBTOTAL =	$ 1,237,050.00
MARKUP % =	$ 0.15
MARKUP =	$ 185,557.50
BUDGET COST ESTIMATE =	$ 1,422,607.50

APPENDIX H

FACILITY DATA FORM

APPENDIX C - FACILITY DATA FORM

Complete one Facility Data Form for <u>each</u> building. If you are seeking to energy audit multiple buildings, complete one Facility Data Form for each.

FACILITY INFORMATION

Please complete the information below for this specific facility that is seeking enrollment in the Program.

Facility Name & Address POLICE BUILDING – 111 North Sixth Street, Vineland	
Facility's Description Building houses Police Department and Prosecutor's Office	
Total Square Footage 37,152 sq. ft.	Year Built 1966
Number of Hours Occupied per Week Approx. 168 hours	Number of Employees 190

ENERGY DATA

Please complete the energy information below for the most recent 12 month period available. In order to gain a complete picture of the facility's energy use, be sure to include all types of energy used by the facility. Do not include vehicle fuel.

The Data Below is for the 12 Month Period: 11/ / 2007 to 11/ / 2008

ELECTRICITY

Electric Utility Name & Account Number(s) Vineland Municipal Utilities	
Annual kWh Use 6388400.00	Annual Electricity Cost $134,534.70
Max Summer kW 86400.00	Max Winter kW 91600.00

APPENDIX C - FACILITY DATA FORM

Complete one Facility Data Form for <u>each</u> building. If you are seeking to energy audit multiple buildings, complete one Facility Data Form for each.

FACILITY INFORMATION

Please complete the information below for this specific facility that is seeking enrollment in the Program.

Facility Name & Address	
CITY HALL – 640 EAST WOOD ST., VINELAND	
Facility's Description	
Municipal Building housing various departments including Administration Finance, Health, Human Resources, Purchasing, City Clerk, Tax Assessor, Tax Collection, License & Inspection, Information Services, etc.	
Total Square Footage	**Year Built**
Approx. 100,000 sq. ft	1971
Number of Hours Occupied per Week	**Number of Employees**
Approx. 60 hours	150

ENERGY DATA

Please complete the energy information below for the most recent 12 month period available. In order to gain a complete picture of the facility's energy use, be sure to include all types of energy used by the facility. Do not include vehicle fuel.

The Data Below is for the 12 Month Period: 11 / /2007 to 11 / /2008

ELECTRICITY

Electric Utility Name & Account Number(s)	
Vineland Municipal Utilities	
Annual kWh Use	**Annual Electricity Cost**
29228400.00	$417,025.00
Max Summer kW	**Max Winter kW**
347400.00	289800.00

NATURAL GAS

Natural Gas Utility Name & Account Number(s)	
South Jersey Gas Co. - #3 02 15 0211 0 3	
Annual Use in Therms	Annual Natural Gas Cost
34965.39	$36,351.17

FUEL OIL

Fuel Oil Utility Name & Account Number(s)	
Annual Use in Gallons	Annual Fuel Oil Cost

PROPANE

Propane Utility Name & Account Number(s)	
Annual Use in Gallons	Annual Propane Cost

OTHER

In this section please indicate any other fuel type that the facility uses, such as: solar energy, wind energy, bio-fuel, cogeneration, fuel cells.

Other Fuel Type:	
Annual Energy Use (indicate units)	Annual Energy Cost

STAFF USE ONLY

Date Received: _____ Project No.: _____