

Woodbridge Township

Energy Audit Report

Revised March 2010

Final Report

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Executive Summary

As part of an initiative to reduce energy cost and consumption, the State of New Jersey's Department of Treasury has secured the services of CDM and its pre-approved sub-consultant Metro Energy Solutions to perform an energy audit for buildings owned and operated by the Township of Woodbridge ("Township") in an effort to develop comprehensive Energy Conservation Retrofit Measures (ECRMs). Collectively CDM and Metro Energy Solutions will be referred to throughout this document as ("CDM/Metro"). The energy audit team visited the facilities on August 4th, 5th and 6th, 2009. As a result of the site visits and evaluation of the historical energy usage of the facility, CDM/Metro was successful in identifying opportunities for energy savings measures. CDM/Metro has also evaluated the potential for renewable energy technologies to be implemented at the Township's facility to offset the Township's electrical energy usage. Specifically, the use of solar electric photovoltaic panels was investigated on buildings not previously included in the Township's current ongoing Solar Project.

It is important to note that the ECRMs outlined in Section B of this report are not only payback driven but include measures identified for renewable and/or environmental benefits, for energy cost savings, operation and maintenance concerns, and to increase comfort levels. A wide range of measures were evaluated, with a wide range of payback periods, with the ultimate goal of providing a range of options for the Township to consider. Not all ECRMs identified as a result of the energy audit are recommended. ECRMs must be economically feasible to be recommended to the Township for implementation. The feasibility of each ECRM was measured through a simple payback analysis. The simple payback period was determined after establishing estimated Construction Cost estimates, Operations & Maintenance (O&M) estimates, projected annual energy savings estimates, and the potential value of New Jersey Clean Energy rebates, or Renewable Energy Credits, if applicable.

Summary of Proposed Pricing and Savings

The rates used to calculate electric cost savings were calculated based on the utility data provided by the Township and are included in the Energy Use Analysis write-up section of this report. Please note that the average fuel prices used to calculate electric energy cost savings are based on 2008/09 bills and that general assumptions were made where any necessary data was missing. For purposes of this report and forecasting future energy cost increases we have assumed an electric and gas inflation rate of 3% per year. For water and sewer we applied a 2% inflation rate in each year.

Historical Energy Usage

The following table, Table ES-1, summarizes the current annual energy usage at each of the District's buildings. These values can serve as a benchmarking tool, to quantify the reduction in electrical energy and natural gas usage following implementation of the recommended ECRMs.

Table ES-1: Annual Energy Usage & Cost (2008-2009)

	Electrical Energy Use (kWh)	Natural Gas Use (therms)	Water Use (gals)	Cost for Electric Service	Cost for Natural Gas	Cost for Water Service
Municipal Bldg	3,816,589	85,005	N/A	\$472,150	\$122,609	N/A
Community Center	3,207,376	114,391	N/A	\$466,325	\$39,180	N/A
Pump Station	3,822,591	4,315	N/A	\$159,727	\$1,746	N/A
Evergreen Senior Center	119,709	9,739	N/A	\$10,689	\$3,195	N/A
Barron Arts Center	59,166	2,725	N/A	\$3,621	\$1,171	N/A
Health Center	106,860	8,258	N/A	\$9,293	\$3,312	N/A
Main Library	1,104,160	20,350	1240	\$165,552	\$28,519	\$11,294
Iselin Branch Public Library	57,200	6,388	65	\$13,348	\$8,867	\$600
Fords Branch Public Library	144,300	4,701	46	\$27,164	\$6,845	\$756
Inman Branch Public Library	96,880	4,133	27	\$16,985	\$5,873	\$391

Recommended ECRMs

The following table, Table ES-2, presents the ranking of recommended ECRMs identified for the building including but not limited to lighting, HVAC systems, water conservation and building envelope. Additional ECRMs were identified and evaluated, as discussed in Section 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-2: Ranking of Recommended ECRMs

Overall Ranking (Based on Simple Payback)	ECRM	Engineer's Opinion of Probable Construction Cost ¹	Projected Annual Energy Savings (kWh, therms or gallons)	Projected Annual Energy & O&M Cost Savings	Simple Payback Period (Years)
1	Municipal Building - Interior Zone (VAV System)	\$57,000	69,697 kWh 21,000 therms	\$38,882	1.47
2	Evergreen Senior Center - Steam Trap Maintenance	\$5,000	2,247 therms	\$3,146	1.59
3	Health Center - Lighting Replacement/Occupancy Sensor Inst	\$12,504	43,186 kWh	\$7,125	1.76
4	Fords Library - Lighting Replacement/Occupancy Sensor Inst	\$4,103	9,559 kWh	\$1,912	2.15
5	Pump Station - Lighting Replacement/Occupancy Sensor Inst.	\$8,870	69,934 kWh	\$3,871	2.29
6	Municipal Building - Lighting Replacement/Occupancy Sensor Inst	\$46,835	134,674 kWh	\$19,014	2.46
7	Inman Library - Lighting Replacement/Occupancy Sensor Inst	\$7,779	13,671 kWh	\$2,610	2.98
8	Main Library - Lighting Replacement/Occupancy Sensor Inst	\$88,527	171,917 kWh	\$27,007	3.28
9	Baron Arts Center - Lighting Replacement/Occupancy Sensor Inst	\$1,878	3,182 kWh	\$485	3.88
10	Community Center - Lighting Replacement/Occupancy Sensor Inst.	\$15,137	22,142 kWh	\$3,658	4.14
11	Iselin Library - Lighting Replacement/Occupancy Sensor Inst	\$2,230	2,024 kWh	\$488	4.57
12	Evergreen Senior Center - Lighting Replacement/Occupancy Sensor Inst	\$36,702	41,844 kWh	\$6,987	5.25

Overall Ranking (Based on Simple Payback)	ECRM	Engineer's Opinion of Probable Construction Cost ¹	Projected Annual Energy Savings (kWh, therms or gallons)	Projected Annual Energy & O&M Cost Savings	Simple Payback Period (Years)
13	Evergreen Senior Center - Water Conservation	\$22,600	274 therms 405,000 gallons	\$3,219	7.02
14	Fords Library - Water Conservation	\$3,740	44,062 gallons	\$344	10.87
15	Iselin Library - Water Conservation	\$3,740	41,250 gallons	\$319	11.72
16	Main Library - Building Management System	\$75,000	21,092 kWh 2,034 therms	\$6,011	12.48
17	Community Center - HVAC Control Replacement (DDC)	\$150,000	41,476 kWh 3,108 therms	\$10,365	14.47
18	Municipal Building - Building Management System	\$45,000	-	\$2,920	15.41
19	Fords Library - HVAC Unit Replacement	\$57,810	11,776 kWh 940 therms	\$3,586	16.12
20	Health Center – Water Conservation	\$10,250	73,125 gallons	\$512	20.02

¹ Engineers Probable Construction takes into account any applicable rebates.

Table ES-3: Recommended ECRMs¹

Total Engineer's Opinion of Probable Construction Cost	Projected Annual Energy Savings	Projected Annual Energy & O&M Cost Savings	Simple Payback Period (years)
\$654,705	656,164 kWh, 29,603 therms, 563,437 gals	\$142,461	4.60

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

Renewable Energy Technologies

Solar Energy

Section 4.5 of the report provides for an economic evaluation of a solar energy system recommended to be installed at some of the Township's facilities. The evaluation covered the economic feasibility of the Township furnishing and installing a solar energy system under a typical construction contract and to assume full responsibility of the operation of such a system.

Based on a simple payback model, summarized in Table ES-4, it would benefit the Township to further investigate the installation of a solar energy system at six (6) buildings. This is primarily based on the initial upfront capital investment required for a solar energy system installation and the 11 year payback period. This payback period justifies installing the solar energy system. 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 4.5.

Table ES-4 includes a simple payback analysis for the installation of a solar energy system at the identified Township buildings. Refer to Appendix A for a more detailed solar financing spreadsheet.

Table ES-4: Simple Payback Analysis for Solar Energy System

Parameter	Solar
Estimated Budgetary Project Cost	\$10,516,250
1 st Year Production	1,699,337 kWh
Annual Electric Savings	\$249,876
Annual Estimated SREC Revenue	\$669,216
Project Simple Payback	11.44

Section 1

Introduction

1.1 General

As part of an initiative to reduce energy cost and consumption, the Township has secured the services of CDM/Metro to perform an energy audit of ten (10) Township facilities 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 retrofit measures (ECRM). The various phases conducted under this Energy Audit included the following:

1. Historic Energy Consumption: 1) Compiled historic usage and costs for all energy utilities provided including electric, natural gas, propane and fuel oil for the twelve months prior to the audit; 2) Identified the utility rate schedules under which services are provided to each meter; 3) Entered the required building and utility data into the U.S. Environmental protection Agency's (EPA) Portfolio Manager energy benchmarking system. Reported the resulting EPA score for each building (when available).
2. CDM/Metro conducted a detailed site inspection of each facility and its operations, including interviews with operators. Client participation was essential to the preparation of this audit report. Interviews and site visits included participation by your staff. Inspection of each building was conducted in sequence with one another.
3. CDM/Metro conducted a review and audit of all mechanical and electrical equipment and systems in these facilities to understand their condition, age, operating characteristics, etc., and to identify potential energy savings or operational improvements associated with these systems.
4. CDM/Metro generated a list of current mechanical and electrical equipment in each facility along with proposed ECRMs. We also provided a description of each recommendation, including justification for the recommendation. An economic analysis, inclusive of estimates of applicable savings and capital costs, was developed for each of these recommendations. The analyses are spreadsheet based and include estimated energy savings, simple payback, and estimated return on investment and are included in Section D. The calculations are based upon industry accepted norms for construction cost opinions, energy cost projections, and comparative energy usage based on building type, square footage, and age. Potential rebate amounts are incorporated in the calculations where applicable.

5. CDM/Metro has identified and estimated potential rebates for energy projects offered through the New Jersey BPU's SmartStart Buildings program or the Clean Energy Program.
6. This document will serve as the formal report of all findings, analyses and recommendations as they relate to equipment inventory and energy savings opportunities that can be realized by the Township.

1.2 Background

This Energy Audit for the Township of Woodbridge consists of ten (10) buildings as outlined below:

	<u>Facility Name</u>	<u>Facility Square Footage</u>
1.	Woodbridge Township Municipal Building	93,700
2.	Woodbridge Community Center	82,300
3.	Woodbridge Township Pump Station	6,300
4.	Evergreen Senior Center	28,250
5.	Barron Arts Center	2,270
6.	Woodbridge Township Health Center	10,000
7.	Woodbridge Township Main Library	52,000
8.	Iselin Branch Public Library	8,700
9.	Fords Branch Public Library	16,000
10.	Inman Branch Public Library	4,400

The total square footage of buildings covered as part of this study and as outlined above is 303,920. The buildings vary in age, type, use, etc. A description of each is provided in Section 2 of this report.

1.3 Purpose and Scope

The objective of the energy audit is to identify energy conservation 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. 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 and 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 that are major consumers of electrical energy and are clear candidates for energy savings measures. In addition, the potential for solar electric systems to be installed was evaluated and presented herein. The scope of the electrical portion of this audit includes: building lighting systems retrofits, occupancy sensor installations, solar feasibility analyses, , and evaluation of existing electrical systems. These systems have been identified in an effort to provide ECRMs. A list of the current electrical equipment has been provided. In addition potential incentives and rebates have been identified based on the New Jersey BPU's SmartStart Buildings Program, and/or the Clean Energy Program. Rebate estimates for each ECRM are provided in each subsection along with measure description, estimated savings and estimated installation costs.

Section 2

Facility Description

2.1 Woodbridge Township Municipal Building

The Municipal building is 93,700 square feet and 13 years old. There was little documentation available at the time of the audit. This report is based on information from maintenance personnel and energy consumption records obtained over a one year period.



2.1.1 Description of Building Envelope

The windows have double pane glass mounted on aluminum frames. The windows appear to be a tight fit construction in good condition with minimal infiltration loss.

The exterior walls are assumed to have insulation meeting the applicable Energy codes.

The roof has built up roof membranes (BUR). The entire roof is fairly new (13 years old) and in good condition.

2.1.2 Description of Building Mechanical Equipment

Heating System

The heating system was inoperative for the summer season at the time of the energy audit.

There are two (2) original cast iron Smith gas-fired hot water boilers rated at 1,526 MBH output. Hot water is circulated to hot water coils in VAV (variable-air-volume) boxes and to fan-powered VAV units which provide hot air heating to all occupied spaces. Hot water is also pumped to hot water coils in the four (4) rooftop packaged air conditioning units for freeze protection.

Each heating zone in the occupied spaces has a thermostatically controlled VAV unit with a hot water heating coil which provides hot air heating to the space.

Cooling System

There are four (4) rooftop packaged air conditioning units that serve the 4 floors of the Municipal building. The 4 units supply conditioned air to VAV (variable-air-volume) boxes and to fan-powered VAV units which provide cooling to all occupied spaces.

The Police IT (information technology) room is served by a Liebert split system air conditioning (AC) unit. When new computer equipment was added to the IT room, another Trane split AC unit was added in 1997.

Building personnel stated that eight (8) compressors on the four units have been replaced possibly due to low voltage conditions from the utility. Also, condensing units on rooftop packaged air conditioning units Roof Top Unit ("RTU"), RTU 2 and RTU 3 had been replaced 2 years ago.

Ventilation

Outdoor ventilation air is provided by four (4) rooftop packaged air conditioning units that serve the 4 floors of the Municipal building. The units draw in fresh air and mix it into the supply air system which serves the occupied spaces.

HVAC Controls

RTU 2 and RTU 3 are on a digital Building Management System (BMS) that can be accessed via a computer. The BMS system has full capabilities of monitoring, start/stop, temperature override, scheduling, etc., which is utilized by operating personnel.

The VAV units provide heating and cooling to all occupied spaces. Each VAV is controlled by a thermostat.

Domestic Hot Water

Domestic hot water is provided by one (1) PVI gas-fired hot water heater rated at 225 gallons.

Water Fixtures

All the fixtures are relatively efficient featuring 1.6GPF toilets, 1.0 GPF urinals and 2.2 GPM sinks.

Major Mechanical Equipment Life Expectancy

Table 1 below shows a listing of major HVAC equipment found at this facility. Also included is the typical life expectancy and general condition of the equipment. The life expectancy data is an excerpt from a survey done by ASHRAE (American Society of Heating, Refrigeration and Air-conditioning Engineers) and listed in the ASHRAE Handbook - HVAC Applications (Chapter 35, Table 3).

Table 1: HVAC Equipment List

Unit	Size	# of Units	Area Served	Age	Median Life (years)	Condition
RTU 1(Rooftop unit)	19,500 cfm	1	Ground floor	1996, new condenser 2007	15	Good
RTU 2	32,000	1	1 st floor	1996, new	15	Good, condenser

Unit	Size	# of Units	Area Served	Age	Median Life (years)	Condition
	cfm			condenser 2007		replaced 2 years ago
RTU 3	55,000 cfm	1	2 nd and 3 rd floor	1996	15	Good, condenser replaced 2 years ago
RTU 4	3,000 cfm	1	courtroom	1996	15	Good
Liebert AC unit		1	Police IT room	1996, new condenser in 2005	15	Good
Trane AC unit		1	Police IT room	2007	15	Good
Boiler 1&2	1,526 MBH	2	Office	1996	35	Good
VAV boxes	varies	many	all 4 floors	1996	20	Good
2 - HW pumps	20 HP	2	whole building	1996	20	Good
DHW heater	225 gal	1	bathrooms/sinks	1996	15	Good

2.1.3 Description of Building Lighting

Lighting System

The existing lighting system consists of 2X2 (2 and 3 lamp), 2X4 (2, 3, and 4 lamp), 8-foot (2 lamp), 4-foot (1, 2, and 4 lamp), 2-foot (2 lamp) linear fluorescent fixtures, along with compact fluorescent, metal halide, high pressure sodium, and incandescent fixtures. All of the fluorescent fixtures at this facility already have energy efficient T-8 lamps, but there are a small number of existing inefficient incandescent and existing high pressure sodium fixtures that should be replaced. There are currently no controlling devices turning lights on and off based upon occupancy.

2.2 Woodbridge Community Center

The Community Center is 82,300 square feet and became fully operative in 2003. This report relies on information from maintenance personnel and energy consumption records obtained over a two year period.



2.2.1 Description of Building Envelope

The windows have double pane glass mounted on aluminum frames. The windows appear to be a tight fit construction in good condition with minimal infiltration loss.

The exterior walls are assumed to have insulation meeting the applicable Energy codes.

The roof has built up roof membranes (BUR). Therefore, the entire roof is fairly new (installed in 2003) and in good condition.

2.2.2 Description of Building Mechanical Equipment

Heating System

The heating system was inoperative for the summer season at the time of the energy audit.

There are sixteen (16) packaged rooftop units (RTU) which provide heating, air-conditioning and ventilation to all occupied spaces. Each unit has a gas fired heating section. All RTU units except, for the pool and ice rink, have an economizer package to save energy.

Cooling System

There are sixteen (16) packaged rooftop units (RTU) which provide heating, air-conditioning and ventilation to all occupied spaces. All RTU units, except for the pool and ice rink, have an economizer package to save energy.

Ventilation

Outdoor ventilation air is provided by sixteen (16) packaged rooftop units (RTU) which provide heating, air-conditioning and ventilation to all occupied spaces. The units draw in fresh air and mix it into the supply air system which serves the occupied spaces.

HVAC Controls

Heating and cooling is controlled by programmable thermostats.

Domestic Hot Water

Domestic hot water is provided by three (3) gas-fired hot water heaters:

- 80 gallon set at 77 degrees to serve bathrooms.
- 80 gallon set at 120 degrees to serve ice rink.
- 100 gallon to serve kitchens.

Water Fixtures

All the fixtures are relatively efficient featuring 1.6 GPF (Gallons Per Flush) toilets, 1.0 GPF urinals and 2.2 GPM sinks.

Major Mechanical Equipment Life Expectancy

Table 2 below shows a listing of major HVAC equipment found at this facility. Also included is the typical life expectancy and general condition of the equipment. The life expectancy data is an excerpt from a survey done by ASHRAE (American Society of Heating, Refrigeration and Air-conditioning Engineers) and listed in the ASHRAE Handbook - HVAC Applications (Chapter 35, Table 3).

Table 2: HVAC Equipment List

Unit	Size	# of Units	Area Served	Age	Median Life (years)	Condition
RTU 1	600 cfm	1	maintenance	2003	15	Good
RTU 2	1600	1	team lockers	2003	15	Good
RTU 3	1600	1	warming	2003	15	Good
RTU 4	1685	1	south classrooms	2003	15	Good
RTU 5	3200	1	north classrooms	2003	15	Good
RTU 6	2220	1	concession/party	2003	15	Good
RTU 7	2420	1	wellness	2003	15	Good
RTU 8	2420	1	game lounge	2003	15	Good
RTU 9	2905	1	pro shop	2003	15	Good
RTU 10	4705	1	Office/admin.	2003	15	Good
RTU 11	6800	1	lobby/event area	2003	15	Good
RTU 12	8400	1	gymnasium	2003	15	Good
RTU 13	1695	1	pool locker	2003	15	Good
RTU 14	8200	1	pool locker	2003	15	Good
RTU 15	11,000	1	roller rink	2003	15	Good
RTU 16	11,000	1	ice rink	2003	15	Good
Ice rink Chiller	110 Tons	1	ice rink	2003	20	Good
Ice rink Cool. tower	110 Tons	1	ice rink	2003	20	Good
2-CHW brine pumps	25 Hp	2	ice rink	2003	20	Good
Cond. Water Pump	7.5 Hp	1	ice rink	2003	20	Good
Snow pit pump	5 Hp	1	ice rink	2003	20	Good
Pool Boiler	1,010 Mbh	1	pool	2003	25	Good
Condensing Unit	507 Mbh	1	roller rink	2003	20	Good
Condensing Unit	284 Mbh	1	pool	2003	20	Good
2 - booster pumps	5 Hp	2	domestic cold water	2003	10	Good
Pizza Hood Exh. Fan	1.5 Hp	1	Pizza Hood	2003	20	Good
Grill Hood Exh. Fan	3 Hp	1	Grill Hood	2003	20	Good

Unit	Size	# of Units	Area Served	Age	Median Life (years)	Condition
3 Methane fans	7.5 Hp	3	Ground Methane extraction	2003	20	Good
DHW heater	80 gal	1	bathrooms/sinks	2003	15	Good
DHW heater	80 gal	1	ice rink	2003	15	Good
DHW heater	100 gal.	1	kitchen	2003	15	Good

2.2.3 Description of Building Lighting

Lighting System

The existing lighting system consists of 2X2 (2 lamp), 1X4 (2 lamp), 2X4 (3 lamp), 8-foot (2 and 4 lamp), 4-foot (2 lamp), along with compact fluorescent, and metal halide fixtures. Almost all of the fluorescent fixtures at this facility already have energy efficient T-8 lamps, but there are a small number of existing inefficient fluorescent fixtures that should be replaced. There are currently no controlling devices turning lights on and off based upon occupancy.

2.3 Woodbridge Township Pump Station

The Pump Station is 6,300 square feet and 20 years old. The facility is occupied and operates 24 hours a day. There was little documentation available at the time of the audit. This report relies on information from maintenance personnel and energy consumption records obtained over a one year period.



2.3.1 Description of Building Envelope

There are 3- 6" wide strip windows in the building. The windows appear to be a tight fit construction in good condition with minimal infiltration loss.

The exterior walls are assumed to have insulation meeting the applicable Energy codes.

The roof has built up roof membranes (BUR). The roof is original (approximately 20 years old) and in fair condition.

2.3.2 Description of Building Mechanical Equipment

Heating System

There are two (2) rooftop packaged air conditioning units that serve the building. One serves the office area, the other serves the control room. The units have electric heating coils to heat the air that is supplied to the spaces.

Cooling System

There are two (2) rooftop packaged air conditioning units that serve the building. One serves the office area, the other serves the control room.

Ventilation

Outdoor ventilation air is provided by two (2) rooftop packaged air conditioning units. The units draw in fresh air and mix it into the supply air system, which serves the occupied spaces. It would seem that there is an inoperative makeup air fan that would serve the plant located in the bar screen room. The Township should investigate further why it is not working and if it is code compliant.

HVAC Controls

Space thermostats control the temperature and on/off operation.

Domestic Hot Water

Domestic hot water is provided by one (1) electric hot water heater rated at 50 gallons.

Water Fixtures

The fixtures in the building are not low water consumption. Therefore upgrades will be recommended later in this report.

Emergency Generator

There are (2) Caterpillar -1500 kW generators used for emergency purposes. Previously the generators were upgraded to primary power status and turned on when a third pump was required to lessen the peak electrical demand curve on which the municipality was charged. However EPA rules have since restricted such use.

Major Mechanical Equipment Life Expectancy

Table 3 below shows a listing of major HVAC equipment found at this facility. Also included is the typical life expectancy and general condition of the equipment. The life expectancy data is an excerpt from a survey done by ASHRAE (American Society of Heating, Refrigeration and Air-conditioning Engineers) and listed in the ASHRAE Handbook - HVAC Applications (Chapter 35, Table 3).

Table 3: HVAC Equipment List

Unit	Size	# of Units	Area Served	Age	Median Life (years)	Condition
Office AC	5 ton	1	Office area	2006	15	Good
Control Room AC	20 ton	1	Control Room	2004	15	Good
DHW heater	50 gal	1	bathrooms	2006	15	Good
5 - sewage pumps	600 HP	5	Sewage	2006	20	Good
5 - VSD for pumps	-	5	pumps	2004	-	Good

Unit	Size	# of Units	Area Served	Age	Median Life (years)	Condition
2 – odor control compressors	-	2	Aerates wastewater	2002	20	Good
Bioway - air scrubber	5 HP	1	Odor control	2008	17	Good
3 – roof blowers	10 HP	3	Grit Chamber	2006	20	Good
Exhaust Fan	-	1	Pump Room	-	20	Good
Makeup air	-	1	Pump Room	-	20	Good
Emergency Generator	1500 kW	2	Plant	1989	-	Good

2.3.3 Description of Building Lighting

The existing lighting system consists of 2X2 (2 lamp), 2X4 (4 lamp), 4-foot (2 lamp), along with compact fluorescent, metal halide, high pressure sodium, mercury vapor, and incandescent fixtures. Almost all of the fluorescent fixtures at this facility do not have energy efficient T-8 lamps and should be replaced. There are currently no controlling devices turning lights on and off based upon occupancy.

2.4 Evergreen Senior Center

The Evergreen Senior Center is 28,250 square feet and 56 years old. The building was originally designed and used as a grade school. There was little documentation available at the time of the audit. This report relies on information from maintenance personnel and energy consumption records obtained over a two year period.



2.4.1 Description of Building Envelope

The windows are being replaced with energy efficient double pane glass.

There was no evidence of exterior wall or roof insulation.

Some exterior doors have gaps letting in outside air and should be repaired.

2.4.2 Description of Building Mechanical Equipment

Heating System

The heating system was inoperative for the summer season at the time of the energy audit. Heating for the entire building is provided by two (2) - 94 HP (boiler horsepower) Weil McClain gas fired steam boilers that are approximately 12 years old. Every classroom has unit ventilator and fin-tube radiation to combat heating losses in the buildings skin. The building skin is defined as the roof, exterior walls and windows. Hallways are heated by recessed radiators in the walls. The all purpose room, which is formerly the gymnasium, is heated by two (2) Heating and Ventilating

(HV) units. The Multi-Service-program-on-aging room is heated by a Heating and Ventilating (HV) unit.

Cooling System

The all purpose room is cooled by two (2) packaged rooftop AC units. All other rooms have window AC units.

Ventilation

Outdoor ventilation air is provided in classrooms primarily by unit ventilators. There are seventeen (17) unit ventilators in classrooms original to the building and beyond their ASHRAE useful life of 25 years. Unit ventilators take fresh air from the outdoors via a fan and blow it across a heating coil and into the room. The three (3) heating/ventilating units and the packaged air handling units also take in outside air and provide ventilation.

HVAC Controls

The two (2) rooftop air conditioning units each have a space thermostat. The boilers have a modern self-contained control system, which has a night time/weekend setback capability to save energy. The three (3) heating and ventilating units each have thermostats which are not working and are manually turned on/off as needed. Unit ventilators are turned on manually as needed; the thermostats are not working. Window air-conditioners are turned on manually as needed. The controls system is pneumatic. The air-compressor appears to be original and the dryer is not working.

Domestic Hot Water

Domestic hot water is provided by one (1) AO Smith gas-fired hot water heater rated at 81 gallons.

Water Fixtures

The building does not have low water consumption fixtures on its 24 toilets, 6 urinals and 20 sinks. The two (2) bathrooms in the game room (2 toilets and 2 sinks) are closed by the Board of Health and are not included in this report.

Major Mechanical Equipment Life Expectancy

Table 4 below shows a listing of major HVAC equipment found at this facility. Also included is the typical life expectancy and general condition of the equipment. The life expectancy data is an excerpt from a survey done by ASHRAE (American Society of Heating, Refrigeration and Air-conditioning Engineers) and listed in the ASHRAE Handbook - HVAC Applications (Chapter 35, Table 3).

Table 4: HVAC Equipment List

Unit	Size	# of Units	Area Served	Age	Median Life (years)	Condition
AC-1, AC-2	5,000 cfm estimated	1	all purpose room	1987	15	Good/Fair
Window AC Units	varies	21	All Classrooms	varies	10	Good/Fair
2 - Steam Boilers	94 HP	2	Unit Ventilators, radiators	1997	35	Good
2 - HV units	10,000 cfm	2	all purpose room	1966	20	Fair
1 - HV unit	12,000 cfm	1	Multi-Service-program-on-aging room	1966	20	Fair
Unit Ventilators	-	17	All Classrooms	1966	20	Fair
DHW heater	81 gal	1	bathrooms/sinks	Unkno wn	15	Good
Compressor	-	1	HVAC Control system	1966	20	Fair/Poor

2.4.3 Description of Building Lighting

The existing lighting system consists of 2X2 (2 lamp), 2X4 (4 lamp), 8-foot (2, and 4 lamp), 4-foot (2, and 4 lamp), along with mercury vapor, and incandescent fixtures. Almost all of the fluorescent fixtures at this facility do not have energy efficient T-8 lamps and should be replaced. There are currently no controlling devices turning lights on and off based upon occupancy.

2.5 Baron Arts Center

The Baron Art Center is 2,270 square feet and 200 years old. It was originally a church. It is an historic building which is registered with the State and National Register of Historic places. The facility is open 8:30 - 4:30 Monday through Friday. There was little documentation available at the time of the audit. This report relies on information from maintenance personnel and energy consumption records obtained over a two year period.



2.5.1 Description of Building Envelope

All windows are stained glass and of historic nature and not energy saving.

The exterior walls are assumed to have no insulation.

2.5.2 Description of Building Mechanical Equipment

Heating System

There is one (1) Crown 225,000 Btuh input gas hot water boiler that is 20 years old. Hot water is circulated to fin tube radiation throughout the building.

Cooling System

There are two (2) split air conditioning units that serve the building. One unit serves the office area; the other unit serves the gallery.

Ventilation

Outdoor ventilation air is provided by the two (2) split air conditioning units. The units draw in fresh air and mix it into the supply air system which serves the occupied spaces.

HVAC Controls

Programmable space thermostats control the temperature and schedule. Due to the sensitive environmental nature of the artwork, the Arts Center Director has discretion over space operating conditions.

Domestic Hot Water

Domestic hot water is provided by one (1) natural gas fired hot water heater rated at 40 gallons. It is approximately 30 years old and beyond its expected useful life and *should be replaced immediately*.

Water Fixtures

The fixtures in the building are not low water consumption. Therefore upgrades will be recommended, see below.

Major Mechanical Equipment Life Expectancy

Table 5 below shows a listing of major HVAC equipment found at this facility. Also included is the typical life expectancy and general condition of the equipment. The life expectancy data is an excerpt from a survey done by ASHRAE (American Society of Heating, Refrigeration and Air-conditioning Engineers) and listed in the ASHRAE Handbook - HVAC Applications (Chapter 35, Table 3).

Table 5: HVAC Equipment List

Unit	Size	# of Units	Area Served	Age	Median Life (years)	Condition
AC -1	10 ton	1	Gallery	1995	15	Good/fair, at its expected 15 year life
AC-2	5 ton	1	Office area	1995	15	Good/fair, at its expected 15 year life
DHW heater	40 gal	1	Bathrooms	1980 est.	15	Fair/poor, beyond its expected life

Unit	Size	# of Units	Area Served	Age	Median Life (years)	Condition
2 – wall AC units	6,000 Btuh	2	Basement	2007	10	Good
HW Boiler	225,000	1	1 st fl & Basement	1989 est	25	Good/fair

2.5.3 Description of Building Lighting

The existing lighting system consists of 2X4 (4 lamp), 8-foot (2 lamp), 4-foot (2 lamp), along with incandescent fixtures. Almost all of the fluorescent fixtures at this facility do not have energy efficient T-8 lamps and should be replaced. There are currently no controlling devices turning lights on and off based upon occupancy.

2.6 Woodbridge Township Health Center

The Health Center is 10,000 square feet, 1 story and 40 years old. There was little documentation available at the time of the audit. This report relies on information from maintenance personnel and energy consumption records obtained over a two year period.



2.6.1 Description of Building Envelope

The windows have single pane glass and are not energy efficient.

The exterior walls are assumed to have no insulation.

The roof was redone 12 years ago.

2.6.2 Description of Building Mechanical Equipment

Heating System

The heating system was inoperative for the summer season at the time of the energy audit. There is one (1) original cast iron Cleaver Brooks gas-fired hot water boiler rated at 2,092 MBH input. The boiler was converted to gas in 1980. Hot water is circulated to hot water radiators in all occupied spaces. There is one hot water pump. A standby pump has been removed.

Cooling System

An original air handling unit serves the building which is in poor condition. It is leaking, insulation around it is falling down, and a motor shaft was replaced 6 years ago. In 1993, two (2) Trane condensing units at 20 tons each were installed on the exterior ground to serve this air handling unit. In 1993 a 10 ton packaged rooftop AC unit was installed for the auditorium.

Ventilation

Outdoor ventilation air is provided by the rooftop AC unit and the air handling unit that serves the building. The units draw in fresh air and mix it into the supply air system which serves the occupied spaces.

HVAC Controls

The hot water system is manually controlled. There is no reset based on outside air temperature or timer, scheduler or night setback. The newer air conditioning unit has a programmable thermostat in the auditorium. The air handling unit is controlled by a return air temperature sensor.

Domestic Hot Water

Domestic hot water is provided by one (1) A.O. Smith gas-fired hot water heater rated at 81 gallons. It is 2 years old.

Water Fixtures

The nine (9) existing sinks are low water consumption. The 9 toilets and 5 urinals are not low water consumption.

Major Mechanical Equipment Life Expectancy

Table 6 below shows listing of major HVAC equipment found at this facility. Also included is the typical life expectancy and general condition of the equipment. The life expectancy data is an excerpt from a survey done by ASHRAE (American Society of Heating, Refrigeration and Air-conditioning Engineers) and listed in the ASHRAE Handbook - HVAC Applications (Chapter 35, Table 3).

Table 6: HVAC Equipment List

Unit	Size	Age	Area Served	# of Units	Median Life (years)	Condition
Air handling unit	40 ton	1969	Whole building	1	15	Poor
Roof top AC	10 ton	2006	Auditorium	1	15	Good
Condensing unit	40 ton	1993	AH-1	1	20	Good
Boiler	2,092 MBH	1969	Whole building	1	30	Fair
HW pump	1 HP	-	HW system	1	10	Fair
DHW heater	81 gal	2007	bathrooms/sinks	1	15	Good

2.6.3 Description of Building Lighting

The existing lighting system consists of 1X4 (2 lamp), 2X4 (4 lamp), 4-foot (2 lamp), along with compact fluorescent, high pressure sodium, and incandescent fixtures. Almost all of the fluorescent fixtures at this facility do not have energy efficient T-8

lamps and should be replaced. There are currently no controlling devices turning lights on and off based upon occupancy.

2.7 Woodbridge Township Main Library

The Main Library is 52,000 square feet and 35 years old. There was little documentation available at the time of the audit. This report relies on information from maintenance personnel and energy consumption records obtained over a two year period.



2.7.1 Description of Building Envelope

The windows have single pane glass and are not energy efficient.

The exterior walls are assumed to have insulation meeting the applicable Energy codes.

The roof was redone 15 years ago and insulation added. The roof is going to be redone shortly as solar panels are going to be added.

2.7.2 Description of Building Mechanical Equipment

Heating System

The heating system was inoperative for the summer season at the time of the energy audit. There are two (2) original cast iron, Weil McClain gas-fired hot water boilers, rated at 2,701 MBH. The boilers were converted to gas 20 years ago. Hot water is circulated to hot water coils in the fan-coil units and to radiators in all occupied spaces. Hot water is also pumped to hot water coils in the four (4) rooftop air handling to heat supply air to the occupied spaces.

Cooling System

Two years ago the cooling plant was upgraded with a new 225 ton chiller, cooling towers, pumps, etc. There are four (4) rooftop air handling units that serve the Library building. The four (4) units supply conditioned air to all occupied spaces except the 2nd floor Book Exam Center which has four (4) McQuay heating and cooling fan coil units which personnel say are rarely used.

Ventilation

Outdoor ventilation air is provided by the four (4) rooftop air handling units that serve the building. The units draw in fresh air and mix it into the supply air system which serves the occupied spaces.

HVAC Controls

The four (4) HVAC units have a 7 day timer. Hot water and chilled water pipes serving the units have control valves, which modulate via return air temperature. The

hot water system serving the terminal units have a circulating loop where water temperature is reset based on outside air temperature. There is no central BMS (building management system) and the existing controls are pneumatic.

Domestic Hot Water

Domestic hot water is provided by one (1) A.O. Smith gas-fired hot water heater rated at 119 gallons. It is 15 years old and approaching the end of its expected useful life and should be monitored for replacement.

Water Fixtures

The library has low water consumption fixtures on its toilets, urinals and sinks except for one toilet in the workroom. The first floor men’s sink hot water faucet does not shutoff and the ground floor women’s hot water faucets do not work properly.

Major Mechanical Equipment Life Expectancy

Table 7 below shows a listing of major HVAC equipment found at this facility. Also included is the typical life expectancy and general condition of the equipment. The life expectancy data is an excerpt from a survey done by ASHRAE (American Society of Heating, Refrigeration and Air-conditioning Engineers) and listed in the ASHRAE Handbook - HVAC Applications (Chapter 35, Table 3).

Table 7: HVAC Equipment List

Unit	Size	# of Units	Area Served	Age	Median Life (years)	Condition
HVAC 1(Roof unit)	20,000 CFM	1	Ground floor (tech and children’s library)	1974	15	Good/Fair
HVAC 2	14,000 CFM	1	1 st floor main library	1974	15	Good/Fair
HVAC 3	16,000 CFM	1	1 st floor main library	1974	15	Good/Fair
HVAC 4	9,600 CFM	1	1 st fl. workroom, 2 nd fl office	1974	15	Good/Fair
Chiller	225 ton	1	HVAC units, terminals	2006	23	Good
Cooling towers		1	Chiller	2006	20	Good
CHW pump	20 hp	1	CHW system	2006	20	Good
CW pump	15 hp	1	CW system	2006	20	Good
3 – HW pumps	2@3 HP, 1@1.5HP	3	3hp for HVAC units, 1.5 HP for HW system	-	20	Fair
2 - Boilers	2701 MBH	2	HVAC units, radiators	1974	30	Fair
DHW heater	119 gal	1	bathrooms/sinks	1995	15	Fair

2.7.3 Description of Building Lighting

The existing lighting system consists of 4X4 (4 lamp), 2X2 (2 lamp), 2X4 (2, 3, and 4 lamp), 8-foot (2 lamp), 4-foot (2 lamp), 2-foot (2 lamp) linear fluorescent fixtures, along with mercury vapor, high pressure sodium, and incandescent fixtures. Almost all of the fluorescent fixtures at this facility do not have energy efficient T-8 lamps and should be replaced. There are currently no controlling devices turning lights on and off based upon occupancy.

2.8 Iselin Branch Public Library

The Iselin Library is 8,700 square feet and 41 years old. There was little documentation available at the time of the audit. This report relies on information from maintenance personnel and energy consumption records obtained over a two year period.



2.8.1 Description of Building Envelope

The windows have single pane glass and are not energy efficient.

There is no visible insulation for the exterior wall.

There is no evidence that the roof was insulated.

2.8.2 Description of Building Mechanical Equipment

Heating System

The heating system was inoperative for the summer season at the time of the energy audit. There are two (2) HVAC units that serve the Library building. Each HVAC unit's main supply air duct splits into two, each divided duct with a gas-fired section, for two (2) heating zones per HVAC unit. Therefore, the two (2) HVAC units have four (4) heating zones total to heat supply air to the occupied spaces.

Cooling System

There are two (2) HVAC split system units that serve the Library building. The two (2) units supply conditioned air to all occupied spaces.

Ventilation

Outdoor ventilation air is provided the two (2) HVAC units that serve the building. The units draw in fresh air and mix it into the supply air system which serves the occupied spaces.

HVAC Controls

The 2 HVAC units have a 7 day timer. Each HVAC unit has a day and night space thermostat which controls unit temperature.

Domestic Hot Water

Domestic hot water is provided by one (1) GE gas-fired hot water heater rated at 29 gallons. It was recently installed in 2009.

Water Fixtures

The library does not have low water consumption fixtures on its 4 toilets, 2 urinals and 7 sinks.

Major Mechanical Equipment Life Expectancy

Table 8 below shows a listing of major HVAC equipment found at this facility. Also included is the typical life expectancy and general condition of the equipment. The life expectancy data is an excerpt from a survey done by ASHRAE (American Society of Heating, Refrigeration and Air-conditioning Engineers) and listed in the ASHRAE Handbook - HVAC Applications (Chapter 35, Table 3).

Table 8: HVAC Equipment List

Unit	Size	# of Units	Area Served	Age	Median Life (years)	Condition
HVAC 1	4,000 CFM	1	Meeting, office	1989	15	Good/Fair
HVAC 2	12,000 CFM	1	Library	1989	15	Good/Fair
DHW heater	29 gal	1	bathrooms/sinks	2009	15	Good
HVAC 1 Cond. Unit	10 ton (est.)	1	HVAC 1	1989	15	Good/Fair
HVAC 2 Cond. Unit	30 ton (est.)	1	HVAC 2	1989	15	Good/Fair

2.8.3 Description of Building Lighting

The existing lighting system consists of 1X4 (1 lamp), 2X4 (2 lamp), 8-foot (4 lamp), 4-foot (1 lamp), along with compact fluorescent, metal halide, high pressure sodium, and incandescent fixtures. Almost all of the fluorescent fixtures at this facility already have energy efficient T-5 lamps, but the small number of existing inefficient incandescent and fluorescent fixtures should be replaced. There are currently no controlling devices turning lights on and off based upon occupancy.

2.9 Fords Branch Public Library

The Fords Library is 16,000 square feet and 38 years old. There was little documentation available at the time of the audit. This report relies on information from maintenance personnel and energy



consumption records obtained over a one year period.

2.9.1 Description of Building Envelope

The windows have single pane glass and are not energy efficient.

There is no visible insulation for the exterior wall. The front door is gapped and should be repaired or sealed to prevent air infiltration.

There is some evidence that the roof was insulated, however this should be confirmed.

2.9.2 Description of Building Mechanical Equipment

Heating System

The heating system was inoperative for the summer season at the time of the energy audit. There are four (4) rooftop packaged HVAC units that serve the Library building. The four (4) units have gas-fired sections to heat supply air to the occupied spaces. There are self-contained electrical baseboard heating units under some windows.

Cooling System

There are four (4) rooftop packaged HVAC units that serve the Library building. The four (4) units supply conditioned air to all occupied spaces.

Ventilation

Outdoor ventilation air is provided the four (4) rooftop air handling units that serve the building. The units draw in fresh air and mix it into the supply air system which serves the occupied spaces.

HVAC Controls

The four (4) HVAC units have a 7 day timer. Each HVAC unit has a day and night space thermostat which controls unit temperature.

Domestic Hot Water

Domestic hot water is provided by one (1) Dayton gas-fired hot water heater rated at 52 gallons. *It is approximately 37 years old and past its expected 15 year useful life and should be replaced.*

Water Fixtures

The library does not have low water consumption fixtures on its 4 toilets, 2 urinals and 7 sinks.

Major Mechanical Equipment Life Expectancy

Table 9 below shows a listing of major HVAC equipment found at this facility. Also included is the typical life expectancy and general condition of the equipment. The life expectancy data is an excerpt from a survey done by ASHRAE (American Society of Heating, Refrigeration and Air-conditioning Engineers) and listed in the ASHRAE Handbook - HVAC Applications (Chapter 35, Table 3).

Table 9: HVAC Equipment List

Unit	Size	# of Units	Area Served	Age	Median Life (years)	Condition
HVAC 1(Roof unit)	7.5 tons	1	Meeting, work room	1989	15	Fair condition
HVAC 2	7.5 tons	1	Office area	1989	15	Fair condition
HVAC 3	7.5 tons	1	1 st floor main library	1989	15	Fair condition
HVAC 4	7.5 tons	1	1 st floor main library	1989	15	Good/Fair condition
DHW heater	52 gal	1	bathrooms/sinks	1972	15	Fair/poor condition

2.9.3 Description of Building Lighting

The existing lighting system consists of 4X4 (8 lamp), 2X2 (3 lamp), 2X4 (2, 3, and 4 lamp), 8-foot (4, and 8 lamp), 4-foot (2, and 4 lamp), along with compact fluorescent, high pressure sodium, and incandescent fixtures. Almost all of the fluorescent fixtures at this facility already have energy efficient T-8 lamps, but the small number of existing inefficient incandescent and fluorescent fixtures should be replaced. There are currently no controlling devices turning lights on and off based upon occupancy.

2.10 Inman Branch Public Library

The Inman Library is 4,400 square feet and 44 years old. There was little documentation available at the time of the audit. This report relies on information from maintenance personnel and energy consumption records obtained over a two year period.



2.10.1 Description of Building Envelope

The windows have single pane glass and are not energy efficient.

There was some evidence of exterior wall insulation. It is not certain to what extent and if this meets the applicable Energy codes.

The asphalt shingle roof was redone less than 10 years ago. There is evidence of some insulation. It is not certain if this meets the applicable Energy codes.

2.10.2 Description of Building Mechanical Equipment

Heating System

The heating system was inoperative for the summer season at the time of the energy audit. The existing boiler has been removed and is in the process of being replaced. It

will be a gas-fired hot water boiler. Hot water is circulated to hot water coils in the three (3) air handling units to heat supply air to the occupied spaces.

Cooling System

The cooling system was upgraded with a new Carrier chiller. The two (2) chilled water pumps are being replaced. The condensing unit is outdoors. Chilled water is circulated to chilled water coils in the three (3) air handling units to cool supply air to the occupied spaces.

Ventilation

Outdoor ventilation air is provided the three (3) air handling units that serve the building. The units draw in fresh air and mix it into the supply air system which serves the occupied spaces.

HVAC Controls

The three (3) air handling units each have a space day thermostat and night thermostat.

Domestic Hot Water

Domestic hot water is provided by one (1) Rudd gas-fired hot water heater rated at 30 gallons. It is 20 years old and past its expected 15 year useful life and *should be replaced*.

Water Fixtures

The library does not have low water consumption fixtures on its 3 toilets, 2 urinals and 4 sinks. One men’s sink faucet does not work properly.

Major Mechanical Equipment Life Expectancy

Table 10 below shows a listing of major HVAC equipment found at this facility. Also included is the typical life expectancy and general condition of the equipment. The life expectancy data is an excerpt from a survey done by ASHRAE (American Society of Heating, Refrigeration and Air-conditioning Engineers) and listed in the ASHRAE Handbook - HVAC Applications (Chapter 35, Table 3).

Table 10: Equipment Life Expectancy and Condition

Unit	Size	# of Units	Area Served	Age	Median Life (years)	Condition
AH 1	3,000 CFM	1	1 st floor main library	1974	15	Good/Fair
AH 2	3,000 CFM	1	1 st floor main library	1974	15	Good/Fair
AH 3	3,000 CFM	1	1 st floor main library	1974	15	Good/Fair
Chiller	22.4 ton	1	AH units	2000	20	Good
Condensing unit	22.4 ton	1	Chiller	2000	20	Good

Unit	Size	# of Units	Area Served	Age	Median Life (years)	Condition
2- CHW/HW pumps	1 hp	1	AH units	2009	10	Good
Boiler	30 MBH	3	AH units	2009	25	Good
DHW heater	30 gal	2	bathrooms/sinks	1989	15	Fair

2.10.3 Description of Building Lighting

The existing lighting system consists of 1X4 (2 lamp), 4-foot (1, 2, and 4 lamp), 2-foot (2 lamp) linear fluorescent fixtures, along with compact fluorescent, metal halide, quartz, high pressure sodium, and incandescent fixtures. Almost all of the fluorescent fixtures at this facility do not have energy efficient T-8 lamps and should be replaced. There are currently no controlling devices turning lights on and off based upon occupancy.

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 facilities 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. It is important to note that CDM/Metro obtained complete and accurate utility bills for all facilities, wherever possible, as identified in this report. In the few cases where complete information was not available; estimates were used to complete the energy calculations.

For this study, monthly utility bills were analyzed and unit costs of energy obtained. The unit cost of energy, as determined from the monthly utility bills, 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 Woodbridge. In addition, an analysis of existing utility tariffs and recommendations are included in Appendix E.

For future monitoring of energy use and benchmarking, Woodbridge Township has been enrolled and provided access to the EPA Portfolio Manager.

3.1.1 Woodbridge Township Municipal Building

Figure 3.1.1a illustrates the monthly electricity delivered to Woodbridge Municipal Building by PSE&G from March 2008 to February 2009. The total annual cost and consumption of electricity for this period was \$472,150 and 3,816,589 kWh. The average electric cost for this 12-month period was \$0.124 per kWh.

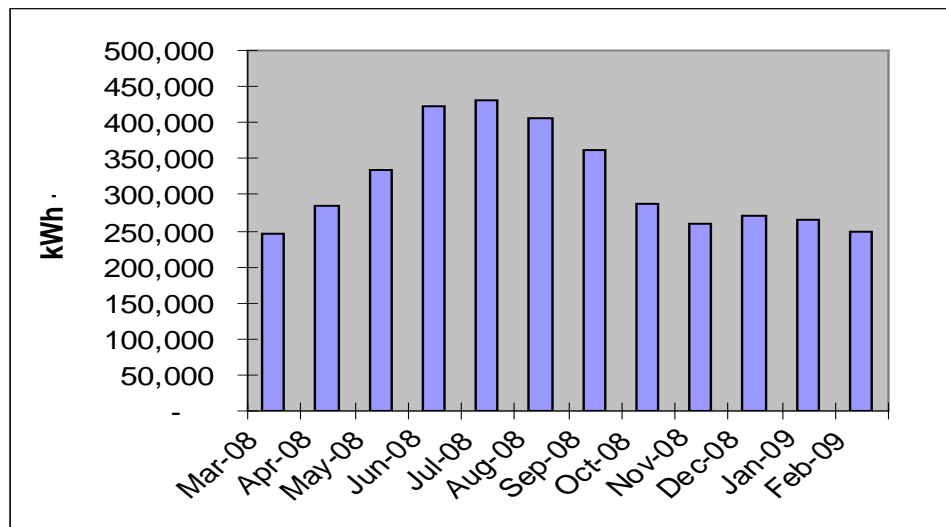


Figure 3.1.1a: Monthly Electricity Usage

Figure 3.1.1b illustrates the monthly natural gas purchased from Elizabethtown Gas from January 2008 to December 2008. The total annual cost and consumption of gas for this period was \$122,609 and 85,005 therms. The average gas cost for this 12-month period was \$1.44 per therm. Therefore, an average electric and natural gas usage per unit area is estimated at 161.04 kWh/ft² and 3.59 therms/ft².

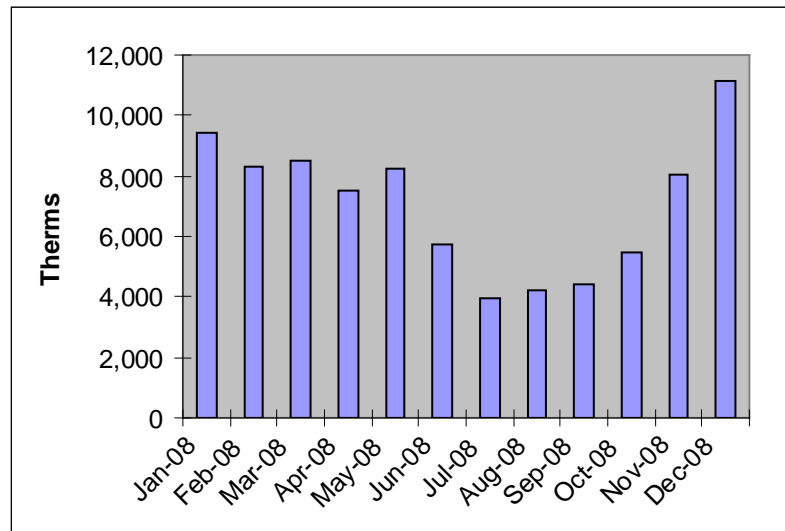


Figure 3.1.1b: Monthly Natural Gas Usage

3.1.2 Woodbridge Community Center

Figure 3.1.2a illustrates the monthly electricity delivered to Woodbridge Community Center by PSE&G from December 2008 to November 2009. The total annual cost and consumption of electricity for this period was \$466,325 and 3,207,376 kWh. The average electric cost for this 12-month period was \$0.145 per kWh.

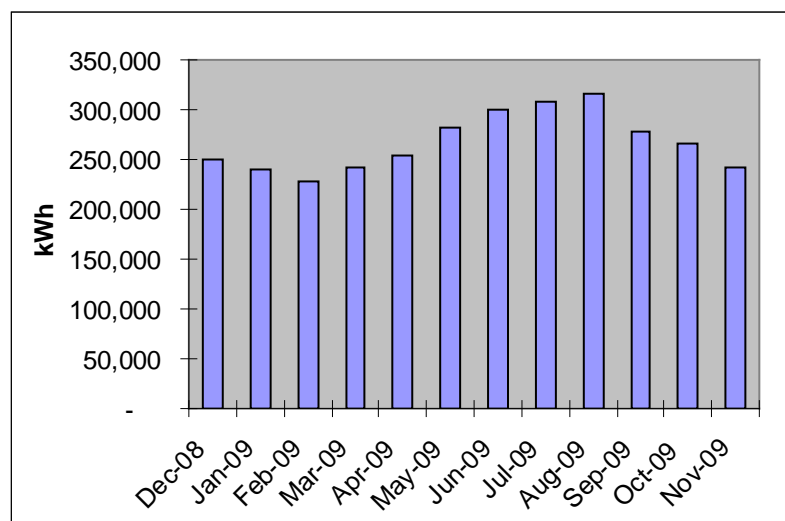


Figure 3.1.2a: Monthly Electricity Usage

Figure 3.1.2b illustrates the monthly natural gas purchased from Elizabethtown Gas from January 2008 to December 2008. The annual cost and consumption of gas for this period was \$39,180 and 114,391 therms. Please note, utility data was unavailable for March 2008. The average gas cost for this 12-month period was estimated at \$1.40 per therm. Therefore, an average electric and natural gas usage per unit area is estimated at 38.97 kWh/ft² and 1.39 therms/ft².

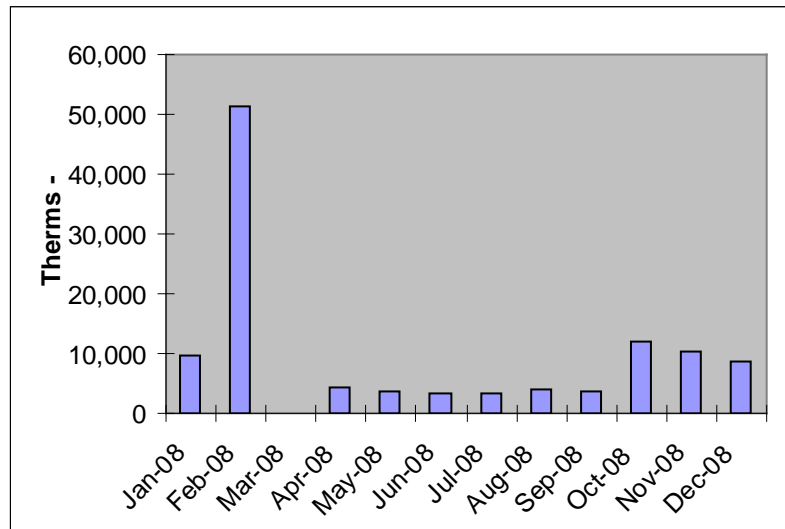


Figure 3.1.2b: Monthly Natural Gas Usage

3.1.3 Woodbridge Township Pump Station

Figure 3.1.3a illustrates the monthly electricity delivered to Woodbridge Pump Station by PSE&G from January 2009 to December 2009. The total annual cost of electricity for this period was \$159,727 and 3,822,591 kWh. The average electric cost for this 12-month period was \$0.042 per kWh.

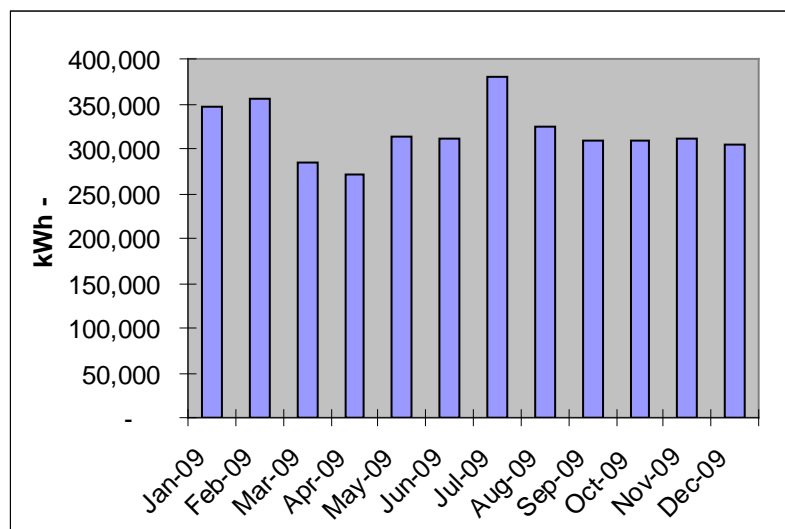


Figure 3.1.3a: Monthly Electricity Usage

Figure 3.1.3b illustrates the monthly natural gas purchased from Elizabethtown Gas from January 2008 to December 2008. The total annual cost and consumption of gas for this period was \$1,746 and 4,315 therms. Please note, utility data was unavailable for November and December 2008. The average gas cost for this 12-month period was estimated at \$1.40 per therm. Therefore, an average electric and natural gas usage per unit area is estimated at 606.76 kWh/ft² and 0.685 therms/ft².

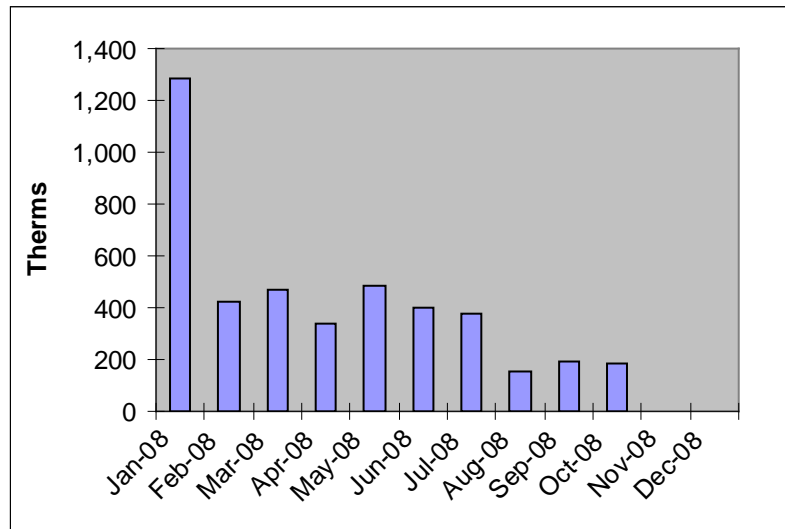


Figure 3.1.3b: Monthly Natural Gas Usage

3.1.4 Evergreen Senior Center

Please note, actual utility bills from the local utility were not provided; instead summary data was provided for this site. As a result, missing components such as peak demand, tariff, etc. are not represented in this report. Figure 3.1.4a illustrates the monthly electricity generated from November 2008 to October 2009. The total annual generation cost of electricity for this period was \$10,689 and 119,709 kWh. The average electric generation cost for this 12-month period was \$0.089 per kWh. As a result, for payback calculations, an estimated total cost of \$0.162 was used to provide a more realistic financial analysis.

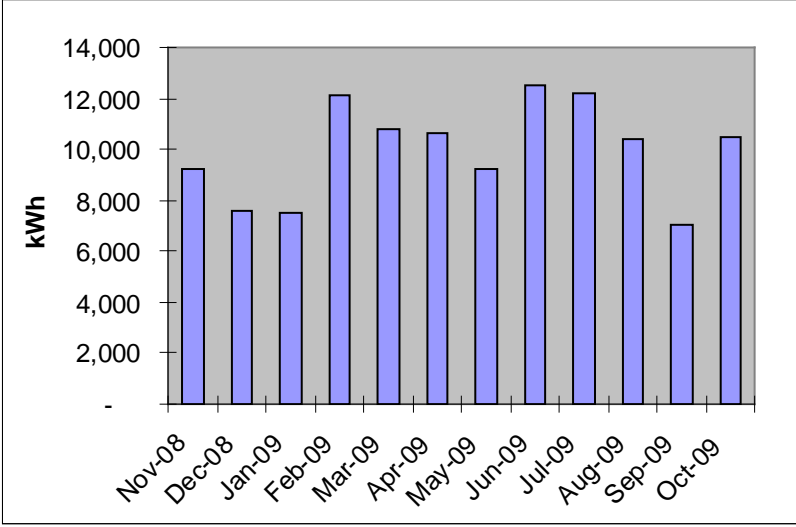


Figure 3.1.4a: Monthly Electricity Usage

Figure 3.1.4b illustrates the monthly natural gas purchased from Elizabethtown Gas from May 2008 to April 2009; however, we were only provided with the month of March. The usage in the March is fairly high so it is safe to assume it is for the entire year. The total annual cost and consumption of gas for this period was \$3,195 and 9,739 therms. The average gas cost for this 12-month period was estimated at \$1.40 per therm. Therefore, an average electric and natural gas usage per unit area is estimated at 4.24 kWh/ft² and 0.345 therms/ft².

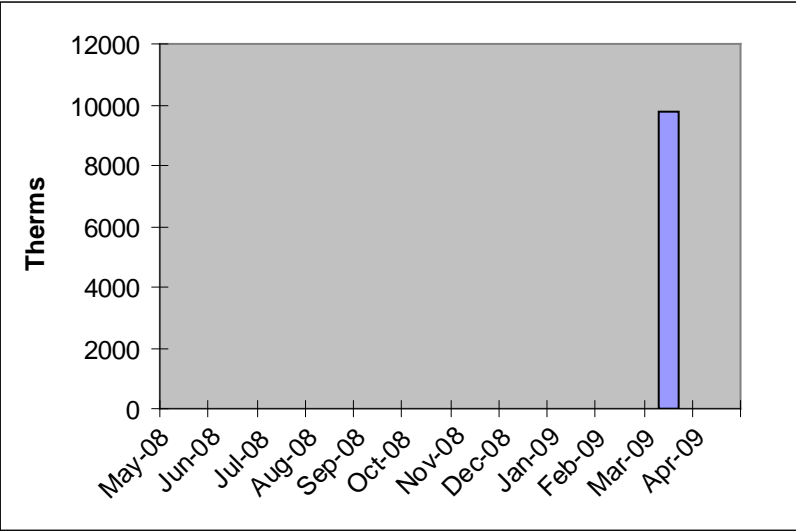


Figure 3.1.4b: Monthly Natural Gas Usage

3.1.5 Baron Arts Center

Please note, actual utility bills from the local utility were not provided; instead summary data was provided for each site. As a result, missing components such as peak demand, tariff, etc. are not represented in this report. Figure 3.1.5a illustrates the

monthly electricity generated from December 2008 to October 2009. The total annual generation cost of electricity for this period was \$3,621 and 59,166 kWh. The average electric generation cost for this 12-month period was \$0.061 per kWh. As a result, for payback calculations, an estimated total cost of \$0.141 was used to provide a more realistic financial analysis.

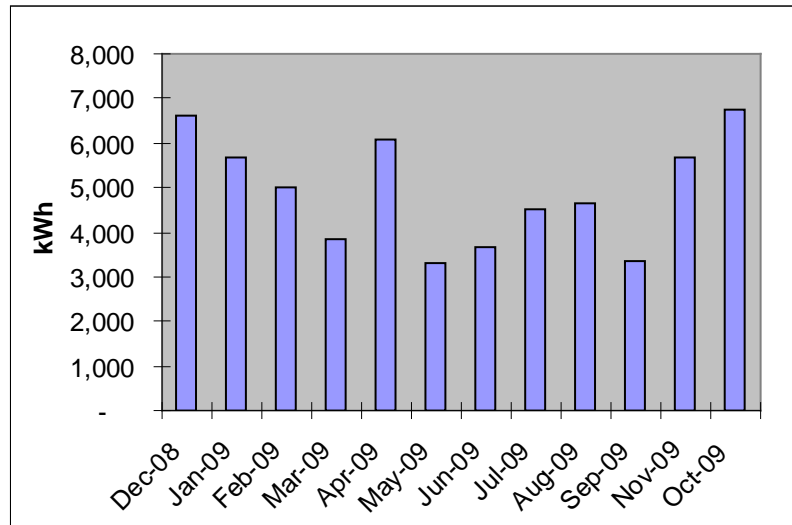


Figure 3.1.5a: Monthly Electricity Usage

Figure 3.1.5b illustrates the monthly natural gas purchased from Elizabethtown Gas from January 2008 to December 2008. The total annual cost and consumption of gas for this period was \$1,171 and 2,725 therms. Due to incomplete billing information, the average gas cost for this 12-month period was estimated \$1.40 per therm. Therefore, an average electric and natural gas usage per unit area is estimated at 26.06 kWh/ft² and 1.2 therms/ft².

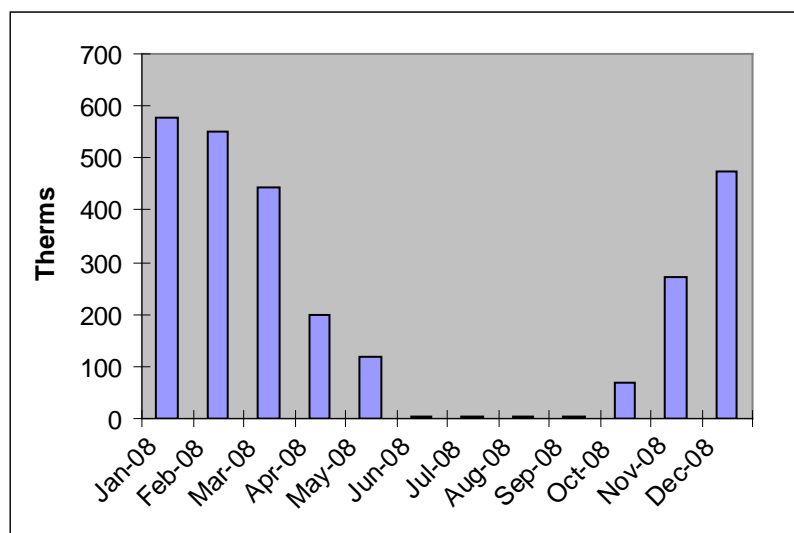


Figure 3.1.5b: Monthly Natural Gas Usage

3.1.6 Woodbridge Township Health Center

Please note, actual utility bills from the local utility were not provided; instead summary data was provided for each site. As a result, missing components such as peak demand, tariff, etc. are not represented in this report. Figure 3.1.6a illustrates the monthly electricity delivered to Woodbridge Health Center by PSE&G from October 2008 to September 2009. The total annual generation cost of electricity for this period was \$9,293 and 106,860 kWh. The average electric generation cost for this 12-month period was \$0.087 per kWh. As a result, for payback calculations, an estimated total cost of \$0.160 was used to provide a more realistic financial analysis.

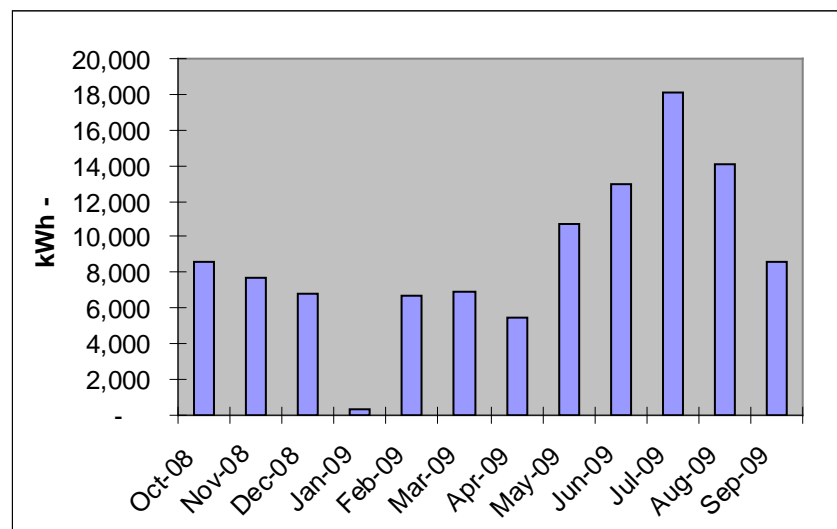


Figure 3.1.6a: Monthly Electricity Usage

Figure 3.1.6b illustrates the monthly natural gas purchased from Elizabethtown Gas from January 2008 to December 2008. The total annual cost and consumption of gas for this period was \$3,312 and 8,258 therms. The average gas cost for this 12-month period was estimated at \$1.40 per therm. Therefore, an average electric and natural gas usage per unit area is estimated at 10.68 kWh/ft² and 0.826 therms/ft².

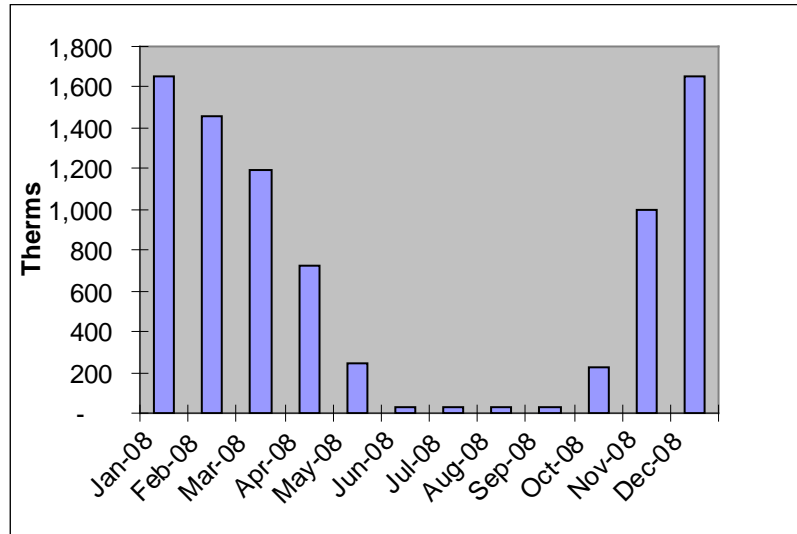


Figure 3.1.6b: Monthly Natural Gas Usage

3.1.7 Woodbridge Township Main Library

Please note, actual utility bills from the local utility were not provided; instead summary data was provided for each site. As a result, missing components such as peak demand, tariff, etc. are not represented in this report. Figure 3.1.7a illustrates the monthly electricity generated from April 2008 to March 2009. The total annual cost and consumption of electricity for this period was \$165,552 and 1,104,160 kWh. The average electric cost for this 12-month period was \$0.15 per kWh.

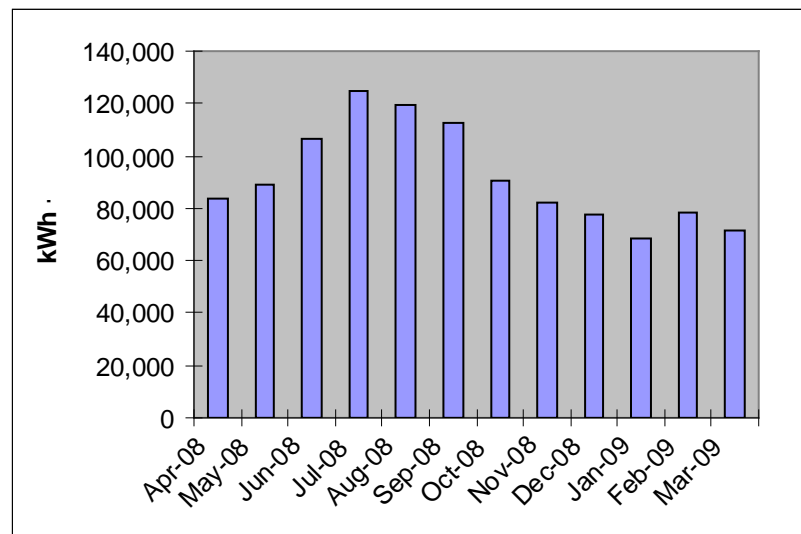


Figure 3.1.7a: Monthly Electricity Usage

Figure 3.1.7b illustrates the monthly natural gas purchased from Elizabethtown Gas from January 2008 to December 2008. The total annual cost and consumption of gas for this period was \$28,519 and 20,350 therms. Please note, utility data was not

provided for June through September 2008. The average gas cost for this 12-month period was \$1.40 per therm. Therefore, an average electric and natural gas usage per unit area is estimated at 21.23 kWh/ft² and 0.39 therms/ft².

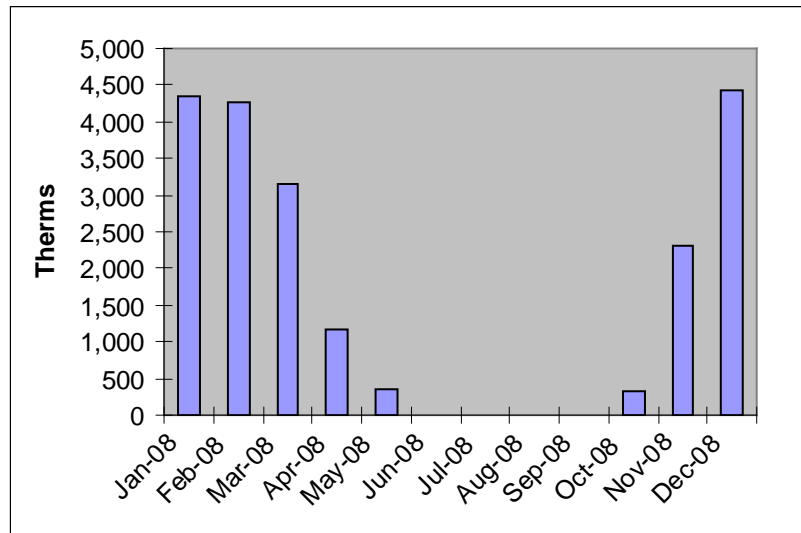


Figure 3.1.7b: Monthly Natural Gas Usage

3.1.8 Iselin Branch Public Library

Figure 3.1.8a illustrates the monthly electricity delivered to Iselin Branch Library by PSE&G from December 2008 to November 2009. The total annual cost and consumption of electricity for this period was \$13,348 and 57,200 kWh. The average electric cost for this 12-month period was \$0.233 per kWh.

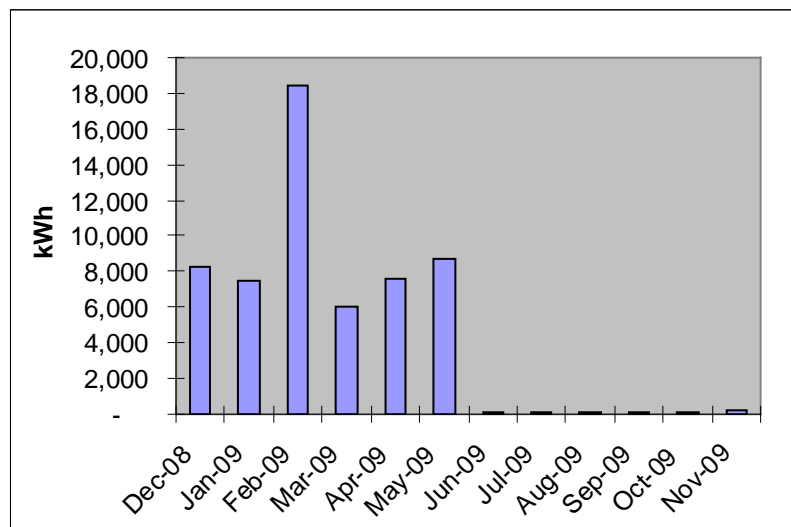


Figure 3.1.8a: Monthly Electricity Usage

Figure 3.1.8b illustrates the monthly natural gas purchased from Elizabethtown Gas from January 2008 to December 2008. The total annual cost and consumption of gas for this period was \$8,867 and 6,388 therms. The average gas cost for this 12-month

period was \$1.39 per therm. Therefore, an average electric and natural gas usage per unit area is estimated at 6.58 kWh/ft² and 0.73 therms/ft².

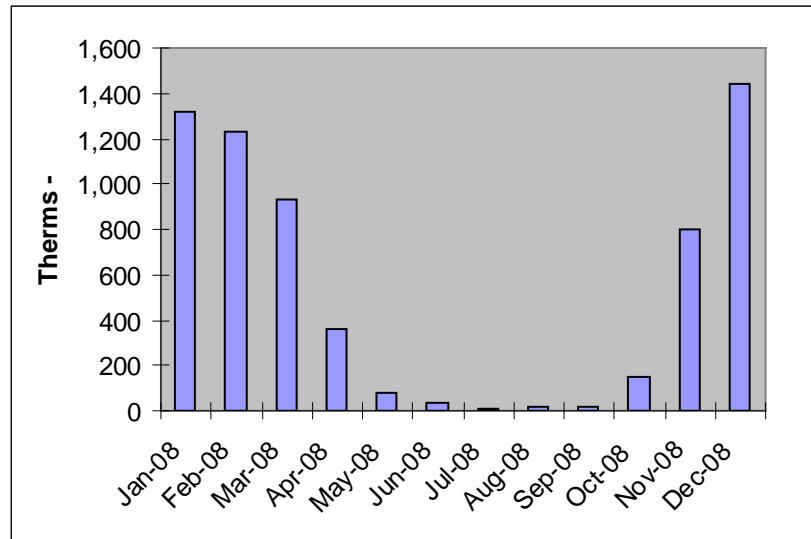


Figure 3.1.8b: Monthly Natural Gas Usage

3.1.9 Fords Branch Public Library

Figure 3.1.9a illustrates the monthly electricity delivered to Fords Branch Library by PSE&G from November 2008 to October 2009. The total annual cost and consumption of electricity for this period was \$27,164 and 144,300 kWh. The average electric cost for this 12-month period was \$0.188 per kWh.

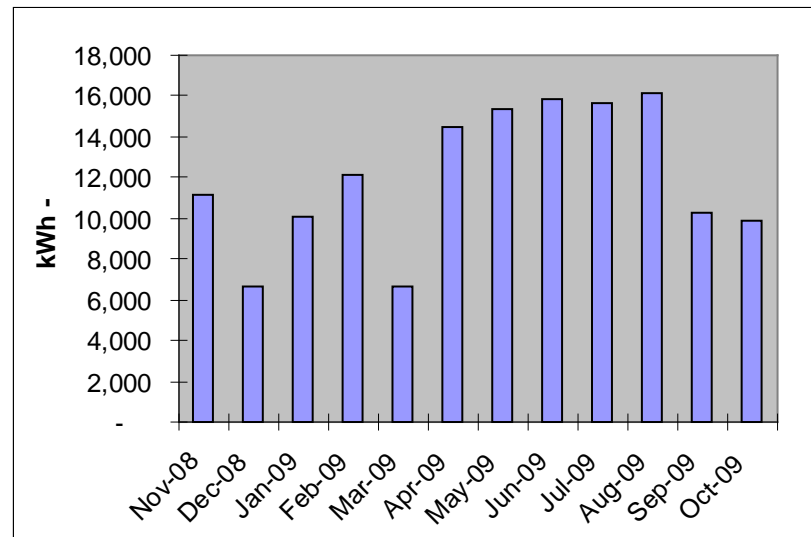


Figure 3.1.9a: Monthly Electricity Usage

Figure 3.1.9b illustrates the monthly natural gas purchased from Elizabethtown Gas from January 2008 to December 2008. The total annual cost and consumption of gas for this period was \$6,845 and 4,701 therms. Please note, utility data was unavailable for May through September 2008. The average gas cost for this 12-month period was

\$1.46 per therm. Therefore, an average electric and natural gas usage per unit area is estimated at 9.02 kWh/ft² and 0.29 therms/ft².

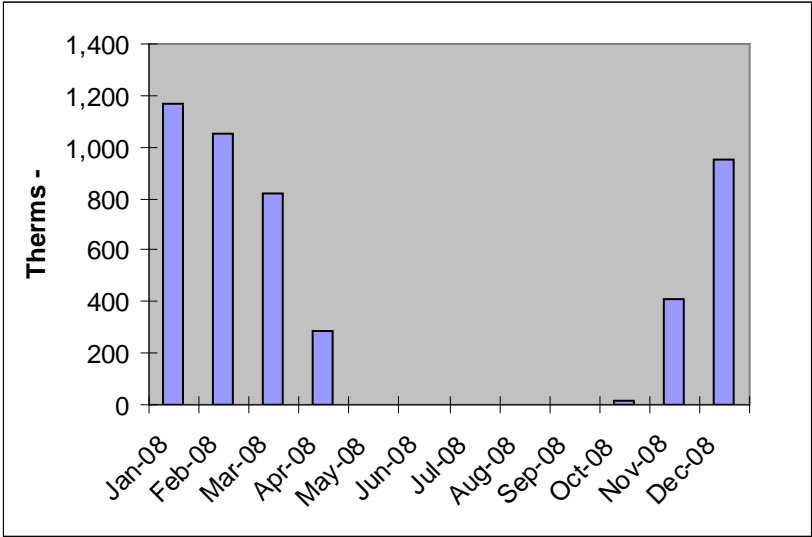


Figure 3.1.9b: Monthly Natural Gas Usage

3.1.10 Inman Branch Public Library

Figure 3.1.10a illustrates the monthly electricity delivered to Inman Branch Library by PSE&G from November 2008 to October 2009. The total annual cost and consumption of electricity for this period was \$16,985 and 96,880 kWh. The average electric cost for this 12-month period was \$0.175 per kWh.

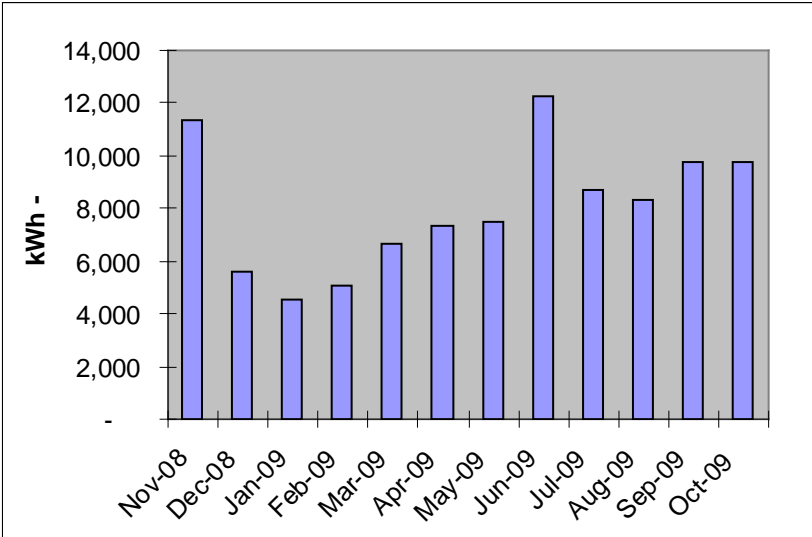
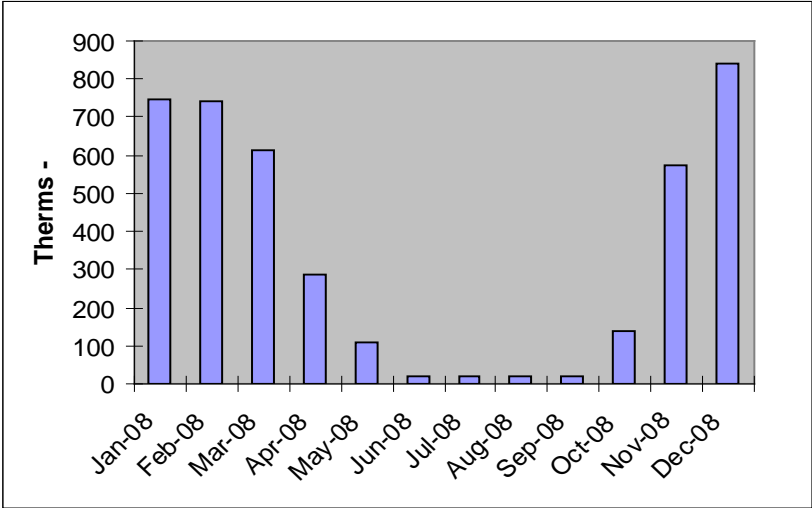


Figure 3.1.10a: Monthly Electricity Usage

Figure 3.1.10b illustrates the monthly natural gas purchased from Elizabethtown Gas from January 2008 to December 2008. The total annual cost and consumption of gas for this period was \$5,873 and 4,133 therms. The average gas cost for this 12-month period was \$1.42 per therm. Therefore, an average electric and natural gas usage per unit area is estimated at 22.02 kWh/ft² and 0.94 therms/ft².

Figure 3.1.10b: Monthly Natural Gas Usage



Section 4

Energy Conservation Retro Measures (ECRM)

4.1 Building Lighting Systems

4.1.1 Woodbridge Township Municipal Building

CDM/Metro suggests upgrading the existing HID, fluorescent, and incandescent lighting as identified in Appendix B to high efficiency standards, creating lighting uniformity throughout the buildings. In general, the energy efficient lighting upgrade involves installing new energy-efficient lighting fixtures with electronic ballasts, reflectors, and/or new energy-efficient luminaries to the existing lighting systems. In seeking the highest of efficiency standards, CDM/Metro suggests that the High Pressure Sodium HID fixtures in the parking deck be replaced with T8 linear fluorescent fixtures for an increase in light output and a decrease in energy consumption. Also, the existing 32-watt T8 linear fluorescent lamps throughout the building can be replaced with 28-watt T8 lamps. The strategies included in this section focused on maximizing energy savings while meeting or exceeding existing light levels. CDM/Metro also recommends installing occupancy sensors in specified areas of the facility. (Please refer to Appendix B: Lighting Retrofit Spreadsheets for a line-by-line proposal spreadsheet for detailed strategies and sensor locations).

Estimated Energy Savings:

The annual energy savings are estimated to be 23.34 kW, 134,674 kWh and \$16,700. In addition the project will generate annual maintenance savings from avoided costs related to changing lamps and ballasts. Please refer to Appendix B for the Lighting Spreadsheets and energy savings calculations.

The annual maintenance savings is estimated to be \$2,314.

The lifetime energy savings is estimated to be \$190,130.

Assumptions:

The Lighting Annual Savings assume the annual hours per year of operation as outlined under the column entitled "Hours Code" in Appendix B and the Operational & Maintenance (O&M) savings for the first three years are calculated by assuming the total avoidance of existing lamp & ballast maintenance costs by installing newer technologies. Years four (4) and five (5) are calculated using just the avoided existing ballasts costs based on the fact that the five-year warranty on the ballasts and the three-year warranty on the lamps has now expired. Years six (6) through ten (10) are calculated by using the difference between the cost to maintain the existing system and the cost to maintain the proposed system.

Estimated New Jersey SmartStart Incentive:

The estimated incentive is \$3,690.

Estimated Installation Cost:

The estimated cost to install high efficiency lighting as outlined in Appendix B is \$50,525.

Estimated Economic Benefits:

The simple payback is 2.46 years and the Return on Investment is estimated to be 41%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.1.2 Woodbridge Community Center

CDM/Metro suggests upgrading the existing fluorescent lighting as identified in Appendix B to high efficiency standards, creating lighting uniformity throughout the buildings. In general, the energy efficient lighting upgrade involves replacing the existing 32-watt T8 linear fluorescent lamps throughout the building with 28-watt T8 lamps. The strategies included in this section focused on maximizing energy savings while meeting or exceeding existing light levels. CDM/Metro also recommends installing occupancy sensors in specified areas of the facility. (Please refer to Appendix B: Lighting Retrofit Spreadsheets for a line-by-line proposal spreadsheet for detailed strategies and sensor locations).

Estimated Energy Savings:

The annual energy savings are estimated to be 8.47 kW, 22,142 kWh and \$3,211. In addition the project will generate annual maintenance savings from avoided costs related to changing lamps and ballasts. Please refer to Appendix B for the Lighting Spreadsheets and energy savings calculations.

The annual maintenance savings is estimated to be \$447.

The lifetime energy savings is estimated to be \$36,580.

Assumptions:

The Lighting Annual Savings assume the annual hours per year of operation as outlined under the column entitled "Hours Code" in Appendix B and the Operational & Maintenance (O&M) savings for the first three years are calculated by assuming the total avoidance of existing lamp & ballast maintenance costs by installing newer technologies. Years four (4) and five (5) are calculated using just the avoided existing ballasts costs based on the fact that the five-year warranty on the ballasts and the three-year warranty on the lamps has now expired. Years six (6) through ten (10) are calculated by using the difference between the cost to maintain the existing system and the cost to maintain the proposed system.

Estimated New Jersey SmartStart Incentive:

The estimated incentive is \$405.

Estimated Installation Cost:

The estimated cost to install high efficiency lighting as outlined in Appendix B is \$15,542.

Estimated Economic Benefits:

The simple payback is 4.14 years and the Return on Investment is estimated to be 24%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.1.3 Woodbridge Township Pump Station

CDM/Metro suggests upgrading the existing HID, T12 fluorescent, and incandescent lighting as identified in Appendix B to high efficiency standards, creating lighting uniformity throughout the buildings. In general, the energy efficient lighting upgrade involves installing new energy-efficient lighting fixtures with electronic ballasts, reflectors, and/or new energy-efficient luminaries to the existing lighting systems. CDM/Metro suggests that the Mercury Vapor HID fixtures be replaced with T5 linear fluorescent fixtures for an increase in light output and a decrease in energy consumption. The strategies included in this section focused on maximizing energy savings while meeting or exceeding existing light levels. CDM/Metro also recommends installing occupancy sensors in specified areas of the facility. (Please refer to Appendix B: Lighting Retrofit Spreadsheets for a line-by-line proposal spreadsheet for detailed strategies and sensor locations).

Estimated Energy Savings:

The annual energy savings are estimated to be 9.17 kW, 69,934 kWh and \$2,937. In addition the project will generate annual maintenance savings from avoided costs related to changing lamps and ballasts. Please refer to Appendix B for the Lighting Spreadsheets and energy savings calculations.

The annual maintenance savings is estimated to be \$934.

The lifetime energy savings is estimated to be \$44,055.

Assumptions:

The Lighting Annual Savings assume the annual hours per year of operation as outlined under the column entitled "Hours Code" in Appendix B and the Operational & Maintenance (O&M) savings for the first three years are calculated by assuming the total avoidance of existing lamp & ballast maintenance costs by installing newer technologies. Years four (4) and five (5) are calculated using just the avoided existing ballasts costs based on the fact that the five-year warranty on the ballasts and the three-year warranty on the lamps has now expired. Years six (6) through ten (10) are calculated by using the difference between the cost to maintain the existing system and the cost to maintain the proposed system.

Estimated New Jersey SmartStart Incentive:

The estimated incentive is \$2,375.

Estimated Installation Cost:

The estimated cost to install high efficiency lighting as outlined in Appendix B is \$11,245.

Estimated Economic Benefits:

The simple payback is 2.29 years and the Return on Investment is estimated to be 44%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.1.4 Evergreen Senior Center

CDM/Metro suggests upgrading the existing HID, T12 fluorescent, and incandescent lighting as identified in Appendix B to high efficiency standards, creating lighting uniformity throughout the buildings. In general, the energy efficient lighting upgrade involves installing new energy-efficient lighting fixtures with electronic ballasts, reflectors, and/or new energy-efficient luminaires to the existing lighting systems. The current indoor HID fixtures throughout the facility are inefficient by today's standards, and so in seeking the highest of efficiency standards, CDM/Metro suggests that the Mercury Vapor HID fixtures be replaced with T5 linear fluorescent fixtures for an increase in light output and a decrease in energy consumption. Also, the existing 32-watt T8 linear fluorescent lamps throughout the building can be replaced with 28-watt T8 lamps. The strategies included in this section focused on maximizing energy savings while meeting or exceeding existing light levels. CDM/Metro also recommends installing occupancy sensors in specified areas of the facility. (Please refer to Appendix B: Lighting Retrofit Spreadsheets for a line-by-line proposal spreadsheet for detailed strategies and sensor locations).

Estimated Energy Savings:

Note: Electric charges were not accurately provided; therefore, for payback calculations an estimated total cost was used to provide a more realistic financial analysis.

The annual energy savings are estimated to be 17.96 kW, 41,844 kWh and \$6,779. In addition the project will generate annual maintenance savings from avoided costs related to changing lamps and ballasts. Please refer to Appendix B for the Lighting Spreadsheets and energy savings calculations.

The annual maintenance savings is estimated to be \$208.

The lifetime energy savings is estimated to be \$69,870.

Assumptions:

The Lighting Annual Savings assume the annual hours per year of operation as outlined under the column entitled “Hours Code” in Appendix B and the Operational & Maintenance (O&M) savings for the first three years are calculated by assuming the total avoidance of existing lamp & ballast maintenance costs by installing newer technologies. Years four (4) and five (5) are calculated using just the avoided existing ballasts costs based on the fact that the five-year warranty on the ballasts and the three-year warranty on the lamps has now expired. Years six (6) through ten (10) are calculated by using the difference between the cost to maintain the existing system and the cost to maintain the proposed system.

Estimated New Jersey SmartStart Incentive:

The estimated incentive is \$6,135.

Estimated Installation Cost:

The estimated cost to install high efficiency lighting as outlined in Appendix B is \$42,837.

Estimated Economic Benefits:

The simple payback is 5.25 years and the Return on Investment is estimated to be 19%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.1.5 Baron Arts Center

CDM/Metro suggests upgrading the existing T12 fluorescent, and incandescent lighting as identified in Appendix B to high efficiency standards, creating lighting uniformity throughout the buildings. In general, the energy efficient lighting upgrade involves installing new energy-efficient lighting fixtures with electronic ballasts and/or new energy-efficient luminaires to the existing lighting systems. The strategies included in this section focused on maximizing energy savings while meeting or exceeding existing light levels. (Please refer to Appendix B: Lighting Retrofit Spreadsheets for a line-by-line proposal spreadsheet for detailed strategies and sensor locations).

Estimated Energy Savings:

Note: Electric charges were not accurately provided; therefore, for payback calculations an estimated total cost was used to provide a more realistic financial analysis.

The annual energy savings are estimated to be 1.68 kW, 3,182 kWh and \$449. In addition the project will generate annual maintenance savings from avoided costs related to changing lamps and ballasts. Please refer to Appendix B for the Lighting Spreadsheets and energy savings calculations.

The annual maintenance savings is estimated to be \$36.

The lifetime energy savings is estimated to be \$4,850.

Assumptions:

The Lighting Annual Savings assume the annual hours per year of operation as outlined under the column entitled "Hours Code" in Appendix B and the Operational & Maintenance (O&M) savings for the first three years are calculated by assuming the total avoidance of existing lamp & ballast maintenance costs by installing newer technologies. Years four (4) and five (5) are calculated using just the avoided existing ballasts costs based on the fact that the five-year warranty on the ballasts and the three-year warranty on the lamps has now expired. Years six (6) through ten (10) are calculated by using the difference between the cost to maintain the existing system and the cost to maintain the proposed system.

Estimated New Jersey SmartStart Incentive:

The estimated incentive is \$300.

Estimated Installation Cost:

The estimated cost to install high efficiency lighting as outlined in Appendix B is \$2,178.

Estimated Economic Benefits:

The simple payback is 3.88 years and the Return on Investment is estimated to be 26%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.1.6 Woodbridge Township Health Center

CDM/Metro suggests upgrading the existing HID, T12 fluorescent, and incandescent lighting as identified in Appendix B to high efficiency standards, creating lighting uniformity throughout the buildings. In general, the energy efficient lighting upgrade involves installing new energy-efficient lighting fixtures with electronic ballasts, reflectors, and/or new energy-efficient luminaries to the existing lighting systems. CDM/Metro suggests that the current High Pressure Sodium security fixtures be replaced with Metal Halide fixtures for an increase in light output and a decrease in energy consumption. The strategies included in this section focused on maximizing energy savings while meeting or exceeding existing light levels. CDM/Metro also recommends installing occupancy sensors in specified areas of the facility. (Please refer to Appendix B: Lighting Retrofit Spreadsheets for a line-by-line proposal spreadsheet for detailed strategies and sensor locations).

Estimated Energy Savings:

Note: Electric charges were not accurately provided; therefore, for payback calculations an estimated total cost was used to provide a more realistic financial analysis.

The annual energy savings are estimated to be 18.27 kW, 43,186 kWh and \$6,910. In addition the project will generate annual maintenance savings from avoided costs related to changing lamps and ballasts. Please refer to Appendix B for the Lighting Spreadsheets and energy savings calculations.

The annual maintenance savings is estimated to be \$215.

The lifetime energy savings is estimated to be \$71,250.

Assumptions:

The Lighting Annual Savings assume the annual hours per year of operation as outlined under the column entitled "Hours Code" in Appendix B and the Operational & Maintenance (O&M) savings for the first three years are calculated by assuming the total avoidance of existing lamp & ballast maintenance costs by installing newer technologies. Years four (4) and five (5) are calculated using just the avoided existing ballasts costs based on the fact that the five-year warranty on the ballasts and the three-year warranty on the lamps has now expired. Years six (6) through ten (10) are calculated by using the difference between the cost to maintain the existing system and the cost to maintain the proposed system.

Estimated New Jersey SmartStart Incentive:

The estimated incentive is \$4,575.

Estimated Installation Cost:

The estimated cost to install high efficiency lighting as outlined in Appendix B is \$17,079.

Estimated Economic Benefits:

The simple payback is 1.76 years and the Return on Investment is estimated to be 57%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.1.7 Woodbridge Township Main Library

CDM/Metro suggests upgrading the existing HID, T12 fluorescent, and incandescent lighting as identified in Appendix B to high efficiency standards, creating lighting uniformity throughout the buildings. In general, the energy efficient lighting upgrade involves installing new energy-efficient lighting fixtures with electronic ballasts, reflectors, and/or new energy-efficient luminaries to the existing lighting systems. The current indoor HID fixtures throughout the facility are inefficient by today's

standards, and so in seeking the highest of efficiency standards, CDM/Metro suggests that the majority of the Mercury Vapor fixtures be replaced with T5 linear fluorescent fixtures for an increase in light output and a decrease in energy consumption. This change will also provide the ability to turn the lights on and off instantly as compared to the long warm up period that the existing fixtures require. The strategies included in this section focused on maximizing energy savings while meeting or exceeding existing light levels. CDM/Metro also recommends installing occupancy sensors in specified areas of the facility. (Please refer to Appendix B: Lighting Retrofit Spreadsheets for a line-by-line proposal spreadsheet for detailed strategies and sensor locations).

Estimated Energy Savings:

The annual energy savings are estimated to be 68.38 kW, 171,917 kWh and \$25,788. In addition the project will generate annual maintenance savings from avoided costs related to changing lamps and ballasts. Please refer to Appendix B for the Lighting Spreadsheets and energy savings calculations.

The annual maintenance savings is estimated to be \$1,219.

The lifetime energy savings is estimated to be \$270,070.

Assumptions:

The Lighting Annual Savings assume the annual hours per year of operation as outlined under the column entitled "Hours Code" in Appendix B and the Operational & Maintenance (O&M) savings for the first three years are calculated by assuming the total avoidance of existing lamp & ballast maintenance costs by installing newer technologies. Years four (4) and five (5) are calculated using just the avoided existing ballasts costs based on the fact that the five-year warranty on the ballasts and the three-year warranty on the lamps has now expired. Years six (6) through ten (10) are calculated by using the difference between the cost to maintain the existing system and the cost to maintain the proposed system.

Estimated New Jersey SmartStart Incentive:

The estimated incentive is \$23,175.

Estimated Installation Cost:

The estimated cost to install high efficiency lighting as outlined in Appendix B is \$111,702.

Estimated Economic Benefits:

The simple payback is 3.28 years and the Return on Investment is estimated to be 31%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.1.8 Iselin Branch Public Library

CDM/Metro suggests upgrading the existing HID, T12 fluorescent, and incandescent lighting as identified in Appendix B to high efficiency standards, creating lighting uniformity throughout the buildings. In general, the energy efficient lighting upgrade involves installing new energy-efficient lighting fixtures with electronic ballasts, and/or new energy-efficient luminaires to the existing lighting systems. CDM/Metro suggests that the outside security High Pressure Sodium HID fixtures be replaced with Metal Halide HID fixtures for an increase in light output and a decrease in energy consumption. The strategies included in this section focused on maximizing energy savings while meeting or exceeding existing light levels. CDM/Metro also recommends installing occupancy sensors in specified areas of the facility. (Please refer to Appendix B: Lighting Retrofit Spreadsheets for a line-by-line proposal spreadsheet for detailed strategies and sensor locations).

Estimated Energy Savings:

The annual energy savings are estimated to be 0.33 kW, 2,024 kWh and \$472. In addition the project will generate annual maintenance savings from avoided costs related to changing lamps and ballasts. Please refer to Appendix B for the Lighting Spreadsheets and energy savings calculations.

The annual maintenance savings is estimated to be \$16.

The lifetime energy savings is estimated to be \$4,880.

Assumptions:

The Lighting Annual Savings assume the annual hours per year of operation as outlined under the column entitled "Hours Code" in Appendix B and the Operational & Maintenance (O&M) savings for the first three years are calculated by assuming the total avoidance of existing lamp & ballast maintenance costs by installing newer technologies. Years four (4) and five (5) are calculated using just the avoided existing ballasts costs based on the fact that the five-year warranty on the ballasts and the three-year warranty on the lamps has now expired. Years six (6) through ten (10) are calculated by using the difference between the cost to maintain the existing system and the cost to maintain the proposed system.

Estimated New Jersey SmartStart Incentive:

The estimated incentive is \$235.

Estimated Installation Cost:

The estimated cost to install high efficiency lighting as outlined in Appendix B is \$2,465.

Estimated Economic Benefits:

The simple payback is 4.57 years and the Return on Investment is estimated to be 19%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on

Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.1.9 Fords Branch Public Library

CDM/Metro suggests upgrading the existing HID, T12 fluorescent, and incandescent lighting as identified in Appendix B to high efficiency standards, creating lighting uniformity throughout the buildings. In general, the energy efficient lighting upgrade involves installing new energy-efficient lighting fixtures with electronic ballasts, reflectors, and/or new energy-efficient luminaries to the existing lighting systems. CDM/Metro suggests that the outside security High Pressure Sodium HID fixtures be replaced with Metal Halide HID fixtures for an increase in light output and a decrease in energy consumption. Also, the existing 32-watt T8 linear fluorescent lamps throughout the building can be replaced with 28-watt T8 lamps. The strategies included in this section focused on maximizing energy savings while meeting or exceeding existing light levels. (Please refer to Appendix B: Lighting Retrofit Spreadsheets for a line-by-line proposal spreadsheet for detailed strategies and sensor locations).

Estimated Energy Savings:

The annual energy savings are estimated to be 4.03 kW, 9,559 kWh and \$1,797. In addition the project will generate annual maintenance savings from avoided costs related to changing lamps and ballasts. Please refer to Appendix B for the Lighting Spreadsheets and energy savings calculations.

The annual maintenance savings is estimated to be \$115.

The lifetime energy savings is estimated to be \$19,120.

Assumptions:

The Lighting Annual Savings assume the annual hours per year of operation as outlined under the column entitled "Hours Code" in Appendix B and the Operational & Maintenance (O&M) savings for the first three years are calculated by assuming the total avoidance of existing lamp & ballast maintenance costs by installing newer technologies. Years four (4) and five (5) are calculated using just the avoided existing ballasts costs based on the fact that the five-year warranty on the ballasts and the three-year warranty on the lamps has now expired. Years six (6) through ten (10) are calculated by using the difference between the cost to maintain the existing system and the cost to maintain the proposed system.

Estimated New Jersey SmartStart Incentive:

The estimated incentive is \$550.

Estimated Installation Cost:

The estimated cost to install high efficiency lighting as outlined in Appendix B is \$4,653.

Estimated Economic Benefits:

The simple payback is 2.15 years and the Return on Investment is estimated to be 47%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.1.10 Inman Branch Public Library

CDM/Metro suggests upgrading the existing HID, T12 fluorescent, and incandescent lighting as identified in Appendix B to high efficiency standards, creating lighting uniformity throughout the buildings. In general, the energy efficient lighting upgrade involves installing new energy-efficient lighting fixtures with electronic ballasts, reflectors, and/or new energy-efficient luminaires to the existing lighting systems. CDM/Metro suggests that the outside security Quartz and High Pressure Sodium HID fixtures be replaced with Metal Halide HID fixtures for an increase in light output and a decrease in energy consumption. The strategies included in this section focused on maximizing energy savings while meeting or exceeding existing light levels. (Please refer to Appendix B: Lighting Retrofit Spreadsheets for a line-by-line proposal spreadsheet for detailed strategies and sensor locations).

Estimated Energy Savings:

The annual energy savings are estimated to be 5.35 kW, 13,671 kWh and \$2,392. In addition the project will generate annual maintenance savings from avoided costs related to changing lamps and ballasts. Please refer to Appendix B for the Lighting Spreadsheets and energy savings calculations.

The annual maintenance savings is estimated to be \$218.

The lifetime energy savings is estimated to be \$26,100.

Assumptions:

The Lighting Annual Savings assume the annual hours per year of operation as outlined under the column entitled "Hours Code" in Appendix B and the Operational & Maintenance (O&M) savings for the first three years are calculated by assuming the total avoidance of existing lamp & ballast maintenance costs by installing newer technologies. Years four (4) and five (5) are calculated using just the avoided existing ballasts costs based on the fact that the five-year warranty on the ballasts and the three-year warranty on the lamps has now expired. Years six (6) through ten (10) are calculated by using the difference between the cost to maintain the existing system and the cost to maintain the proposed system.

Estimated New Jersey SmartStart Incentive:

The estimated incentive is \$1,325.

Estimated Installation Cost:

The estimated cost to install high efficiency lighting as outlined in Appendix B is \$9,104.

Estimated Economic Benefits:

The simple payback is 2.98 years and the Return on Investment is estimated to be 34%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.2. HVAC Systems

4.2.1 Woodbridge Township Municipal Building

There are several issues in the Municipal building which can be attributed to significantly higher than normal costs associated with heating. In addition there are numerous complaints by occupants in regards to environmental comfort. Some issues are inter-related and complex and will require some further engineering analysis.

Note: Gas prices were not accurately provided and assumptions were made based on information provided for each location.

Interior Zone with VAV (variable air volume) Boxes with Heating Coils

The Municipal Building has Interior building zones with:

- VAV (variable-air-volume) boxes with heating coils and
- Fan-powered variable-air-volume (FPVAV) boxes with heating coils.

A typical HVAC building VAV system design is as follows:

Perimeter Zones:

Fan-powered VAV (FPVAV) units with heating coils are located on the Perimeter zones of the building to combat heating and cooling losses of the buildings skin (walls, windows and roof). The FPVAV box receives cool air from the central unit year round. A thermostat adjusts the damper inside the FPVAV box and regulates the amount of cool air coming into the space. When heating is required, the damper is on a minimum setting to provide ventilation, the fan and heating coiling will operate and force warm air down into the space.

Interior Zones:

VAV boxes (with damper only, no heating coil or fan) on the interior zones of the building to combat heat gains of the interior space (lights, equipment and people). The VAV box receives cool air from the central unit year round. A thermostat adjusts the damper inside the VAV box to regulate the amount of cool air coming into the space. Cooling is required year round in interior spaces since there are only heat gains and no building skin cooling losses.

Currently, the Municipal building does follow the design and operation of the Perimeter Zones described above. However, the Interior Zones do not. Instead, the Interior Zones of the Municipal building have FPVAV boxes with heating coils and regular VAV boxes with heating coils similar to what would be expected in a Perimeter Zone.

Typically the interior of a building is not designed this way. Boilers are being run in the summer during cooling season to provide hot water to interior and exterior VAV boxes and wasting energy. In the winter, the interior zones are probably receiving hot water also even though by convention there should be no heat loss in interior spaces (unless it is the top floor next to the roof). The heating coils are operating like an old "reheat system" which was prohibited in the 1970's revision of the Energy codes because energy is wasted by over-cooling and then re-heating again.

Of note, during the inspection, is significant HVAC air movement in office spaces which blows papers from shelving and creates a noticeable draft in doorways between office space and the elevator hallways. Also the building operator has to elevate air temperature in summer by using hot water to prevent condensation in ductwork.

Recommendations:

Further investigation and analysis should be done including but not limited to:

- Study of current heating/ cooling loads as they relate to existing HVAC design
- Re-balancing of HVAC system according to current heating/cooling loads
- Possibility of adjusting main supply air temperature to prevent over cooling and necessity of bringing heating coil on.
- De-activating interior zone fans and heating coils to save energy

The 2008 monthly gas bill ranges between a minimum of 4,000 therms/\$8,000 per month in summer to 11,000 therms/\$13,500 per month in winter. The summer therms and cost should be very low and only for gas use of the domestic hot water. Totals for 2008 are 85,000 therms at a cost of \$122,600 or about 91 kBtu/sf/year. These numbers should be lower.

Estimated Energy Savings:

Estimated Heating Energy savings = 6 months heating season x 3,500 therm savings = 21,000 therms/yr

Estimated Heating Energy Cost savings = 21,000 therms/yr x \$1.44/therm = \$30,240

Based on analysis of energy usage and bills, it is conservatively estimated that 10% of the cooling energy could be saved:

Estimated Cooling Energy savings = 696,967 kWh/yr x 10% = 69,697 kWh/yr

Estimated Cooling Energy Cost savings = 69,697 kWh/yr x \$.124/kWh = \$8,642/yr

Total Heating and Cooling Energy savings = \$38,882

The lifetime energy savings is estimated to be \$583,230.

Estimated Installation Cost:

The estimated cost for the recommendations above, including:

- Study of current heating/ cooling loads as they relate to existing HVAC design
- Re-balancing of HVAC system according to current heating/cooling loads
- Possibility of adjusting main supply air temperature to prevent over cooling and necessity of bringing heating coil on.
- De-activating interior zone fans and heating coils to save energy

Estimated Cost:

The estimated cost to provide the services outlined above is \$57,000.

Estimated Economic Benefits:

The simple payback is 1.47 years and the Return on Investment is estimated to be 68%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

HVAC for Police

The rooftop units serve the following areas:

- RTU 1 - ground fl (police patrol offices and desk, 24 hr operation)
- RTU 2 - 1st floor (municipal offices, weekday business hours operation)
- RTU 3 - 2nd floor (detective and chief offices, 24 hr operation plus mun. offices)
- 3rd floor (municipal offices, weekday business hours operation)
- RTU 4 - courtroom

A relatively large RTU 3 at 55,000 CFM (7,580 outside air CFM) is needed to operate in order to cool and heat part of the 2nd floor that the police occupy 24 hours. Consequently, during unoccupied weeknight and weekend hours the rest of the 2nd floor and entire 3rd floor is being heated/cooled unnecessarily wasting energy.

Two possible ways to rectify this waste of energy are:

1. Consolidate the police in an area served by one existing RTU dedicated to them which would operate 24 hours/ 7 days a week, or

2. Provide a new dedicated AC system for the second floor police area which operates 24 hours/7 days a week, and allows RTU 3 to be shut off during unoccupied weeknight and weekend hours

These and other options should be investigated, but are outside the scope of this audit and require further engineering analysis and study.

Estimated Energy Savings:

Estimated Heating Energy savings = 94 off peak hours/144 hours per week x ¼ building x 49,500 heating season therms = 8,078 therms/yr

Estimated Heating Energy Cost savings = 8,078 therms/yr x \$1.44/therm = \$11,632

Estimated Cooling Energy savings = 94 off peak hours/144 hours per week x ¼ building x 696,967 cooling season kWh = 113,741 kWh/yr

Estimated Cooling Energy Cost savings = 113,741 kWh/yr x \$.124/kWh = \$14,104/yr

Total Heating and Cooling Energy savings = \$23,345

The lifetime energy savings is estimated to be \$350,175.

Estimated Installation Cost:

The estimated cost for these 2 options should be investigated further, but are outside the scope of this audit and require further engineering analysis and study. It would seem Option 1: Consolidating the Police on one floor, would be easier and less costly, however the feasibility and logistics of this would have to be determined by the Municipality. Option 2 is outside the scope of this audit and would require further engineering analysis and study.

Total Cost = to be determined

Building Management System

Picture: Existing Building Management System (BMS)



RTU 2 and RTU 3 are on a digital Building Management System (BMS) that can be accessed via a personnel computer. The BMS system has full capabilities of monitoring, start/stop, temperature override, scheduling, etc., which is utilized by operating personnel.

It is recommended that RTU 1 also be added to the BMS along with RTU 4 which serves the courtroom.

Estimated Energy Savings:

Historically a DDC system will save approximately 10% of the operating budget for heating and cooling. Based on the utility bills and the square footage the building we have made an adjustment to the already reduced energy consumption under the two measures outlined above.

The total savings is equal to $\$29,200 \times 10\% = \$2,920/\text{year}$

The lifetime energy savings is estimated to be \$43,800.

Estimated Installation Cost:

The total cost is estimated to be \$45,000.

Estimated Economic Benefits:

The simple payback is 15.41 years and the Return on Investment is estimated to be 6%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.2.2 Woodbridge Community Center

HVAC Control Replacement (DDC)

There is no central energy management system installed in the building. CDM/Metro recommends installing a direct digital controls (DDC) system. By connecting HVAC equipment into a centralized building automation system, monitoring, comfort, and energy operating and scheduling efficiencies will be increased while reducing troubleshooting and maintenance costs.

Where appropriate the outside air intake can be minimized in order not to heat or cool ventilation air when a space is unoccupied. CDM/Metro recommends the installation new Carbon Dioxide sensors to be utilized to minimize HVAC ventilation when not necessary.

Estimated Energy Savings:

A typical DDC system will save approximately 10% of the operating budget for heating due to reduced operation and accurate control, temperature setback capabilities and adjustability. The existing equipment and the building are fairly new and energy efficient. We are recommending applying DDC systems to the ice rink systems (chiller, cooling tower and pumps) and the 8 largest rooftop air handling units, this report will use a more conservative figure of 5% savings.

Based on the utility bills that we were provided, it is estimated that the building's heating requirement is about 62,161 therms of gas.

Heating Energy Savings = 62,161 therms x 5% = 3,108 therms
Heating Cost Savings = 3,108 therms x \$1.40/therm = \$4,351

Estimated Annual Cooling Energy Consumption for Chiller & HVAC units at present
= 829,523kWh/yr

Annual Cooling Energy Savings: 5% Savings x 829,523kWh/yr = 41,476 kWh
Annual Cooling Savings = 41,476 kWh x \$.145 kWh = \$6,014

Total Annual Cooling and Heating Savings = \$4,351 + \$6,014 = \$10,365

The lifetime energy savings is estimated to be \$156,060.

Estimated Installation Cost:

We are estimating a minimum of 100 point DDC system monitoring for the ice rink systems and the eight 8 largest rooftop air handling units only. The total system cost is estimated to be \$150,000. Total cost includes upgrading existing terminal units (ice rink equipment and air handling units), installing the necessary DDC network and front end, and does not include the cost of new terminal units.

Estimated Economic Benefits:

The simple payback is 14.47 years and the Return on Investment is estimated to be 7%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.2.3 Woodbridge Township Pump Station

No recommendations at this time.

4.2.4 Evergreen Senior Center

HV Unit Replacement

There are three (3) Heating and Ventilating (HV) units that are responsible for providing heating and fresh ventilation air for the multi-purpose and multi-service rooms. These units are original to the 1953 building and well beyond their ASHRAE expected life of 15 years.

CDM/Metro Energy recommends replacing the three (3) HV units. The 3 new units will be equipped with digital controls. The new HVAC units will save approximately 10% -20% of the operational energy consumption due to tighter unit construction, temperature setback capabilities and better control system accuracy. The new units will improve the room conditions and allow the rooms to meet the current ASHRAE ventilation standards that may not be currently satisfied. Please note that the following calculations are a preliminary analysis and additional engineering will need to be conducted in order to determine accurate sizing and implementation costs of the systems. Furthermore, design criteria should consider the diversity of operating hours

and occupancy within the building as far and apply it to zoning and operation of a new HVAC system which will yield future energy savings.

Estimated Energy Savings:

Estimated Annual Energy Consumption for HVAC units at present = 6,737 therms/yr
Annual Energy Savings: 20% Savings x 6,737 therms/yr = 1,347 therms
Annual Savings = 1,347 therms x \$1.40/therm = \$1,886

The lifetime energy savings is estimated to be \$37,720.

Estimated Installation Cost:

The total installed cost for three (3) new air handling units with heating coils (no cooling), high efficiency filter, and fan, complete with integral digital control (including demand ventilation) will cost approximately \$144,000. Total cost includes labor and material estimates only.

Estimated Economic Benefits:

The simple payback is 76.36 years and the Return on Investment is estimated to be 1%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

AC Unit Replacement

There are two (2) AC units rated at approximately 5,000 cfm each that are responsible for providing cooling and fresh ventilation air for the multi-purpose room. These units are 22 years old and beyond their ASHRAE expected life of 15 years.

CDM/Metro recommends replacing the air conditioning units. The two (2) new units will be equipped with digital controls. The new HVAC units will save approximately 20% of the operational energy consumption due to tighter unit construction, temperature setback capabilities and better control system accuracy. The new units will improve the room conditions and allow the rooms to meet the current ASHRAE ventilation standards that may not be currently satisfied. Please note that the following calculations are a preliminary analysis and additional engineering will need to be conducted in order to determine accurate sizing and implementation costs of the systems. Furthermore, design criteria should consider the diversity of operating hours and occupancy within the building as far and apply it to zoning and operation of a new HVAC system which will yield future energy savings.

Estimated Energy Savings:

Note: Electric charges were not accurately provided; therefore, for payback calculations an estimated total cost was used to provide a more realistic financial analysis.

Estimated Annual Energy Consumption for HVAC units at present = 32,340 kWh/yr
Annual Energy Savings: 20% Savings x 32,340 kWh /yr = 6,468 kWh
Annual Savings = 6,468 kWh x \$0.162 = \$1,048

The lifetime energy savings is estimated to be \$15,720.

Current Estimated New Jersey SmartStart Incentive:
The estimated incentive is \$1,825. (total for 2 units)

Estimated Installation Cost:

The total installed cost for two (2) air conditioning units complete with integral digital controls will cost approximately \$50,000. Total cost is based on an estimated cooling capacity of 25 tons and includes labor and material only.

Estimated Economic Benefits:

The simple payback is 45.98 years and the Return on Investment is estimated to be 2%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

Unit Ventilator Replacement

Ventilation in the rooms is provided by seventeen (17) unit ventilators. These units are old and inefficient compared to new units and likely do not provide a proper amount of fresh air according to the latest ASHRAE guidelines. CDM/Metro recommends replacing these units with new, matching units equipped with digital controls and demand ventilation controls.

Estimated Energy Savings:

Based on the size of these rooms, the total natural gas consumption of the building, and that personnel said the HV units are manually turned on as needed, it is estimated that the heat output of the unit ventilators is about 4,491 therms. According to several published case studies, the new unit ventilators will provide between 25% and 35% savings. These savings are primarily based on better control of the unit, especially when an economizer cycle is used. Also, it is assumed that there is not a substantial change in total cfm of the units.

Annual Heating Energy Efficiency Savings = 4,491 therms x 30% (savings) = 1,347 therms/yr

Total Annual heating cost savings = \$1.40/therm * (1,347) therms/yr = \$1,886/yr

The lifetime energy savings is estimated to be \$37,720.

Additional operations and maintenance savings can be expected from this upgrade.

Estimated Installation Cost:

The total implementation cost of seventeen (17) new units equipped with a heating coil, an economizer and digital controls is estimated to be \$238,000.

Estimated Economic Benefits:

The simple payback is 126.21 years and the Return on Investment is estimated to be 1%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

Steam Trap Maintenance

The building custodial staff stated that steam traps are not regularly serviced or maintained. The exact number of steam traps is unknown. However, assuming one trap per room plus additional traps located in hallways, stairwells, and the boiler room, and estimating the percentage of the building that is heated by steam, we estimated the total number of steam traps to be approximately fifty-seven (57). A steam trap is a device designed to block the leaking of steam to condensate lines. CDM/Metro recommends testing of all traps. The U.S. Department of Energy has shown that approximately 20% of the steam leaving a central boiler plant may be lost via leaking traps in typical space heating systems without proactive maintenance programs.

Potential Energy Savings (following steam trap test):

To be conservative, CDM/Metro has assumed a conservative 10% savings for repairing/replacing failed traps. Based on the utility bills and the approximate percentage of the building for which steam is used for heating, the annual heating load for steam is estimated to be 22,457 therms. The savings can be calculated as shown below. It should be noted that these savings do not result from the testing of the steam traps but are a result of repairing any issues that are identified through testing.

Potential Energy savings = Annual Heating Use x 10% = 22,457 therms x 10% = 2,247 therms/year
Cost savings = 2,247 therms x \$1.40/therm = \$3,146

The lifetime energy savings is estimated to be \$22,022.

Estimated Economic Benefits:

The simple payback is 1.59 years and the Return on Investment is estimated to be 63%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

Steam Trap Testing Cost:

Exact number of traps could not be verified CDM/Metro recommends a steam trap survey and catalog be completed to identify all steam traps and current condition. Estimated cost to complete a facility wide survey is \$2,000. Once the steam trap analysis is completed the total cost to either repair or replace damaged steam traps can be provided. For the purposes of this analysis, a conservative total cost of \$5,000 has been assumed.

4.2.5 Baron Arts Center

Domestic Hot Water Heater

Domestic hot water is provided by one gas hot water heater rated at 40 gallons. It is approximately 30 years old and beyond its expected useful life and should be replaced immediately.

Estimated Utility Cost Savings:

Negligible

Estimated Installation Cost:

The installation cost for a 40 gallon gas hot water heater is \$900

Current Estimated New Jersey SmartStart Incentive:

The estimated incentive is \$50.

Split AC Units

CDM/Metro recommends budgeting to replace the two (2) split AC units, which at 15 years old, are at their ASHRAE life expectancy. The new units will be equipped with digital controls. The new air handling unit will also save a considerable amount of the operational energy consumption due to tighter unit construction, temperature setback capabilities and better control system accuracy resulting from the unit's ability to be dynamically controlled by the self contained control system. Please note that the following calculations are a preliminary analysis and additional engineering will need to be conducted in order to determine accurate sizing and implementation costs of the systems.

Estimated Energy Savings:

Note: Electric charges were not accurately provided; therefore, for payback calculations an estimated total cost was used to provide a more realistic financial analysis.

Estimated Annual Cooling Energy Consumption for HVAC units at present = 11,291 kWh/yr

Annual Cooling Energy Savings: 20% Savings x 11,291 kWh/yr = 2,258 kWh

Annual Cooling Savings = 2,258 kWh x \$.141 /kWh = \$318

The lifetime energy savings is estimated to be \$4,770.

Current Estimated New Jersey SmartStart Incentive:

The estimated incentive is \$1,180.

Estimated Installation Cost:

It is assumed that the unit will be rated at approximately 10 tons and 5 tons. The total installed cost for the new air conditioning units as stated above, cooling coils, high efficiency filter, and fan, complete with integral digital control will cost approximately \$30,000. Total cost includes labor and material estimates only.

Estimated Economic Benefits:

The simple payback is 90.52 years and the Return on Investment is estimated to be 1%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.2.6 Woodbridge Township Health Center

HVAC Unit Replacement

The air-handling unit serving the building is original to the 1969 building and well beyond its ASHRAE expected life of 15 years.

CDM/Metro recommends replacing the unit. The new unit will be equipped with digital controls. The new HVAC units will save approximately 20% of the operational energy consumption due to tighter unit construction, temperature setback capabilities and better control system accuracy. The new unit will improve the room conditions and allow the rooms to meet the current ASHRAE ventilation standards that may not be currently satisfied. Please note that the following calculations are a preliminary analysis and additional engineering will need to be conducted in order to determine accurate sizing and implementation costs of the systems. Furthermore, design criteria should consider the diversity of operating hours and occupancy within the building as far and apply it to zoning and operation of a new HVAC system which will yield future energy savings.



Estimated Energy Savings:

Note: Electric charges were not accurately provided; therefore, for payback calculations an estimated total cost was used to provide a more realistic financial analysis.

Estimated Annual Energy Consumption for HVAC unit at present = 34,230 kWh/yr
Annual Energy Savings: 20% Savings x 34,230 kWh /yr = 6846 kWh/yr
Annual Savings = 6846 kWh/yr \times \$.160 kWh = -\$1,095

The lifetime energy savings is estimated to be \$16,425.

Estimated Installation Cost:

The size of the existing AHU was estimated at approximately 16,000 cfm, based on the cooling capacity of the condensing units. The total installed cost for the new air handling unit with cooling coils, high efficiency filter, and fan, complete with integral digital control will cost approximately \$75,000. Total cost includes labor and material estimates only.

Estimated Economic Benefits:

The simple payback is 67.01 years and the Return on Investment is estimated to be 1%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

Boiler Replacement

The hot water boiler (converted from steam 29 years ago) is original to the building built in 1969. The boiler has exceeded its estimated ASHRAE service life of 30 years. CDM/Metro recommends replacing the existing boilers with high efficiency, modulating condensing boilers. The new boilers will be equipped with the latest, digital boiler controls that will optimize hot water production based on outdoor air conditions. Additional engineering will be required to accurately size the new boiler.



Estimated Energy Savings:

The proposed hot water condensing modular boilers have a high net efficiency of up to 95-99%. For the purposes of our calculations CDM/Metro has assumed a more conservative figure of 90% (efficiency at any moment can vary between 86% and 97% based on return water temperature and input modulation). CDM/Metro has assumed the hours of operation to be 3,000 hours per year, a current boiler efficiency of 75% and an annual heating load of approximately 7,921 therms.

Energy Savings = Current Gas Usage (1- EFF old/EFF new) = 7,921 Therms (1- 0.75/0.90) = 1,320 therms/yr

The annual cost savings = 1,320 therms x \$1.40/therm = \$1,848

The lifetime energy savings is estimated to be \$46,200.

Estimated New Jersey SmartStart Incentive:

The estimated incentive is \$1,750.

Estimated Installation Cost:

Based on the building size and annual utility bills it appears that the existing boiler is oversized. Further engineering analysis is required to accurately determine the size of the new boiler, however for the purpose of this study we will assume that the new boiler is rated at 1,000 MBH. The total construction cost is estimated at \$60,000 and includes demolition of the existing boilers and the installation of high-efficiency modulating condensing boiler.

Estimated Economic Benefits:

The simple payback is 31.52 years and the Return on Investment is estimated to be 3%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.2.7 Woodbridge Township Main Library

HVAC Unit Replacement

There are four (4) HVAC units that are responsible for providing heating, cooling and fresh ventilation air for the library rated at 20,000 cfm, 14,000 cfm, 16,000 cfm and 9,600 cfm. These rooftop air-handling units are original to the 1974 building and well beyond their ASHRAE expected life of 15 years. However, upon visual inspection the units appear to be well maintained and in good/fair condition. There have been a variety of repairs done over the years such as motor replacements, etc. Air handling units such as these can lose 10%-20% of their efficiency/output over the years due to wear and tear on unit construction, motors, dampers, controls, coils, etc. resulting in leaks and inefficiencies in operation.

CDM/Metro recommends consideration in replacing the four 4 HVAC units. The 4 new units will be equipped with digital controls. It is assumed that the new HVAC units could conservatively save approximately 10% of the operational energy consumption due to tighter unit construction, temperature setback capabilities and better control system accuracy. The new units will improve the room conditions and could allow the rooms to meet the current ASHRAE ventilation standards that may not be currently satisfied. Please note that the following calculations are a preliminary analysis and additional engineering will need to be conducted in order to determine accurate sizing and implementation costs of the systems. Furthermore, design criteria should consider the diversity of operating hours and occupancy within

the building as far and apply it to zoning and operation of a new HVAC system which will yield future energy savings.

Estimated Energy Savings:

Estimated Annual Energy Consumption for HVAC units at present = 5,087 therms/yr

Annual Heating Energy Savings: 10% Savings x 5,087 therms/yr = 509 therms

Annual Heating Savings = 509 therms x \$1.40/therm = \$713

Cooling Energy Savings = 210,920 kWh x 10% = 21,092 kWh

Cooling Cost Savings = 21,092 kWh x \$0.150 kWh = \$3,164

Total Cost Savings = \$712 + \$3,164 = \$ 3,876

The lifetime energy savings is estimated to be \$58,140.

Estimated Installation Cost:

The total installed cost for four new air handling units with heating & cooling coils, high efficiency filter, and fan, complete with integral digital control (including demand ventilation) will cost approximately \$240,000. Total cost includes labor and material estimates only.

Estimated Economic Benefits:

The simple payback is 61.91 years and the Return on Investment is estimated to be 2%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

Boiler Replacement

The two (2) hot water boilers (converted from steam 20 years ago) are original to the building built in 1974. The boilers have exceeded their estimated ASHRAE service life of 30 years. CDM/Metro recommends replacing the two (2) existing boilers with high efficiency, modulating condensing boilers. The new boilers will be equipped with the latest, digital boiler controls that will optimize hot water production based on outdoor air conditions. Additional engineering will be required to accurately size the new boiler.

Estimated Energy Savings:

The proposed hot water condensing modular boilers have a high net efficiency of up to 95-99%. For the purposes of our calculations CDM/Metro has assumed a more conservative figure of 90% (efficiency at any moment can vary between 86% and 97% based on return water temperature and input modulation). CDM/Metro has assumed the hours of operation to be 3,000 hours per year, a current boiler efficiency of 75% and an annual heating load of approximately 20,349 therms.

Energy Savings = Current Gas Usage (1- EFF old/EFF new) = 20,349 Therms (1-0.75/0.90) = 3,391 therms/yr

The annual cost savings = 3,391 therms x \$1.40/therm = \$4,748.

The lifetime energy savings is estimated to be \$118,700.

Estimated New Jersey SmartStart Incentive:

The estimated incentive is \$5,402.

Estimated Installation Cost:

The total construction cost is estimated at \$270,000 and includes demolition of the existing boilers and the installation of (2) high-efficiency condensing boilers rated at 2,701 MBH each.

Estimated Economic Benefits:

The simple payback is 55.74 years and the Return on Investment is estimated to be 2%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

Building Management System

There is no central energy management system installed in the building and all HVAC components such as boilers and air handling units are controlled through an old pneumatic system. Some of the thermostatic controls do not work well.

CDM/Metro recommends installing a direct digital controls (DDC) system. By connecting these units into a centralized building automation system and converting the terminal units' controls and sensors to DDC, the compressed air system can be eliminated which will greatly reduce troubleshooting and maintenance costs. *This recommendation should only be implemented if new terminal units are installed.* Where appropriate the outside air intake can be minimized in order not to heat or cool ventilation air when a space is unoccupied. CDM/Metro recommends the installation new Carbon Dioxide sensors to be utilized to minimize HVAC ventilation when not necessary.

Estimated Energy Savings:

A typical DDC system will save approximately 10% of the operating budget for heating and cooling due to reduced operation and accurate control, temperature setback capabilities and adjustability. Based on the utility bills, it is estimated that the building's heating requirement is about 20,349 therms of gas.

Heating Energy Savings = 20,349 therms x 10% = 2,034 therms

Heating Cost Savings = 2,034 therms x \$1.40/therm = \$2,848

Cooling Energy Savings = 210,920 kWh × 10% = 21,092 kWh
Cooling Cost Savings = 21,092 kWh × \$.150 kWh = \$3,164

Total Cost Savings = \$2,848 + \$3,164 = \$6,011

The lifetime energy savings is estimated to be \$90,165.

Estimated Installation Cost:

We are estimating a minimum of 50 point DDC system monitoring for the library. The total system cost is estimated to be \$75,000. Total cost includes upgrading existing terminal units (Chiller plant, boiler plant equipment and air handling units), installing the necessary DDC network and front end, and does not include the cost of new terminal units.

Estimated Economic Benefits:

The simple payback is 12.48 years and the Return on Investment is estimated to be 8%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.2.8 Iselin Branch Public Library

HVAC Unit Replacement

Picture: HVAC split system units

Two (2) HVAC split system units are responsible for providing heating, cooling and fresh ventilation air for the library. These units are approximately 20 years old and beyond their ASHRAE expected life of 15 years.



CDM/Metro recommends replacing the 2 HVAC units. The two 2 new units will be equipped with digital controls. The new HVAC units will save approximately 20% of the operational energy consumption due to tighter unit construction, temperature setback capabilities and better control system accuracy. The new units will improve the room conditions and allow the rooms to meet the current ASHRAE ventilation standards that may not be currently satisfied. Please note that the following calculations are a preliminary analysis and additional engineering will need to be conducted in order to determine accurate sizing and implementation costs of the systems. Furthermore, design criteria should consider the diversity of operating hours and occupancy within the building as far and apply it to zoning and operation of a new HVAC system which will yield future energy savings.

Estimated Energy Savings:

Estimated Annual Energy Consumption for HVAC units at present = 49,200 kWh/yr
Annual Energy Savings: 20% Savings x 49,200 kWh/yr = 9,840 kWh
Annual Savings = 9,840 kWh x \$.233/kWh = \$2,293

The lifetime energy savings is estimated to be \$34,395.

Current Estimated New Jersey SmartStart Incentive:

The estimated incentive is \$3,100

Estimated Installation Cost:

The total installed cost for two (2) new split air conditioning units with cooling coils, high efficiency filter, and fan, complete with integral digital control (including demand ventilation) will cost approximately \$80,000. Total cost includes labor and material estimates only.

Estimated Economic Benefits:

The simple payback is 33.54 years and the Return on Investment is estimated to be 3%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.2.9 Fords Branch Public Library

HVAC Unit Replacement

There are four (4) HVAC units that are responsible for providing heating, cooling and fresh ventilation air for the library. These units are approximately 20 years old and well beyond their ASHRAE expected life of 15 years.



CDM/Metro recommends replacing the four 4 HVAC units. The new units will be equipped with digital controls. The new HVAC units will save approximately 20% of the operational energy consumption due to tighter unit construction, temperature setback capabilities and better control system accuracy. The new units will improve the room conditions and allow the rooms to meet the current ASHRAE ventilation standards that may not be currently satisfied. Please note that the following calculations are a preliminary analysis and additional engineering will need to be conducted in order to determine accurate sizing and implementation costs of the systems. Furthermore, design criteria should consider the diversity of operating hours and occupancy within

the building as far and apply it to zoning and operation of a new HVAC system which will yield future energy savings.

Estimated Energy Savings:

Estimated Annual Energy Consumption for HVAC units at present = 4,701 therms/yr

Annual Heating Energy Savings: 20% Savings x 4,701 therms/yr = 940 therms

Annual Heating Savings = 940 therms x \$1.46/therm = \$1,373

Cooling Energy Savings = 58,880kWh x 20% = 11,776kWh

Cooling Cost Savings = 11,776 kWh x \$.188 kWh = \$2,214

Total Cost Savings = \$1,373 + \$ 2,214 = \$3,586

The lifetime energy savings is estimated to be \$53,790.

Estimated New Jersey SmartStart Incentive:

The estimated incentive is \$2,190.

Estimated Installation Cost:

The total installed cost for four new rooftop units (rated at approximately 7.5 tons each) with heating coils, DX cooling, high efficiency filter, and fan, complete with integral digital control will cost approximately \$60,000. Total cost includes labor and material estimates only.

Estimated Economic Benefits:

The simple payback is 16.12 years and the Return on Investment is estimated to be 6%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

Domestic Hot Water Heater

Domestic hot water is provided by one gas hot water heater rated at 52 gallons. It is approximately 37 years old and beyond its expected useful life and should be replaced immediately.

Estimated Utility Cost Savings:

Negligible

Estimated Installation Cost:

The installation cost for a 52 gallon gas hot water heater is \$1,000

Current Estimated New Jersey SmartStart Incentive:

The estimated incentive is \$50.

4.2.10 Inman Branch Public Library

Domestic Hot Water Heater

Domestic hot water is provided by one gas hot water heater rated at 30 gallons. It is approximately 20 years old and beyond its expected useful life and should be replaced immediately.

Estimated Utility Cost Savings:

Negligible

Estimated Installation Cost:

The installation cost for a 30 gallon gas hot water heater is \$850

Current Estimated New Jersey SmartStart Incentive:

The estimated incentive is \$50.

Air Handling Unit Replacement

There are three (3) air-handling units that are responsible for providing heating, cooling and fresh ventilation air for the library. These units are original to the 1974 building and well beyond their ASHRAE expected life of 15 years.

CDM/Metro recommends replacing the three (3) air-handling units. The 3 new units will be equipped with digital controls. The new HVAC units will save approximately 10% of the operational energy consumption due to tighter unit construction, temperature setback capabilities and better control system accuracy. The new units will improve the room conditions and allow the rooms to meet the current ASHRAE ventilation standards that may not be currently satisfied. Please note that the following calculations are a preliminary analysis and additional engineering will need to be conducted in order to determine accurate sizing and implementation costs of the systems. Furthermore, design criteria should consider the diversity of operating hours and occupancy within the building as far and apply it to zoning and operation of a new HVAC system which will yield future energy savings.

Estimated Energy Savings:

Estimated Annual Heating Energy Consumption for HVAC units at present = 3,883 therms/yr

Annual Heating Energy Savings: 10% Savings x 3,883 therms/yr = 388 therms

Annual Heating Savings = 388 therms x \$1.42/therm = \$551

Estimated Annual Cooling Energy Consumption for HVAC units at present = 34,760 kWh/yr

Annual Cooling Energy Savings: $10\% \text{ Savings} \times 34,760 \text{ kWh/yr} = 3,476 \text{ kWh}$
Annual Cooling Savings = $3,476 \text{ kWh} \times \$0.175 \text{ kWh} = \$608$

Total Annual Cooling and Heating Savings = $\$551 + \$608 = \$1,159$

The lifetime energy savings is estimated to be \$17,385.

Estimated Installation Cost:

The total installed cost for four new air handling units with both heating and cooling coils, high efficiency filter, and fan, complete with integral digital control (including demand ventilation) will cost approximately \$45,000. Total cost includes labor and material estimates only.

Estimated Economic Benefits:

The simple payback is 38.70 years and the Return on Investment is estimated to be 3%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.3 Building Envelope

4.3.1 Woodbridge Township Municipal Building

No recommendations at this time.

4.3.2 Woodbridge Township Community Center

No recommendations at this time.

4.3.3 Woodbridge Township Pump Station

No recommendations at this time.

4.3.4 Evergreen Senior Center

No recommendations at this time.

4.3.5 Baron Arts Center

No recommendations at this time.

4.3.6 Woodbridge Township Health Center

Window Replacement

The Library's windows consist of single paned glass. CDM/Metro recommends replacing these old windows with new, double paned energy efficient windows with weather stripped aluminum frames.

Estimated Energy Savings:

Note: Electric charges were not accurately provided; therefore, for payback calculations an estimated total cost was used to provide a more realistic financial analysis.

Energy savings that could be realized from a window replacement is a result of reduced heat conduction and air infiltration. Additional measurement and analysis needs to be conducted to identify exact quantities, pricing and savings.

Estimated Annual Energy Savings Winter = 560 therms/yr
Estimated Annual Energy Savings Summer =18,752 kWh/yr
Annual Winter Savings 560 therms x 1.40 = \$784
Annual Summer Savings 18752 x .16 = \$3,000
The total annual cost savings were estimated at \$3,784

The lifetime energy savings is estimated to be \$75,680.

Estimated Installation Cost:

The implementation cost to replace approximately 3,492 sq ft of windows with high efficiency windows is \$349,200.

Estimated Economic Benefits:

The simple payback is 92.28 years and the Return on Investment is estimated to be 1%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.3.7 Woodbridge Township Main Library

Window Replacement

The Library's windows consist of single paned glass. CDM/Metro recommends replacing these old windows with new, double paned energy efficient windows with weather stripped aluminum frames.

Estimated Energy Savings:

Energy savings that could be realized from a window replacement is a result of reduced heat conduction and air infiltration. Additional measurement and analysis needs to be conducted to identify exact quantities, pricing and savings.

Estimated Annual Energy Savings Winter = 2,208 therms/yr
Estimated Annual Energy Savings Summer =77,703 kWh/yr
Annual Winter Savings 2,208 therms x 1.40 = \$3,091
Annual Summer Savings 77,703 x .15 = \$11,655

The total annual cost savings were estimated at **\$14,747**

The lifetime energy savings is estimated to be \$294,940.

Estimated Installation Cost:

The implementation cost to replace approximately 3,492 sq. ft. of windows with high efficiency windows is \$349,200.

Estimated Economic Benefits:

The simple payback is 23.68 years and the Return on Investment is estimated to be 4%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.3.8 Iselin Branch Public Library

Window Replacement

The Library's windows consist of single paned glass. CDM/Metro recommends replacing these old windows with new, double paned energy efficient windows with weather stripped aluminum frames.

Estimated Energy Savings:

Energy savings that could be realized from a window replacement is a result of reduced heat conduction and air infiltration. Additional measurement and analysis needs to be conducted to identify exact quantities, pricing and savings.

Estimated Annual Energy Savings Winter = 304 therms/yr
Estimated Annual Energy Savings Summer =12,745 kWh/yr
Annual Winter Savings 304 therms x 1.39 = \$423
Annual Summer Savings 12,745 x .233 = \$2,970

The total annual cost savings were estimated at **\$3,392**

The lifetime energy savings is estimated to be \$67,840

Estimated Installation Cost:

The implementation cost to replace approximately 768 sq ft of windows with high efficiency windows is \$76,800.

Estimated Economic Benefits:

The simple payback is 26.07 years and the Return on Investment is estimated to be 4%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.3.9 Fords Branch Public Library

Window Replacement

The Library's windows consist of single paned glass. CDM/Metro recommends replacing these old windows with new, double paned energy efficient windows with weather stripped aluminum frames.

Estimated Energy Savings:

Energy savings that could be realized from a window replacement is a result of reduced heat conduction and air infiltration. Additional measurement and analysis needs to be conducted to identify exact quantities, pricing and savings.

Estimated Annual Energy Savings Winter = 208 therms/yr
Estimated Annual Energy Savings Summer =9,376 kWh/yr
Annual Winter Savings 208 therms x 1.46 = \$304
Annual Summer Savings 9,376 x .188 = \$1,763

The total annual cost savings were estimated at **\$2,066**

The lifetime energy savings is estimated to be \$30,990.

Estimated Installation Cost:

The implementation cost to replace approximately 768 sq ft of windows with high efficiency windows is \$76,800.

Estimated Economic Benefits:

The simple payback is 38.93 years and the Return on Investment is estimated to be 3%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.3.10 Inman Branch Public Library

Window Replacement

The Library's windows consist of single paned glass. CDM/Metro recommends replacing these old windows with new, double paned energy efficient windows with weather stripped aluminum frames.

Estimated Energy Savings:

Energy savings that could be realized from a window replacement is a result of reduced heat conduction and air infiltration. Additional measurement and analysis needs to be conducted to identify exact quantities, pricing and savings.

Estimated Annual Energy Savings Winter = 180 therms/yr
Estimated Annual Energy Savings Summer = 6,915 kWh/yr
Annual Winter Savings 180 therms x 1.42 = \$256
Annual Summer Savings 6,915 x .175 = \$1,210

The total annual cost savings were estimated at **\$1,466**

The lifetime energy savings is estimated to be \$21,990.

Estimated Installation Cost:

The implementation cost to replace approximately 688 sq ft of windows with high efficiency windows is \$68,800.

Estimated Economic Benefits:

The simple payback is 48.07 years and the Return on Investment is estimated to be 2%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.4 Water Conservation

4.4.1 Woodbridge Township Municipal Building

No recommendations at this time.

4.4.2 Woodbridge Township Community Center

No recommendations at this time.

4.4.3 Woodbridge Township Pump Station

Water Conservation

The fixtures in the building are not low water consumption except for 3 sinks which have 2.2 GPM aerators. There are approximately: 3 toilets, 4 sinks, 1 shower which is not used, and 2 urinals.

CDM/Metro recommends replacing the urinals with 1/8th gallons per flush (gpf) urinals, toilets with 1.6 gpf low flow toilets and installing low flow .5 GPM aerators on faucets.

Estimated Utility Cost Savings:

The water bills for this building are incomplete. As a result, the following calculations are based on attendance and staff numbers obtained from facility personnel and typical water usage of the other similar facilities.

18 urinal flushes per day x 0.875 gallons saved per flush x 365 days x 2 old urinals/2 total urinals = 5,748 gallons saved per year.

9 toilet flushes per day x 2.0 gallons saved per flush x 365 days x 3 old toilets/3 total toilets = 6,570 gallons saved per year.

6.75 minutes of faucet use per day x 2.5 gallons saved per minute x 365 days x 1/4 faucets to be retrofitted = 1,540 gallons saved per year.

Assuming that 40% of the water used for faucets is heated to 120F and the fuel used to provide such heating is gas, energy savings are calculated to be 3.75 therms.

At a cost of approximately \$7 per thousand gallons of water (including sewer costs) and a cost of \$1.4/therm, the total annual utility cost savings is \$102.

The lifetime energy savings is estimated to be \$2,160.

Estimated Installation Cost:

The installation cost for low flow urinals, low flow aerators and dual flush low flow toilets is estimated to be \$3,670.

Estimated Economic Benefits:

The simple payback is 35.89 years and the Return on Investment is estimated to be 3%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.4.4 Evergreen Senior Center

Water Conservation

CDM/Metro recommends replacing the urinals with 1/8th gallons per flush (gpf) urinals, toilets with 1.6 gpf low flow toilets and installing low flow .5 GPM aerators on the faucets.

Estimated Utility Cost Savings:

The water bills for this building were unavailable. As a result, the following calculations are based on attendance and staff numbers obtained from facility personnel and typical water usage of the other facilities in the district.

240 urinal flushes per day x 0.875 gallons saved per flush x 250 days x 6 old urinals/6 total urinals = 52,500 gallons saved per year.

480 toilet flushes per day x 2.0 gallons saved per flush x 250 days x 24 old toilets/24 total toilets = 240,000 gallons saved per year.

180 minutes of faucet use per day x 2.5 gallons saved per minute x 250 days x 20 old faucets/20 faucets to be retrofitted = 112,500 gallons saved per year.

Assuming that 40% of the water used for faucets is heated to 120F and the fuel used to provide such heating is gas, energy savings are calculated to be 274 therms.

At a cost of approximately \$7 per thousand gallons of water and a cost of \$1.4/therm, the total annual utility cost savings is \$3,219.

The lifetime energy savings is estimated to be \$48,285.

Estimated Installation Cost:

The installation cost for low flow urinals, low flow aerators and dual flush low flow toilets is estimated to be \$22,600.

Estimated Economic Benefits:

The simple payback is 7.02 years and the Return on Investment is estimated to be 14%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.4.5 Baron Arts Center

Water Conservation

Two (2) toilet fixtures in the building are not low water consumption. The remaining 3 sinks and 1 toilet are low water consumption. CDM/Metro recommends replacing the toilets with 1.6 gpf low flow toilets and installing low flow .5 GPM aerators on the kitchen faucet.

Estimated Utility Cost Savings:

The water bills for this building are incomplete. As a result, the following calculations are based on attendance and staff numbers obtained from facility personnel and typical water usage in the district.

30 toilet flushes per day x 2.0 gallons saved per flush x 250 days x 2 old toilets/3 total toilets = 10,000 gallons saved per year.

At a cost of approximately \$7 per thousand gallons of water, the total annual utility cost savings is \$70.

The lifetime energy savings is estimated to be \$1,050.

Estimated Installation Cost:

The installation cost for dual flush low flow toilets is estimated to be \$1,500

Estimated Economic Benefits:

The simple payback is 21.43 years and the Return on Investment is estimated to be 5%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.4.6 Woodbridge Township Health Center

Water Conservation

CDM/Metro recommends replacing the 5 urinals with 1/8th gallons per flush (gpf) urinals, and the 9 toilets with 1.6 gpf low flow toilets.

Estimated Utility Cost Savings:

The water bills for this building are incomplete. As a result, the following calculations are based on attendance and staff numbers obtained from facility personnel and typical water usage in the district.

60 urinal flushes per day x 0.875 gallons saved per flush x 250 days x 5 old urinals/5 total urinals = 13,125 gallons saved per year.

120 toilet flushes per day x 2.0 gallons saved per flush x 250 days x 9 old toilets/9 total toilets = 60,000 gallons saved per year.

At a cost of approximately \$7 per thousand gallons of water, the total annual utility cost savings is \$512.

The lifetime energy savings is estimated to be \$7,680.

Estimated Installation Cost:

The installation cost for low flow urinals and dual flush low flow toilets is estimated to be \$10,250.

Estimated Economic Benefits:

The simple payback is 20.02 years and the Return on Investment is estimated to be 5%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.4.7 Woodbridge Township Main Library

No recommendations at this time.

4.4.8 Iselin Branch Public Library

Water Conservation

CDM/Metro recommends replacing the urinals with 1/8th gallons per flush (gpf) urinals, toilets with 1.6 gpf low flow toilets and installing low flow .5 GPM aerators on the 4 faucets.

Estimated Utility Cost Savings:

The following calculations are based on attendance and staff numbers obtained from facility personnel and typical water usage in the district.

20 urinal flushes per day x 0.875 gallons saved per flush x 300 days x 2 old urinals/2 total urinals = 5,250 gallons saved per year.

45 toilet flushes per day x 2.0 gallons saved per flush x 300 days x 3 old toilets/3 total toilets = 27,000 gallons saved per year.

15 minutes of faucet use per day x 2.0 gallons saved per minute x 300 days x 4 old faucets/4 faucets to be retrofitted = 9,000 gallons saved per year.

Assuming that 40% of the water used for faucets is heated to 120F and the fuel used to provide such heating is gas, energy savings are calculated to be 22 therms.

At a cost of approximately \$7 per thousand gallons of water and a cost of \$1.39/therm, the total annual utility cost savings is \$319

The lifetime energy savings is estimated to be \$4,785.

Estimated Installation Cost:

The installation cost for low flow urinals, low flow aerators and dual flush low flow toilets is estimated to be \$3,740.

Estimated Economic Benefits:

The simple payback is 11.72 years and the Return on Investment is estimated to be 9%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.4.9 Fords Branch Public Library

Water Conservation

CDM/Metro recommends replacing the urinals with 1/8th gallons per flush (gpf) urinals, toilets with 1.6 gpf low flow toilets and installing low flow .5 GPM aerators on faucets.

Estimated Utility Cost Savings:

The following calculations are based on attendance and staff numbers obtained from facility personnel and typical water usage in the district.

25 urinal flushes per day x 0.875 gallons saved per flush x 300 days x 2 old urinals/2 total urinals = 6,562 gallons saved per year.

45 toilet flushes per day x 2.0 gallons saved per flush x 300 days x 3 old toilets/3 total toilets = 27,000 gallons saved per year.

17.5 minutes of faucet use per day x 2.0 gallons saved per minute x 300 days x 4 old faucets/4 faucets to be retrofitted = 10,500 gallons saved per year.

Assuming that 40% of the water used for faucets is heated to 120F and the fuel used to provide such heating is gas, energy savings are calculated to be 25.6 therms.

At a cost of approximately \$7 per thousand gallons of water and a cost of \$1.39/therm, the total annual utility cost savings is \$344

The lifetime energy savings is estimated to be \$5,160.

Estimated Installation Cost:

The installation cost for low flow urinals, low flow aerators and dual flush low flow toilets is estimated to be \$3,740.

Estimated Economic Benefits:

The simple payback is 10.87 years and the Return on Investment is estimated to be 9%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.4.10 Inman Branch Public Library

Water Conservation

CDM/Metro recommends replacing the urinals with 1/8th gallons per flush (gpf) urinals, toilets with 1.6 gpf low flow toilets and installing low flow .5 GPM aerators on the 4 faucets.

Estimated Utility Cost Savings:

The water bills for this building are incomplete. As a result, the following calculations are based on attendance and staff numbers obtained from facility personnel and typical water usage of the other similar buildings.

10 urinal flushes per day x 0.875 gallons saved per flush x 300 days x 2 old urinals/2 total urinals = 2,625 gallons saved per year.

9 toilet flushes per day x 2.0 gallons saved per flush x 300 days x 3 old toilets/3 total toilets = 5,400 gallons saved per year.

3.5 minutes of faucet use per day x 2.0 gallons saved per minute x 300 days x 4 old faucets/4 faucets to be retrofitted = 2,100 gallons saved per year.

Assuming that 40% of the water used for faucets is heated to 120F and the fuel used to provide such heating is gas, energy savings are calculated to be 5 therms.

At a cost of approximately \$7 per thousand gallons of water and a cost of \$1.20/therm, the total annual utility cost savings is \$77.

The lifetime energy savings is estimated to be \$1,155.

Estimated Installation Cost:

The installation cost for low flow urinals, low flow aerators and dual flush low flow toilets is estimated to be \$3,740.

Estimated Economic Benefits:

The simple payback is 48.65 years and the Return on Investment is estimated to be 2%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M. The Return on Investment Calculation was completed by taking the Total Savings including O&M, and dividing by net cost).

4.5 Photovoltaic Solar Energy System

Overview

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. 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 affecting the amount of electricity that is generated.

The following is a preliminary study on the feasibility of installing PV solar systems in Woodbridge to generate a portion of the 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.

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 (tilt). The tilt is determined based on the following factors: geographical location, total targeted kWh production, seasonal electricity requirements and weather conditions such as wind and snow. Ideally, the modules should be installed with an azimuth as close as possible to 180 degrees (south). Our experience has shown that PV systems in New Jersey 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. 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 are all considered in the design phase of the project.



The canopy-mounted system engineered to be installed over parking spaces utilizes a 10 degree tilt with an azimuth as close as possible to 180 degrees (south). In order to mount the panels over parking spaces a “car-port” type construction using steel support members is needed. Typically, these supporting members do not interfere with the flow of traffic that the parking lots were designed for. Each parking space typically can fit four to six panels. The type of PV panels, equipment used to mount the system, and any alterations or additions required to lighting shall be determined during the design phase of the project.



Alternative Financing Option - Power Purchase Agreement

A Power Purchase Agreement (PPA) model entails the Town of Woodbridge entering into a 15 year agreement with a private sector solar developer to build a PV system at the various locations within the Town that have been identified as viable candidates for solar installations. Under this model, the Town of Woodbridge would bear no capital investment. The private sector solar developer invests all of the capital necessary to design, build, own, operate and maintain the system for 15 years. In return for this, the developer also retains the financial benefits of the project, such as the Federal Tax Credits, Accelerated Depreciation, and the SRECs. The Town of Woodbridge, through the PPA agreement, purchases the electricity generated from the system for a 15 year period, at a price that is less than what the Town of Woodbridge pays to the utility company and/or their third-party energy supplier. The PPA guarantees the Town of Woodbridge a savings in purchased electricity without any capital outlay, as well eliminating the need for the Town to maintain, operate, and, if necessary, carry out repairs to the system. Sole responsibility for this rests with the PPA provider.

The minimum size for a solar project PPA model, based on the requirements of the entities that provide the financing for PPAs, is around 300 kW. This size threshold exists primarily because of the fixed transaction costs associated with financing the project. Where multiple buildings are involved, PPA providers assess the viability of a project based on the total kW installed rather than on one individual building. Inasmuch as the total kW proposed for this project is approximately 1.5 Mw (megawatts), a PPA should be given consideration by the Town in assessing the best method of implementing a solar project.

4.5.1 Woodbridge Township Municipal Building

Site Assessment

In order to determine the best location for the installation of the PV solar system, CDM/Metro's engineers performed a satellite image analysis and site walkthrough on August 4, 2009 through August 5, 2009. According to building personnel the roof was completed in 1996 and has a warranty that will end in 2011. The roof of the Municipal Building has a very small amount of space that can accommodate a PV solar system due to roof top equipment as well as a built up ten foot Perimeter. It is mainly flat with an EPDM roof membrane. The total square footage of the building is 23,700. In addition, the parking lot is surrounded by foliage causing a considerable amount of shading. Therefore, the parking deck that has recently been added is only being considered.

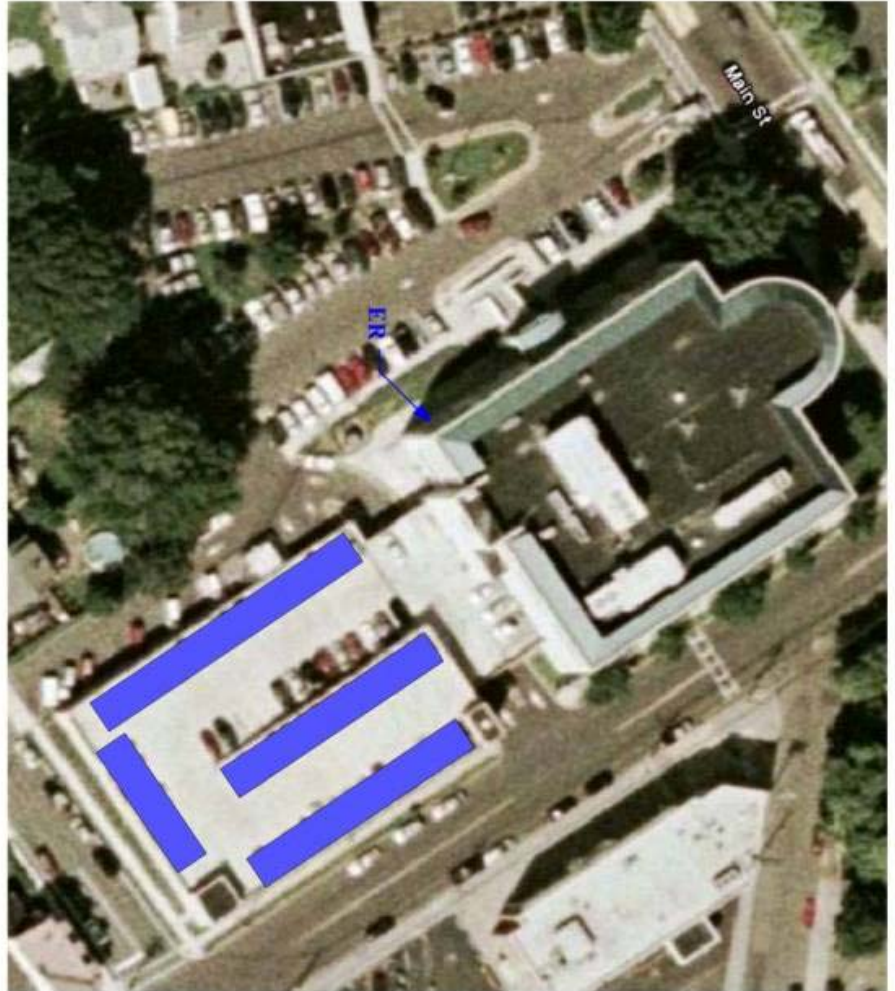
Also, as part of our assessment we investigated possible locations for electrical equipment that need to be installed such as combiner boxes, disconnect switches and DC to AC inverters. Consideration was also given to locations of interconnection between the solar system and building's electrical grid.

PV Panel Location

A PV system utilizing the top level of the parking deck will be constructed of approximately 344 crystalline silicon panels. As stated above our team identified areas that would be suitable for a solar panel installation taking into consideration the number of obstructions, shading, and size of the system. Based on the satellite image there appeared to be little to no shading from adjacent foliage in those areas deemed suitable for a solar installation, although shading may be an issue from some unforeseen objects at certain points in time. Any potential shading issues will be addressed during the design phase and upon completion of a shading analysis. Please refer to the following page for a preliminary solar overlay of the areas identified for placement of solar panels.



System Details
Client: Woodbridge Township
Site: Municipal Building
Installer: Metro Energy Solutions
Electricity Utility: Metro Energy Solutions
Elec. Utility Account #: Sharp ND-U230C1
Solar Module Type: Sharp ND-U230C1
Total Array Rating: 79.12 kW dc
Approx. Coverage Area: 8,370 (ft²)



PV System Sizing

CDM/Metro investigated the installation of a south facing, non-tracking, fixed tilt system for the top level of the parking deck. The calculations were based on a polycrystalline panel such as Sharp ND-U230C1 (rated at 230 watts dc) utilizing a 10-degree panel tilt that will accommodate a system rated at approximately 79.12 kW (dc). The azimuth was estimated at 215 degrees. The *solar azimuth angle* is the azimuth angle of the sun. It is most often defined as the angle between the line from the observer to the sun projected on the ground and the line from the observer due south.

Structural Analysis of the Parking deck

During our analysis our engineers looked at the total unobstructed available area of each section **with southern exposure**. The structural integrity of the parking deck was not confirmed during the site visit. The structure may require some structural modification work prior to the installation of the PV system. This needs to be addressed prior to the implementation of a solar system.

Electrical Service and PV Interconnect Point

The building has a PSE&G electrical service located on the lower level near the boiler room. This is three-phase, four-wire, 480/277 volts with a switchboard rated for 3000 amperes. The switchgear has a 3000-ampere main with ground-fault protection. Connection of the PV system would be done after the meter through a line-side connection (ahead of the main switch) at the main switchgear. This tie-in would be from the AC output side of the PV system inverters. This type of tie-in is required because of the ground-fault protection on the service. National Electrical Code (NEC) requirements do not permit PV system connections on the load side of ground-fault protection. The electrical equipment room is too small to accommodate the new inverter(s). Number and location of the inverters would be subject to a final system design, but all inverters would be located outdoors in NEMA 3R enclosures and installed on poured concrete pads. Any connection points would have to meet NEC and local utility requirements.

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. The assumptions we used in the calculations were as follows: solar array tilt angle of 10°, array azimuth of 215° and a de-rate factor of 0.8.

Table 27: PV System Output Calculations – Year 1 (79.12 kW dc)

Month	Solar Radiation (kWh/m2/day)	AC Energy (kWh)
1	2.33	4,508
2	3.08	5,522
3	4.00	7,782
4	4.78	8,728
5	5.67	10,422
6	5.91	10,185
7	5.75	10,133
8	5.33	9,313
9	4.58	7,974
10	3.52	6,457
11	2.26	4,057
12	1.94	3,637
Totals		88,719

Please note that one section has an azimuth of 145 degrees causing a minute difference in total kWh. The energy savings generated by the installation of approximately 79.12 kW dc of photovoltaic power is estimated to be 88,720 kWh ac. At an average price of \$0.124/kWh, the total energy savings would be \$11,001 per year.

Estimated Installation Cost:

The total cost for the installation of a roof mounted 79.12 kW dc PV glass panel solar system as outlined above is estimated at \$553,840. A typical solar installation can vary in cost from \$5.00 - \$12.00 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, environmental, permitting, etc. Like any installation, certain conditions can affect a price upward or downward. For purposes of this analysis and based on the system size and relative ease of installation the estimated installation cost assumes \$7.00 per watt. The budget costs presented in this report reflect the total material and labor cost required to provide a working system as described herein, including engineering, mounting (racking) systems and electrical interconnection work. The budget costs do not include repairing or replacing roofs, or structural improvements (if necessary).

Estimated System Maintenance Cost:

Photovoltaic systems do not require much ongoing maintenance. The equipment will be covered by manufacturer's warranties, which are typically:

- Solar panels - 25 years
- Inverters - 10+ years
- Workmanship by the installing contractor - 5 years

The Township may want to consider setting aside money in a maintenance budget each year, which would be used in the event a component, such as an inverter, fails after the warranty period, and needs to be repaired or replaced. Typically, we estimate \$0.0175 - \$.025 per kWh generated by the PV system as the annual amount for the client to set aside in a maintenance budget. For the Municipal Building project, this would equate to an average over 25 years of approximately \$1,500 per year.

Estimated Economic Benefits:

The simple payback is 12.06 years and the Return on Investment is estimated to be 8%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M and SREC. The Return on Investment Calculation was completed by taking the Total Savings including O&M and SREC, and dividing by net cost).

Warranty Terms:

All components will be protected by the warranties provided by components' manufacturers. Solar modules typically carry 10 year/90%, and 25 year/80% performance warranty. Inverters come with a standard 10 year warranty with an option to extend it for additional 5 or 10 years. Most manufacturers will warranty the entire system for workmanship for approximately 5 years.

Potential Revenues, Incentives, Tax Credits, etc.:

Electric Generation

The most obvious direct benefit of solar systems is that they generate electricity on site and result in reduced utility purchases. We have derived an average electric rate of \$0.124 per kWh. In addition, the current design of solar panels can result in gradual decline of output efficiency. Although many systems show negligible decline after years of operation, this financial analysis assumes a 0.5% annual degradation in electric output.

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.

Normally, we assume what we believe to be a conservative estimate of the market value of SRECs over a 15 year term. Over the first 5 years, we assume that the SREC value will be at 80% of the NJBPU market forecast. For years 6 through 9, we assume that the SREC value will 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 \$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.

4.5.2 Woodbridge Community Center

Site Assessment

In order to determine the best location for the installation of the PV solar system, CDM/Metro's engineers performed a satellite image analysis and site walkthrough on August 4, 2009 through August 5, 2009. According to building personnel the roof was completed in 2002. It is flat with an EPDM roof membrane. The roof of the

building has several usable sections of space that can accommodate a PV solar system taking roof top equipment as well as set back requirements into consideration. The total square footage of the Community Center is 82,300. In addition, the parking lot has very little foliage with a lot of open area. Therefore, the roof and parking lot is being considered.

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.

PV Panel Location

A PV system utilizing the roof and parking lot will be constructed of approximately 113,571 crystalline silicon panels. As stated above our team identified areas that would be suitable for a solar panel installation taking into consideration the number of obstructions, shading, and size of the system. Based on the satellite image there appeared to be little to no shading from adjacent foliage in those areas deemed suitable for a solar installation, although shading may be an issue from some unforeseen objects at certain points in time. Any potential shading issues will be addressed during the design phase and upon completion of a shading analysis. Please refer to the following page for a preliminary solar overlay of the areas identified for placement of solar panels.



System Details
Client: Woodbridge Township
Site: Community Center
Installer: Metro Energy Solutions
Elec. Utility: Metro Energy Solutions
Elec. Utility Account #: Sharp ND-U230C1
Solar Module Type: 1,096.18 kW dc
Total Array Rating: 113,571 (ft²)
Approx. Coverage Area: 113,571 (ft²)



PV System Sizing

CDM/Metro investigated the installation of a south facing, non-tracking, fixed tilt system for the roof as well as the parking lot. The calculations for the roof and parking lot were based on a poly-crystalline panel such as Sharp ND-U230C1 (rated at 230 watts dc) utilizing a 10-degree panel tilt that will accommodate a roof system rated at approximately 412.62 kW (dc) and a parking canopy system rated at approximately 683.56 kW. The azimuth was estimated at 175 degrees for the roof and 150 degrees for the parking canopy.

Structural Analysis of the Roof

During our analysis our engineers looked at the total unobstructed available area of each section **with southern exposure**. The structural integrity of the roof was not

confirmed during the site visit. The structure may require some structural modification work prior to the installation of the PV system. This needs to be addressed prior to the implementation of a solar system.

Electrical Service and PV Interconnect Point

The existing PSE&G electrical service is 2500 ampere, three-phase four-wire at 480/277 volts with a 2500 ampere main service disconnect with ground-fault protection. The service entrance equipment has an inspection date of 2002. Connection of the PV system would be done after the meter through a line-side (ahead of the main switch) tie-in at the main gear. This tie-in would be from the AC output side of the PV system inverters. The electrical equipment room has no space to accommodate the new inverter(s). Number and location of the inverters would be subject to a final system design, but all inverters would have to be located outdoors in NEMA 3R enclosures and installed on poured concrete pads. Any connection points would have to meet NEC and local utility requirements.

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. The assumptions we used in the calculations were as follows: solar array tilt angle of 10°, array azimuth for the roof of 150°, array azimuth for the parking lot of 175°, and a derate factor of 0.8.

Table 28: Roof PV System Output Calculations – Year 1 (412.62 kW dc)

Month	Solar Radiation (kWh/m ² /day)	AC Energy (kWh)
1	2.39	24,382
2	3.17	29,607
3	4.07	41,479
4	4.83	45,938
5	5.70	54,650
6	5.94	53,436
7	5.76	52,982
8	5.38	49,089
9	4.65	42,234
10	3.61	34,737
11	2.35	22,184
12	2.01	19,845
Totals		470,564

Table 29: Parking Canopy PV System Output Calculations – Year 1 (683.56 kW dc)

Month	Solar Radiation (kWh/m ² /day)	AC Energy (kWh)
1	2.32	39,010
2	3.11	48,048
3	4.02	67,985
4	4.80	75,718
5	5.68	89,947
6	5.94	88,532
7	5.74	87,362
8	5.35	80,786
9	4.60	69,299
10	3.56	56,561
11	2.32	36,017
12	1.96	31,606
Totals		770,872

The energy savings generated by the installation of approximately 1,096.18 kW dc of photovoltaic power is estimated to be 1,241,436 kWh ac. At an average price of \$0.145/kWh, the total energy savings would be \$180,008 per year.

Estimated Installation Cost:

The total cost for the installation of a roof mounted 1,096.18 kW dc PV glass panel solar system as outlined above is estimated at \$7,673,260. A typical solar installation can vary in cost from \$5.00 - \$12.00 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, environmental, permitting, etc. Like any installation, certain conditions can affect a price upward or downward. For purposes of this analysis and based on the system size and relative ease of installation the estimated installation cost assumes \$7.00 per watt. The budget costs presented in this report reflect the total material and labor cost required to provide a working system as described herein, including engineering, mounting (racking) systems and electrical interconnection work. The budget costs do not include repairing or replacing roofs, or structural improvements (if necessary).

Estimated System Maintenance Cost:

Photovoltaic systems do not require much ongoing maintenance. The equipment will be covered by manufacturer’s warranties, which are typically:

- Solar panels – 25 years
- Inverters – 10+ years
- Workmanship by the installing contractor – 5 years

The Township may want to consider setting aside money in a maintenance budget each year, which would be used in the event a component, such as an inverter, fails after the warranty period, and needs to be repaired or replaced. Typically, we

estimate \$0.0175 - \$.025 per kWh generated by the PV system as the annual amount for the client to set aside in a maintenance budget. For the Community Center project, this would equate to an average over 25 years of approximately \$1,500 per year.

Estimated Economic Benefits:

The simple payback is 11.47 years and the Return on Investment is estimated to be 9%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M and SREC. The Return on Investment Calculation was completed by taking the Total Savings including O&M and SREC, and dividing by net cost).

Warranty Terms:

All components will be protected by the warranties provided by components' manufacturers. Solar modules typically carry 10 year/90%, and 25 year/80% performance warranty. Inverters come with a standard 10 year warranty with an option to extend it for additional 5 or 10 years. Most manufacturers will warranty the entire system for workmanship for approximately 5 years.

Potential Revenues, Incentives, Tax Credits, etc.:

Electric Generation

The most obvious direct benefit of solar systems is that they generate electricity on site and result in reduced utility purchases. We have derived an average electric rate of \$0.145 per kWh. In addition, the current design of solar panels can result in gradual decline of output efficiency. Although many systems show negligible decline after years of operation, this financial analysis assumes a 0.5% annual degradation in electric output.

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.

Normally, we assume what we believe to be a conservative estimate of the market value of SRECs over a 15 year term. Over the first 5 years, we assume that the SREC value will be at 80% of the NJBPU market forecast. For years 6 through 9, we assume that the SREC value will 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 \$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.

4.5.3 Woodbridge Township Pump Station

No recommendations at this time due to space limitations.

4.5.4 Evergreen Senior Center

Site Assessment

In order to determine the best location for the installation of the PV solar system, CDM/Metro's engineers performed a satellite image analysis and site walkthrough on August 4, 2009 through August 5, 2009. According to building personnel the roof has not been replaced for about 22 years. The roof of the Senior Center has several usable sections of space that can accommodate a PV solar system taking roof top equipment as well as set back requirements into consideration. It is mainly flat with some elevated sections and has an EPDM membrane roof. The total square footage of the building is 28,250. In addition, the parking lot has very little foliage with a substantial amount of open area. Therefore, the roof and parking lot is being considered.

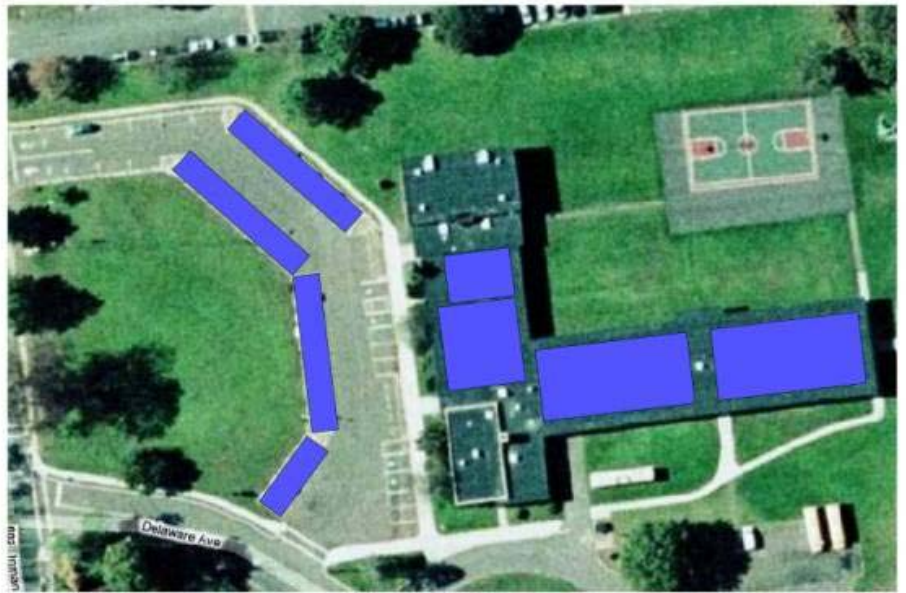
Also, as part of our assessment we investigated possible locations for electrical equipment that need to be installed such as combiner boxes, disconnect switches and DC to AC inverters. Consideration was also given to locations of interconnection between the solar system and building's electrical grid.

PV Panel Location

A PV system utilizing the roof and parking lot will be constructed of approximately 13,905 crystalline silicon panels. As stated above our team identified areas that would be suitable for a solar panel installation taking into consideration the number of obstructions, shading, and size of the system. Based on the satellite image there appeared to be little to no shading from adjacent foliage in those areas deemed suitable for a solar installation, although shading may be an issue from some unforeseen objects at certain points in time. Any potential shading issues will be addressed during the design phase and upon completion of a shading analysis. Please refer to the following page for a preliminary solar overlay of the areas identified for placement of solar panels.



System Details
Client: Woodbridge Township
Site: Senior Center
Installer: Metro Energy Solutions
Elec. Utility Account #: Sharp ND-U230C1
Solar Module Type: 130.41 kW dc
Total Array Rating: 130.41 kW dc
Approx. Coverage Area: 13,905 (ft²)



PV System Sizing

CDM/Metro investigated the installation of a south facing, non-tracking, fixed tilt system for the roof and parking lot, and based our calculations on a poly-crystalline panel such as Sharp ND-U230C1 (rated at 230 watts dc), utilizing a 10-degree panel tilt, that will accommodate a roof system rated at approximately 86.25 kW (dc) and a parking canopy system rated at approximately 44.16 kW. The azimuth was estimated at 170 degrees for the roof. The parking canopy system uses multiple different azimuths at 135, 170 and 215 degrees.

Structural Analysis of the Roof

During our analysis our engineers looked at the total unobstructed available area of each section **with southern exposure**. The structural integrity of the roof was not confirmed during the site visit. The structure may require some structural

modification work prior to the installation of the PV system. This needs to be addressed prior to the implementation of a solar system.

Electrical Service and PV Interconnect Point

The existing electric service is 375 amperes three-phase four-wire at 120/208 volts. There is a main distribution panel rated at 375 amperes with no main breaker, as the panel is configured for a maximum of six disconnects, as permitted under NEC Article 230.71(A). There is no space available for a load-side connection of the PV inverter outputs. NEC rules limit the size of the PV system under this method to no more than 20 percent of the rating of the service entrance device. Under this proposal, this calculates to a connected load of 75 amperes ac. Based on our calculations, the PV system ac output is 362 amperes ac, thus exceeding this limit. The PV system output does not, however, exceed the ampacity of the existing service entrance conductors.

In order to accommodate a PV interconnect, it will be necessary to revamp the existing service entrance equipment. It is our recommendation that the existing main panel be removed and a new panel installed with a main circuit breaker that will accept a line side connection of the PV system inverter AC outputs. This method maximizes the PV system that is proposed for the building and is permitted under NEC Article 230.82(6) and NEC Article 690.64(A). Space limitations dictate that the inverters for the roof-top arrays would have to be located outside the building on concrete pads. The inverters would be housed in NEMA 3R enclosures, and the AC wiring would run from the inverters into the connection point(s) at the switchboards. Any connection points would have to meet NEC and local utility requirements.

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. The assumptions we used in the calculations were as follows: solar array tilt angle of 10°, array azimuth for the roof of 170°, array azimuth for the parking lot of 135°, and a derate factor of 0.8.

Table 30: Roof PV System Output Calculations – Year 1 (86.25 kW dc)

Month	Solar Radiation (kWh/m ² /day)	AC Energy (kWh)
1	2.38	5,079
2	3.16	6,178
3	4.07	8,666
4	4.83	9,598
5	5.70	11,416
6	5.94	11,172
7	5.76	11,069
8	5.38	10,257
9	4.65	8,824
10	3.61	7,249

Month	Solar Radiation (kWh/m ² /day)	AC Energy (kWh)
11	2.35	4,635
12	2.01	4,131
Totals		98,274

Table 31: Parking Canopy PV System Output Calculations – Year 1 (44.16 kW dc)

Month	Solar Radiation (kWh/m ² /day)	AC Energy (kWh)
1	2.24	2,418
2	3.04	3,025
3	3.96	4,324
4	4.76	4,855
5	5.66	5,780
6	5.93	5,717
7	5.71	5,618
8	5.32	5,183
9	4.54	4,419
10	3.48	3,574
11	2.26	2,264
12	1.90	1,959
Totals		49,136

Please note that sections of the parking lot system have various degrees of azimuth causing an increase in total kWh. The energy savings generated by the installation of approximately 130.41 kW dc of photovoltaic power is estimated to be 147,800 kWh ac. At an average price of \$0.162/kWh, the total energy savings would be \$23,944 per year.

Estimated Installation Cost:

The total cost for the installation of a roof mounted 130.41 kW dc PV glass panel solar system as outlined above is estimated at \$912,870. A typical solar installation can vary in cost from \$5.00 - \$12.00 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, environmental, permitting, etc. Like any installation, certain conditions can affect a price upward or downward. For purposes of this analysis and based on the system size and relative ease of installation the estimated installation cost assumes \$7.00 per watt. The budget costs presented in this report reflect the total material and labor cost required to provide a working system as described herein, including engineering, mounting (racking) systems and electrical interconnection work. The budget costs do not include repairing or replacing roofs, or structural improvements (if necessary).

Estimated System Maintenance Cost:

Photovoltaic systems do not require much ongoing maintenance. The equipment will be covered by manufacturer’s warranties, which are typically:

Solar panels – 25 years
Inverters – 10+ years
Workmanship by the installing contractor – 5 years

The Township may want to consider setting aside money in a maintenance budget each year, which would be used in the event a component, such as an inverter, fails after the warranty period, and needs to be repaired or replaced. Typically, we estimate \$0.0175 - \$.025 per kWh generated by the PV system as the annual amount for the client to set aside in a maintenance budget. For the Senior Center project, this would equate to an average over 25 years of approximately \$1,500 per year.

Estimated Economic Benefits:

The simple payback is 11.11 years and the Return on Investment is estimated to be 9%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M and SREC. The Return on Investment Calculation was completed by taking the Total Savings including O&M and SREC, and dividing by net cost).

Warranty Terms:

All components will be protected by the warranties provided by components' manufacturers. Solar modules typically carry 10 year/90%, and 25 year/80% performance warranty. Inverters come with a standard 10 year warranty with an option to extend it for additional 5 or 10 years. Most manufacturers will warranty the entire system for workmanship for approximately 5 years.

Potential Revenues, Incentives, Tax Credits, etc.:

Electric Generation

The most obvious direct benefit of solar systems is that they generate electricity on site and result in reduced utility purchases. We have derived an average electric rate of \$0.162 per kWh. In addition, the current design of solar panels can result in gradual decline of output efficiency. Although many systems show negligible decline after years of operation, this financial analysis assumes a 0.5% annual degradation in electric output.

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.

Normally, we assume what we believe to be a conservative estimate of the market value of SRECs over a 15 year term. Over the first 5 years, we assume that the SREC value will be at 80% of the NJBPU market forecast. For years 6 through 9, we assume that the SREC value will 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 \$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.

4.5.5 Baron Arts Center

No recommendations at this time based on it being a historic (classic) site

4.5.6 Woodbridge Township Health Center

Site Assessment

In order to determine the best location for the installation of the PV solar system, CDM/Metro's engineers performed a satellite image analysis and site walkthrough on August 4, 2009 through August 5, 2009. The roof is fairly new and has a TPO membrane roof with surfacing. The roof of the Senior Center has several usable sections of space that can accommodate a PV solar system taking roof top equipment as well as set back requirements into consideration. The total square footage of the Health Center is 10,000. In addition, the parking lot is surrounded by foliage causing a considerable amount of shading. Therefore, only the roof is being considered.

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.

PV Panel Location

A PV system utilizing the roof will be constructed of approximately 4,731 crystalline silicon panels. As stated above our team identified areas that would be suitable for a solar panel installation taking into consideration the number of obstructions, shading, and size of the system. Based on the satellite image there appeared to be little to no shading from adjacent foliage in those areas deemed suitable for a solar installation, although shading may be an issue from some unforeseen objects at certain points in time. Any potential shading issues will be addressed during the design phase and upon completion of a shading analysis. Please refer to the following page for a preliminary solar overlay of the areas identified for placement of solar panels.



System Details
Client: Woodbridge Township
Site: Health Center
Installer: Metro Energy Solutions
Electricity Utility: Metro Energy Solutions
Elec. Utility Account #: Sharp ND-U230C1
Solar Module Type: 44.85 kW dc
Total Array Rating: 44.85 kW dc
Approx. Coverage Area: 4,731 (ft²)



PV System Sizing

CDM/Metro investigated the installation of a south facing, non-tracking, fixed tilt system for the roof, and based our calculations on a poly-crystalline panel such as Sharp ND-U230C1 (rated at 230 watts dc), utilizing a 10-degree panel tilt, that will accommodate a system rated at approximately 44.85 kW (dc). The azimuth was estimated at 190 degrees.

Structural Analysis of the Roof

During our analysis our engineers looked at the total unobstructed available area of each section of the roof **with southern exposure**. The structural integrity of various roof areas, as well as any additional work that may be required to maintain or extend

existing warranties will need to be addressed prior to the implementation of a solar system.

Electrical Service and PV Interconnect Point

The existing electrical service is 300 amperes three-phase four-wire at 120/208 volts. There is a 300 ampere main circuit breaker. The proposed solar kW system sizing as identified during the feasibility analysis does not exceed the rating of the service. While a load-side connection of the PV inverter outputs is possible, NEC rules would limit the size of the PV system to no more than 120 amperes ac. Based on our calculations, the PV system ac output is 125 amperes ac and would exceed this limit. Therefore, CDM/Metro believes that the interconnect point should be a line-side connection at the switchgear between the utility CT (current transformer) section and the main disconnect switch. This method maximizes the PV system that is proposed for the building and is permitted under NEC Article 230.82(6) and NEC Article 690.64(A). Space limitations dictate that the inverters for the roof-top arrays would have to be located outside the building on concrete pads. The inverters would be housed in NEMA 3R enclosures, and the AC wiring would run from the inverters into the connection point(s) at the switchboards. Any connection points would have to meet NEC and local utility requirements.

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. The assumptions we used in the calculations were as follows: solar array tilt angle of 10°, array azimuth of 190° and a de-rate factor of 0.8.

Table 32: PV System Output Calculations – Year 1 (44.85 kW dc)

Month	Solar Radiation (kWh/m2/day)	AC Energy (kWh)
1	2.39	2,651
2	3.16	3,212
3	4.06	4,495
4	4.83	4,990
5	5.69	5,941
6	5.93	5,801
7	5.77	5,762
8	5.37	5,329
9	4.65	4,583
10	3.61	3,767
11	2.34	2,394
12	2.01	2,155
Totals		51,080

The energy savings generated by the installation of approximately 44.85 kW dc of photovoltaic power is estimated to be 51,082 kWh ac. At an average price of \$0.16/kWh, the total energy savings would be \$8,173 per year.

Estimated Installation Cost:

The total cost for the installation of a roof mounted 44.85 kW dc PV glass panel solar system as outlined above is estimated at \$358,800. A typical solar installation can vary in cost from \$5.00 - \$12.00 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, environmental, permitting, etc. Like any installation, certain conditions can affect a price upward or downward. For purposes of this analysis and based on the system size and relative ease of installation the estimated installation cost assumes \$8.00 per watt. The budget costs presented in this report reflect the total material and labor cost required to provide a working system as described herein, including engineering, mounting (racking) systems and electrical interconnection work. The budget costs do not include repairing or replacing roofs, or structural improvements (if necessary).

Estimated System Maintenance Cost:

Photovoltaic systems do not require much ongoing maintenance. The equipment will be covered by manufacturer's warranties, which are typically:

- Solar panels - 25 years
- Inverters - 10+ years
- Workmanship by the installing contractor - 5 years

The Township may want to consider setting aside money in a maintenance budget each year, which would be used in the event a component, such as an inverter, fails after the warranty period, and needs to be repaired or replaced. Typically, we estimate \$0.0175 - \$.025 per kWh generated by the PV system as the annual amount for the client to set aside in a maintenance budget. For the Health Center project, this would equate to an average over 25 years of approximately \$1,500 per year.

Warranty Terms:

All components will be protected by the warranties provided by components' manufacturers. Solar modules typically carry 10 year/90%, and 25 year/80% performance warranty. Inverters come with a standard 10 year warranty with an option to extend it for additional 5 or 10 years. Most manufacturers will warranty the entire system for workmanship for approximately 5 years.

Potential Revenues, Incentives, Tax Credits, etc.:

Electric Generation

The most obvious direct benefit of solar systems is that they generate electricity on site and result in reduced utility purchases. We have derived an average electric rate of \$0.16 per kWh. In addition, the current design of solar panels can result in gradual decline of output efficiency. Although many systems show negligible decline after

years of operation, this financial analysis assumes a 0.5% annual degradation in electric output.

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.

Normally, we assume what we believe to be a conservative estimate of the market value of SRECs over a 15 year term. Over the first 5 years, we assume that the SREC value will be at 80% of the NJBPU market forecast. For years 6 through 9, we assume that the SREC value will 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 \$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.

Office of Clean Energy Incentive

The Office of Clean Energy offers an incentive based on the current program for systems under 50,000 watts at a rate of \$1/watt. Based on the estimated system size of 44.85 kW, the estimated incentive amount is \$44,850.

Estimated Economic Benefits:

The simple payback is 11.10 years and the Return on Investment is estimated to be 9%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M and SREC. The Return on Investment Calculation was completed by taking the Total Savings including O&M and SREC, and dividing by net cost).

4.5.7 Woodbridge Township Main Library

Site Assessment

In order to determine the best location for the installation of the PV solar system, CDM/Metro's engineers performed a satellite image analysis and site walkthrough on August 4, 2009 through August 5, 2009. The roof is mainly flat with a penthouse located near the canter and has a TPO roof membrane. The roof of the Main Library has several usable sections of space that can accommodate a PV solar system taking roof top equipment as well as set back requirements into consideration. The total square footage of the building is 52,000. In addition, the parking lot is surrounded by

foliage causing a considerable amount of shading. Therefore, only the roof is being considered.

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.

PV Panel Location

A PV system utilizing the roof will be constructed of approximately 14,349 crystalline silicon panels. As stated above our team identified areas that would be suitable for a solar panel installation taking into consideration the number of obstructions, shading, and size of the system. Based on the satellite image there appeared to be little to no shading from adjacent foliage in those areas deemed suitable for a solar installation, although shading may be an issue from some unforeseen objects at certain points in time. Any potential shading issues will be addressed during the design phase and upon completion of a shading analysis. Please refer to the following page for a preliminary solar overlay of the areas identified for placement of solar panels.



System Details
Client: Woodbridge Township
Site: Main Library
Installer: Metro Energy Solutions
Elec. Utility: Electricity Utility
Solar Module Type: Sharp ND-U230C1
Total Array Rating: 138.92 kW dc
Approx. Coverage Area: 14,349 (ft²)



PV System Sizing

CDM/Metro investigated the installation of a south facing, non-tracking, fixed tilt system for both buildings, and based our calculations on a poly-crystalline panel such as Sharp ND-U230C1 (rated at 230 watts dc) utilizing a 10-degree panel tilt that will accommodate a system rated at approximately 138.92 kW (dc). The azimuth was estimated at 215 degrees.

Structural Analysis of the Roof

During our analysis our engineers looked at the total unobstructed available area of each section of the roof **with southern exposure**. The structural integrity of various roof areas, as well as any additional work that may be required to maintain or extend

existing warranties will need to be addressed prior to the implementation of a solar system.

Electrical Service and PV Interconnect Point

The existing electrical PSE&G service is 1600 amperes three-phase four-wire at 120/208 volts. There is a 1600 ampere main circuit breaker. Although there is no ground-fault protection for this service, CDM/Metro feels that the interconnect point should be a line-side connection at the switchgear between the utility CT (current transformer) section and the main disconnect switch of service No. 1. This method maximizes the PV system that is proposed for the building. This type of connection is permitted under NEC Article 230.82(6) and NEC Article 690.64(A). Space limitations dictate that the inverters for the roof-top arrays would have to be located outside the building on concrete pads. The inverters would be housed in NEMA 3R enclosures, and the AC wiring would run from the inverters into the connection point(s) at the switchboards. Any connection points would have to meet NEC and local utility requirements.

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. The assumptions we used in the calculations were as follows: solar array tilt angle of 10°, array azimuth of 215° and a de-rate factor of 0.8.

Table 33: PV System Output Calculations – Year 1 (138.92 kW dc)

Month	Solar Radiation (kWh/m2/day)	AC Energy (kWh)
1	2.33	7,915
2	3.08	9,696
3	4.00	13,664
4	4.78	15,326
5	5.67	18,298
6	5.91	17,882
7	5.75	17,792
8	5.33	16,352
9	4.58	14,001
10	3.52	11,337
11	2.26	7,124
12	1.94	6,387
Totals		155,774

The energy savings generated by the installation of approximately 138.92 kW dc of photovoltaic power is estimated to be 155,774 kWh ac. At an average price of \$0.15/kWh, the total energy savings would be \$23,366 per year.

Estimated Installation Cost:

The total cost for the installation of a roof mounted 138.92 kW dc PV glass panel solar system as outlined above is estimated at \$972,440. A typical solar installation can vary in cost from \$5.00 - \$12.00 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, environmental, permitting, etc. Like any installation, certain conditions can affect a price upward or downward. For purposes of this analysis and based on the system size and relative ease of installation the estimated installation cost assumes \$7.00 per watt. The budget costs presented in this report reflect the total material and labor cost required to provide a working system as described herein, including engineering, mounting (racking) systems and electrical interconnection work. The budget costs do not include repairing or replacing roofs, or structural improvements (if necessary).

Estimated System Maintenance Cost:

Photovoltaic systems do not require much ongoing maintenance. The equipment will be covered by manufacturer's warranties, which are typically:

- Solar panels - 25 years
- Inverters - 10+ years
- Workmanship by the installing contractor - 5 years

The Township may want to consider setting aside money in a maintenance budget each year, which would be used in the event a component, such as an inverter, fails after the warranty period, and needs to be repaired or replaced. Typically, we estimate \$0.0175 - \$.025 per kWh generated by the PV system as the annual amount for the client to set aside in a maintenance budget. For the Library project, this would equate to an average over 25 years of approximately \$1,500 per year.

Estimated Economic Benefits:

The simple payback is 11.48 years and the Return on Investment is estimated to be 9%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M and SREC. The Return on Investment Calculation was completed by taking the Total Savings including O&M and SREC, and dividing by net cost).

Warranty Terms:

All components will be protected by the warranties provided by components' manufacturers. Solar modules typically carry 10 year/90%, and 25 year/80% performance warranty. Inverters come with a standard 10 year warranty with an option to extend it for additional 5 or 10 years. Most manufacturers will warranty the entire system for workmanship for approximately 5 years.

Potential Revenues, Incentives, Tax Credits, etc.:

Electric Generation

The most obvious direct benefit of solar systems is that they generate electricity on site and result in reduced utility purchases. We have derived an average electric rate of \$0.15 per kWh. In addition, the current design of solar panels can result in gradual decline of output efficiency. Although many systems show negligible decline after years of operation, this financial analysis assumes a 0.5% annual degradation in electric output.

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.

Normally, we assume what we believe to be a conservative estimate of the market value of SRECs over a 15 year term. Over the first 5 years, we assume that the SREC value will be at 80% of the NJBPU market forecast. For years 6 through 9, we assume that the SREC value will 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 \$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.

4.5.8 Iselin Branch Public Library

Site Assessment

In order to determine the best location for the installation of the PV solar system, CDM/Metro's engineers performed a satellite image analysis and site walkthrough on August 4, 2009 through August 5, 2009. The roof of the Iselin Branch Library has several usable sections of space that can accommodate a PV solar system taking roof top equipment as well as set back requirements into consideration. According to personnel the roof was redone approximately six years ago. The total square footage of the building is 8,700. In addition, the parking lot is surrounded by foliage causing a considerable amount of shading. Therefore, the roof is only being considered.

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.

PV Panel Location

A PV system utilizing the roof will be constructed of approximately 1,386 crystalline silicon panels. As stated above our team identified areas that would be suitable for a solar panel installation taking into consideration the number of obstructions, shading, and size of the system. Based on the satellite image there appeared to be little to no shading from adjacent foliage in those areas deemed suitable for a solar installation, although shading may be an issue from some unforeseen objects at certain points in time. Any potential shading issues will be addressed during the design phase and upon completion of a shading analysis. Please refer to the following page for a preliminary solar overlay of the areas identified for placement of solar panels.

PV System Sizing

CDM/Metro investigated the installation of a south facing, non-tracking, fixed tilt system, and based our calculations on a poly-crystalline panel, such as Sharp ND-U230C1 (rated at 230 watts dc) utilizing a 10-degree panel tilt, that will accommodate a system rated at approximately 12.88 kW (dc). The azimuth was estimated at 150 degrees.



System Details
Client: Woodbridge Township
Site: Iselin Branch Library
Installer: Metro Energy Solutions
Elec. Utility: Metro Energy Solutions
Elec. Utility Account #: Sharp ND-U230C1
Solar Module Type: 12.88 kW dc
Total Array Rating: 12.88 kW dc
Approx. Coverage Area: 1,386 (ft²)



Electrical Service and PV Interconnect Point

Although the service does not have ground-fault protection, CDM/Metro believes that the interconnect point should be a line-side connection between the metering (CT) section and the main circuit breaker. Such a connection maximizes the amount of solar proposed for the building. Space limitations dictate that the inverters for the roof-top arrays would have to be located outside the building on concrete pads. The inverters would be housed in NEMA 3R enclosures, and the AC wiring would run from the inverters into the connection point(s) at the switchboards. Any connection points would have to meet NEC and local utility requirements.

Structural Analysis of the Roof

During our analysis our engineers looked at the total unobstructed available area of each section of the roof **with southern exposure**. It was noted the roof was replaced approximately 6 years ago. The structural integrity of various roof areas, as well as any additional work that may be required to maintain or extend any existing warranties will need to be addressed prior to the implementation of a solar system.

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. The assumptions we used in the calculations were as follows: solar array tilt angle of 10°, array azimuth of 150° and a de-rate factor of 0.8.

Table 34: PV System Output Calculations – Year 1 (12.88 kW dc)

Month	Solar Radiation (kWh/m2/day)	AC Energy (kWh)
1	2.32	735
2	3.11	905
3	4.02	1,281
4	4.8	1,427
5	5.68	1,695
6	5.94	1,668
7	5.74	1,646
8	5.35	1,522
9	4.6	1,306
10	3.56	1,066
11	2.32	679
12	1.96	596
Totals		14,525

The energy savings generated by the installation of approximately 12.88 kW dc of photovoltaic power is estimated to be 14,525 kWh ac. At an average price of \$0.233/kWh, the total energy savings would be \$3,384 per year.

Estimated Installation Cost:

The total cost for the installation of a roof mounted 12.88 kW dc PV glass panel solar system as outlined above is estimated at \$103,040. A typical solar installation can vary in cost from \$5.00 - \$12.00 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, environmental, permitting, etc. Like any installation, certain conditions can affect a price upward or downward. For purposes of this analysis and based on the system size and relative ease of installation the estimated installation cost assumes \$8.00 per watt. The budget costs presented in this report reflect the total material and labor cost required to provide a working system as described herein, including engineering, mounting (racking) systems and electrical interconnection

work. The budget costs do not include repairing or replacing roofs, or structural improvements (if necessary).

Estimated System Maintenance Cost:

Photovoltaic systems do not require much ongoing maintenance. The equipment will be covered by manufacturer's warranties, which are typically:

- Solar panels – 25 years
- Inverters – 10+ years
- Workmanship by the installing contractor – 5 years

The Township may want to consider setting aside money in a maintenance budget each year, which would be used in the event a component, such as an inverter, fails after the warranty period, and needs to be repaired or replaced. Typically, we estimate \$0.0175 - \$.025 per kWh generated by the PV system as the annual amount for the client to set aside in a maintenance budget. For the Iselin Branch Library project, this would equate to an average over 25 years of approximately \$1,500 per year.

Warranty Terms:

All components will be protected by the warranties provided by components' manufacturers. Solar modules typically carry 10 year/90%, and 25 year/80% performance warranty. Inverters come with a standard 10 year warranty with an option to extend it for additional 5 or 10 years. Most manufacturers will warranty the entire system for workmanship for approximately 5 years.

Potential Revenues, Incentives, Tax Credits, etc.:

Electric Generation

The most obvious direct benefit of solar systems is that they generate electricity on site and result in reduced utility purchases. We have derived an average electric rate of \$0.233 per kWh. In addition, the current design of solar panels can result in gradual decline of output efficiency. Although many systems show negligible decline after years of operation, this financial analysis assumes a 0.5% annual degradation in electric output.

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.

Normally, we assume what we believe to be a conservative estimate of the market value of SRECs over a 15 year term. Over the first 5 years, we assume that the SREC value will be at 80% of the NJBPU market forecast. For years 6 through 9, we assume that the SREC value will 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 \$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.

Office of Clean Energy Incentive

The Office of Clean Energy offers an incentive based on the current program for systems under 50,000 watts at a rate of \$1/watt. Based on the estimated system size of 12.88 kW, the estimated incentive amount is \$12,880.

Estimated Economic Benefits:

The simple payback is 9.9 years and the Return on Investment is estimated to be 10%. (The Simple Payback Calculation (Yrs) was completed by taking the Total Cost minus incentives divided by total Annual Savings including O&M and SREC. The Return on Investment Calculation was completed by taking the Total Savings including O&M and SREC, and dividing by net cost)

4.5.9 Fords Branch Public Library

No recommendations at this time based on extreme (approximately 80%) shading.

4.5.10 Inman Branch Public Library

No recommendations at this time based on extreme shading.

4.6 Other Renewable Technologies

Geothermal Energy

Geothermal systems utilize the constant temperature of the earth throughout the year (at depths from 5 ft. to 1,000 ft. the earth temperature remains at 53 deg. F) as the primary source of energy for the heating/cooling and domestic hot water production. Additionally, since the earth is maintained at a constant temperature from heat absorbed from the sun this energy is considered a “renewable resource,” and therefore is not as reliant on existing supplies of fossil fuels.

Even though this application requires significantly higher up-front costs, it has several advantages over conventional HVAC systems such as substantially lower operating and maintenance costs. The life span of the system is longer than conventional heating

and cooling systems. Most loop fields are warranted for 25 to 50 years and are expected to last at least 50 to 100 years. However it is important to note that Geothermal systems are more difficult to install in existing facilities and require higher capital cost due to having to complete significant infrastructure changes. Therefore, installation of a geothermal system is not recommended at any of the Woodbridge facilities at this point.

Wind Energy

To get a general idea if your region has good wind resources, CDM/Metro Energy looked at the New Jersey Wind Resource Map. The maps indicate if wind speeds are strong enough to further investigate the wind resource. Based on the approximate location of the Woodbridge sites, it appears as though they fall in the area which would present a relatively low opportunity for wind (5 m/s or less). In addition, since the value of the Renewable Energy Credits is not as established as the market for Solar Renewable Energy Credits, and the Township would not be eligible for any of the financial incentives that a private developer would be entitled to (i.e. the 30% Federal Tax Credit) the payback for a potential project would be excessively long and therefore the installation of a wind turbine is not recommended.

Section 5

Environmental Benefits

As a result of the energy conservation projects contained in this proposal, Woodbridge will be continuing its efforts to both reduce its operating and maintenance costs through the installation of more energy efficient equipment, and reduce the amount of pollution emitted into the atmosphere. Below is a summary of the environmental benefits of the project.

Global Warming - The progressive rise of the earth's surface temperatures, as well as changes in global climate patterns, are caused by anthropogenic (human-caused) emissions of gases – such as carbon dioxide, methane, sulfur dioxide and nitrogen oxides – which are contributing markedly to an increasing greenhouse effect. The planet's climate has changed significantly in the past as the result of natural influences, but the terms “global warming” or “climate change” are most often used to refer to the changes occurring now that are a result of the recent (one century) increase in emissions of greenhouse gases, primarily from the burning of fossil fuels.

Greenhouse Effect - The greenhouse effect is produced as atmospheric gases allow incoming solar radiation to pass through the earth's atmosphere, but prevent part of the outgoing infrared radiation from the earth's surface and lower atmosphere from escaping into outer space. This process occurs naturally and has kept the earth's temperature at a temperature range where human life can exist. Current life on earth could not be sustained without the natural greenhouse effect. Some greenhouse gases occur naturally in the atmosphere, while others result from human activities. Greenhouse gases that occur naturally include water vapor, carbon dioxide, methane, nitrous oxide, and ozone. Certain activities, however, add to the levels of most of these naturally occurring gases:

Carbon dioxide (CO₂) - A colorless, odorless, non-poisonous gas that is a normal part of the ambient air. Carbon dioxide is a product of fossil fuel combustion. Although carbon dioxide does not directly impair human health, it is a greenhouse gas that traps terrestrial infrared radiation (heat) and contributes to global warming. CO₂ reduction amounts are calculated in metric tons for each measure as outlined below.

*note: Since every tree planted in tropical regions (where trees are the most effective at reducing global warming) removes about 50 pounds of carbon dioxide from the atmosphere each year, the CO₂ reductions resulting from this project are equivalent to planting a specified and quantifiable number of trees as outlined below!

Nitrogen Oxides (NO_x) - Gases consisting of one molecule of nitrogen and varying numbers of oxygen molecules. Nitrogen oxides are produced by the combustion of fossil fuels in vehicles and electric power plants. In the atmosphere, nitrogen oxides can contribute to formation of photochemical ozone (smog),

impair visibility, and have health consequences. They are considered pollutants. NO_x reduction amounts are calculated in metric tons for each measure as outlined below.

*note: Since NO_x has a Global Warming Potential (a measure of how much a gas contributes to the greenhouse effect) of 296 times that of CO₂, the NO_x reductions resulting from this project are equivalent to planting a specified and quantifiable number of trees as outlined below.

Sulfur dioxide (SO₂) - A compound composed of one sulfur and two oxygen molecules. Sulfur dioxide emitted into the atmosphere through natural and anthropogenic processes is changed in a complex series of chemical reactions in the atmosphere to sulfate aerosols. These aerosols are believed to result in negative radiative forcing (i.e., tending to cool the earth's surface) and do result in acid deposition (e.g., acid rain). Acid rain has been shown to have adverse impacts on forests, freshwaters and soils, killing off insect and aquatic lifeforms as well as causing damage to buildings and having possible impacts on human health. SO₂ reduction amounts are calculated in metric tons for each measure as outlined below.

These combined carbon equivalents equal over 366 trees planted – or approximately 4 acres of tropical reforestation – as well as significant acreage of native forests protected from the ravages of acid rain.

Therefore, our project will result not just in improvements to the building's infrastructure, an increase in comfort and health for the residents, as well as reduced costs and energy use, but also in annual improvements to the environment from the significantly reduced levels of CO₂, NO_x, and SO₂ being emitted into the atmosphere. These combined carbon equivalents equal over 4,308 trees planted – or approximately 17 acres of tropical reforestation – as well as significant acreage of native forests protected from the ravages of acid rain.

Table 35: Environmental Benefits Summary

ECM	Nox (tons) Reduced	CO2 (tons) Reduced	SO2 (tons) Reduced	Total Cost per Nox Reduced \$	Total Cost per CO2 Reduced \$	Total Cost per SO2 Reduced \$
1- Woodbridge Township Municipal Building						
Lighting Replacement/Occupancy Sensor Inst	0.15	84.29	0.54	\$0	\$599	\$0
Interior Zone (VAV System)	0.23	166.56	0.28	\$0	\$342	\$0
HVAC Police	0.19	118.48	0.45	\$0	\$0	\$0
Building Management System	0.00	0.00	0.00	\$0	\$0	\$0
PV Solar System	0.10	55.53	0.35	\$0	\$12,111	\$0
Sub-Total	0.67	424.85	1.63	\$0	\$13,053	\$0
2- Woodbridge Township Community Center						
Lighting Replacement/Occupancy Sensor Inst	0.02	13.86	0.09	\$0	\$1,122	\$0
HVAC Control Replacement (DDC)	0.07	44.32	0.17	\$0	\$3,384	\$0
PV Solar System	1.37	776.98	4.96	\$6,379,723	\$11,286	\$1,768,507
Sub-Total	2.14	1260.01	6.84	\$6,379,723	\$15,792	\$1,768,507
3- Woodbridge Township Pump Station						
Lighting Replacement/Occupancy Sensor Inst	0.08	43.77	0.28	\$0	\$257	\$0
Water Conservation	0.02	8.70	0.06	\$0	\$422	\$0
Sub-Total	2.23	1312.48	7.17	\$0	\$679	\$0
4- Evergreen Senior Center						
Lighting Replacement/Occupancy Sensor Inst	0.05	26.19	0.17	\$0	\$1,636	\$0
HV Unit Replacement	0.01	7.89	0.00	\$0	\$18,262	\$0
AC Unit Replacement	0.01	4.05	0.03	\$0	\$12,351	\$0
Unit Ventilator Replacement	0.01	7.89	0.00	\$0	\$30,183	\$0
Steam Tap Maintenance	0.02	13.15	0.00	\$0	\$380	\$0
Water Conservation	0.00	1.60	0.00	\$0	\$14,090	\$0
PV Solar System	0.16	92.50	0.59	\$0	\$11,278	\$0
Sub-Total	0.26	153.27	0.78	\$0	\$88,179	\$0
5- Baron Arts Center						
Lighting Replacement/Occupancy Sensor Inst	0.00	1.99	0.01	\$0	\$1,094	\$0
Domestic Hot Water Heater	0.00	0.00	0.00	\$0	\$0	\$0
Split AC Units	0.00	1.41	0.01	\$0	\$21,228	\$0
Water Conservation	0.00	0.00	0.00	\$0	\$0	\$0
Sub-Total	0.01	3.40	0.02	\$0	\$22,322	\$0
6- Woodbridge Township Health Center						
Lighting Replacement/Occupancy Sensor Inst	0.05	27.03	0.17	\$0	\$632	\$0
HVAC Unit Replacement	0.01	4.28	0.03	\$0	\$17,504	\$0

ECM	Nox (tons) Reduced	CO2 (tons) Reduced	SO2 (tons) Reduced	Total Cost per Nox Reduced \$	Total Cost per CO2 Reduced \$	Total Cost per SO2 Reduced \$
Boiler Replacement	0.01	7.73	0.00	\$0	\$7,765	\$0
Window Replacement	0.02	15.01	0.07	\$0	\$23,257	\$0
Water Conservation	0.00	0.00	0.00	\$0	\$0	\$0
PV Solar System	0.06	31.97	0.20	\$0	\$12,626	\$0
Sub-Total	0.15	86.03	0.48	\$0	\$61,783	\$0
7-Woodbridge Township Main Library						
Lighting Replacement/Occupancy Sensor Inst	0.19	107.60	0.69	\$0	\$1,038	\$0
HVAC Unit Replacement	0.03	16.18	0.08	\$0	\$14,833	\$0
Boiler Replacement	0.03	19.85	0.00	\$0	\$13,601	\$0
Building Management System	0.04	25.11	0.08	\$0	\$2,987	\$0
Window Replacement	0.10	61.56	0.31	\$0	\$5,673	\$0
PV Solar System	0.17	97.50	0.62	\$0	\$11,399	\$0
Sub-Total	0.56	327.79	1.79	\$0	\$49,531	\$0
8-Iselin Branch Public Library						
Lighting Replacement/Occupancy Sensor Inst	0.00	1.27	0.01	\$0	\$1,946	\$0
HVAC Unit Replacement	0.01	6.16	0.04	\$0	\$12,990	\$0
Window Replacement	0.02	9.76	0.05	\$0	\$7,872	\$0
Water Conservation	0.00	0.13	0.00	\$0	\$0	\$0
PV Solar System	0.02	9.09	0.06	\$0	\$12,751	\$0
Sub-Total	0.05	26.40	0.16	\$0	\$35,559	\$0
9-Fords Branch Public Library						
Lighting Replacement/Occupancy Sensor Inst	0.01	5.98	0.04	\$0	\$778	\$0
HVAC Unit Replacement	0.02	12.87	0.05	\$0	\$4,661	\$0
Window Replacement	0.01	7.09	0.04	\$0	\$10,839	\$0
Water Conservation	0.00	0.15	0.00	\$0	\$0	\$0
Sub-Total	0.04	26.09	0.12	\$0	\$16,277	\$0
10-Inman Branch Public Library						
Lighting Replacement/Occupancy Sensor Inst	0.02	8.56	0.05	\$0	\$1,064	\$0
Air Handling Unit Replacement	0.01	4.45	0.01	\$0	\$10,119	\$0
Window Replacement	0.01	5.38	0.03	\$0	\$12,784	\$0
Water Conservation	0.00	0.03	0.00	\$0	\$0	\$0
Sub-Total	0.03	18.41	0.10	\$0	\$6,878	\$0

Benefits of Water Efficiency

The average household spends as much as \$500 per year on its water and sewer bill. By making just a few simple changes to use water more efficiently, you could save about \$132 per year. If all U.S. households installed water-efficient appliances, the country would save more than 3 trillion gallons of water and more than \$17 billion dollars per year! Also, when water is used more efficiently, we reduce the need for costly water supply infrastructure investments and new wastewater treatment facilities.

It takes a considerable amount of energy to deliver and treat the water used everyday. American public water supply and treatment facilities consume about 50 billion kilowatt-hours (kWh) per year – enough electricity to power more than 4.5 million homes for an entire year. For example, letting a faucet run for five minutes uses about as much energy as letting a 60-watt light bulb run for 14 hours.

By reducing water use you can not only help reduce the energy required to supply and treat public water supplies but also can help address climate change. In fact:

- If 1 out of every 100 American homes retrofitted with water-efficient fixtures, we could save about 100 million kWh of electricity per year – avoiding 75,000 tons of greenhouse gas emissions. That is equivalent to removing nearly 15,000 automobiles from the road for one year!
- If 1 percent of American homes replaced an older toilet with a high-efficiency toilet (HET), the country would save more than 38 million kWh of electricity – enough to supply more than 43,000 households electricity for one month.

Depleting reservoirs and groundwater aquifers can put water supplies, human health, and the environment at serious risk. Lower water levels can lead to higher concentrations of natural contaminants, such as radon and arsenic, or human pollutants, such as agricultural and chemical wastes. Using water more efficiently helps maintain supplies at safe levels, [protecting human health and the environment](#).

References:

The United Nations' Intergovernmental Panel on Climate Change (IPCC) Report, *Working Group I: The Scientific Basis: "Direct GWPs"*; 2001

Trees for the Future: "[Global Cooling Centers](#)"; 2006.

Gray Russell, Certified Energy Professional, Green Living Solutions; 2007

Carbon dioxide (CO₂) - A colorless, odorless, non-poisonous gas that is a normal part of the.

United States Environmental Protection Agency Website

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 ECRMs 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 incentives 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 in 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
- Water Conservation
- Solar Energy

6.1.1 Lighting Systems

Table 6.1-1 includes a ranking of the recommended lighting system retrofits for each of the buildings. 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					
Site	Retrofit Cost	NJ SmartStart Incentives	Total Cost	Annual Fiscal Savings	Simple Payback (Years)
Health Center	\$17,079	- \$4,575	\$12,504	\$7,125	1.76
Fords Library	\$4,653	- \$550	\$4,103	\$1,912	2.15
Pump Station	\$11,245	- \$2,375	\$8,870	\$3,871	2.29
Municipal Building	\$50,525	- \$3,690	\$46,835	\$19,014	2.46
Inman Library	\$9,104	- \$1,325	\$7,779	\$2,610	2.98
Main Library	\$111,702	- \$23,175	\$88,527	\$27,007	3.28
Baron Arts Center	\$2,178	- \$300	\$1,878	\$485	3.88
Community Center	\$15,542	- \$405	\$15,137	\$3,658	4.14
Iselin Library	\$2,465	- \$235	\$2,230	\$488	4.57
Evergreen Senior Center	\$42,837	- \$6,135	\$36,702	\$6,987	5.25
Project Totals	\$267,330	- \$42,765	\$224,565	\$73,157	3.06

6.1.2 HVAC Systems

Table 6.1-2 includes a ranking of the recommended ECRMs 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 Upgrades					
Site	Retrofit Cost	NJ SmartStart Incentives	Total Cost	Annual Fiscal Savings	Simple Payback (Years)
Senior Center – Steam Tap Maintenance	\$5,000	- \$0	\$5,000	\$3,146	1.59
Municipal Building – Interior Zone (VAV System)	\$57,000	- \$0	\$57,000	\$38,882	1.47
Main Library – Building Management System	\$75,000	- \$0	\$75,000	\$6,011	12.48

Table 6.1-2					
Ranking of Energy Savings Measures Summary – HVAC Upgrades					
Municipal Building – Building Management System	45,000	- \$0	\$45,000	\$2,920	15.41
Community Center – HVAC Control Replacement	\$150,000	- \$0	\$150,000	\$10,365	14.42
Fords Library – HVAC Unit Replacement	\$60,000	- \$2,190	\$57,810	\$3,586	16.12
Project Totals	\$392,000	- \$2,190	\$389,810	\$64,949	6.00

6.1.3 Water Conservation

Table 6.1-3 includes a ranking of the recommended ECRMs to provide energy savings for water conservation, which provide a simple payback of less than 20 years. A detailed discussion on water conservation is presented in Section 4.2

Table 6.1-3					
Ranking of Energy Savings Measures Summary –Water Conservation					
Site	Retrofit Cost	NJ SmartStart Incentives	Total Cost	Annual Fiscal Savings	Simple Payback (Years)
Evergreen Senior Center	\$22,600	- \$0	\$22,600	\$3,219	7.02
Fords Public Library	\$3,740	- \$0	\$3,740	\$344	10.87
Iselin Public Library	\$3,740	- \$0	\$3,740	\$319	11.71
Project Totals	\$30,080	- \$0	\$30,080	\$3,882	7.74

6.1.4 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 township. Based on the simple payback modeling performed, it would benefit the township to further investigate installing the solar energy systems at six (6) buildings. 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 6.1-4, includes a ranking of the solar energy ECRMs for the township.

Site	Installation Cost	Annual SREC Credit	Annual Fiscal Savings	Payback Period (Years)
Iselin Library	\$90,160	\$5,720	\$3,384	9.9
Health Center	\$313,950	\$20,117	\$8,173	11.10
Senior Center	\$912,870	\$58,196	\$23,944	11.11
Community Center	\$7,673,260	\$488,898	\$180,008	11.47
Main Library	\$972,440	\$61,346	\$23,366	11.48
Municipal Building	\$553,840	\$34,939	\$11,001	12.06
Project Totals	\$10,516,520	\$669,216	\$249,876	11.44

APPENDIX A

Energy Conservation Measures (ECM) Summary Sheet

Energy Conservation Measures (ECM) Summary Sheet

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ECM Count	ECM	kW Savings	kWh Savings	Therm Savings	Water Savings (gal)	Annual Electric Savings(\$)	Annual Therm Savings(\$)	Annual Water Savings(\$)	Annual Total Savings(\$)	Annual O&M Savings(\$)	Annual Solar REC (\$)	NJ SmartStart Rebate	Total Cost	Simple Payback (Yrs.)
1- Woodbridge Township Municipal Building														
1	Lighting Replacement/Occupancy Sensor Inst	23.34	134,674	0	0	\$16,700	\$0	\$0	\$16,700	\$2,314	\$0	\$3,690	\$50,525	2.46
2	Interior Zone (VAV System)	0.00	69,697	21,000	0	\$8,642	\$30,240	\$0	\$38,882	\$0	\$0	\$0	\$57,000	1.47
3	HVAC Police	0.00	113,741	8,078	0	\$14,104	\$9,241	\$0	\$23,345	\$0	\$0	\$0	\$0	0.00
4	Building Management System	0.00	0	0	0	\$0	\$0	\$0	\$2,920	\$0	\$0	\$0	\$45,000	15.41
5	PV Solar System	79.12	88,720	0	0	\$11,001	\$0	\$0	\$11,001	\$0	\$34,939	\$0	\$553,840	12.06
	Subtotal	102	406,832	29,078	0	\$50,447	\$39,481	\$0	\$92,848	\$2,314	\$34,939	\$3,690	\$706,365	5.40
2- Woodbridge Township Community Center														
6	Lighting Replacement/Occupancy Sensor Inst	8.47	22,142	0	0	\$3,211	\$0	\$0	\$3,211	\$447	\$0	\$405	\$15,542	4.14
7	HVAC Control Replacement (DDC)	0.00	41,476	3,108	0	\$6,014	\$4,351	\$0	\$10,365	\$0	\$0	\$0	\$150,000	14.47
8	PV Solar System	1,096.18	1,241,436	0	0	\$180,008	\$0	\$0	\$180,008	\$0	\$488,898	\$0	\$7,673,260	11.47
	Subtotal	1,104.65	1,305,324	3,108	0	\$ 189,272	\$4,351	\$0	\$ 193,623	\$447	\$ 488,898	\$405	\$7,838,802	11.48
3- Woodbridge Township Pump Station														
9	Lighting Replacement/Occupancy Sensor Inst	9.17	69,934	0	0	\$4,476	\$0	\$0	\$2,937	\$934	\$0	\$2,375	\$11,245	2.29
10	Water Conservation	0.00	0	4	13,858	\$0	\$5	\$97	\$102	\$0	\$0	\$0	\$3,670	35.89
	Subtotal	9.17	69,934	4	13,858	\$4,476	\$5	\$139	\$3,039	\$934	\$0	\$2,375	\$14,915	3.16
4- Evergreen Senior Center														
11	Lighting Replacement/Occupancy Sensor Inst	17.96	41,844	0	0	\$6,779	\$0	\$0	\$6,779	\$208	\$0	\$6,135	\$42,837	5.25
12	HV Unit Replacement	0.00	0	1,347	0	\$0	\$1,886	\$0	\$1,886	\$0	\$0	\$0	\$144,000	76.36
13	AC Unit Replacement	0.00	6,468	0	0	\$1,048	\$0	\$0	\$1,048	\$0	\$0	\$1,825	\$50,000	45.98
14	Unit Ventilator Replacement	0.00	0	1,347	0	\$0	\$1,886	\$0	\$1,886	\$0	\$0	\$0	\$238,000	126.21
15	Steam Tap Maintenance	0.00	0	2,247	0	\$0	\$3,146	\$0	\$3,146	\$0	\$0	\$0	\$5,000	1.59
16	Water Conservation	0.00	0	274	405,000	\$0	\$384	\$2,835	\$3,219	\$0	\$0	\$0	\$22,600	7.02
17	PV Solar System	130.41	147,800	0	0	\$23,944	\$0	\$0	\$23,944	\$0	\$58,196	\$0	\$912,870	11.11
	Subtotal	148.37	196,112	5,215	405,000	\$31,770	\$7,301	\$2,835	\$41,906	\$208	\$58,196	\$7,960	\$1,415,307	14.03
5- Baron Arts Center														
18	Lighting Replacement/Occupancy Sensor Inst	1.68	3,182	0	0	\$449	\$0	\$0	\$449	\$36	\$0	\$300	\$2,178	3.88
19	Domestic Hot Water Heater	0.00	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$50	\$900	0.00
20	Split AC Units	0.00	2,258	0	0	\$318	\$0	\$0	\$318	\$0	\$0	\$1,180	\$30,000	90.52
21	Water Conservation	0.00	0	0	10,000	\$0	\$0	\$70	\$70	\$0	\$0	\$0	\$1,500	21.43
	Subtotal	1.68	5,440	0	10,000	\$767	\$0	\$70	\$837	\$36	\$0	\$1,530	\$34,578	37.86
6- Woodbridge Township Health Center														
22	Lighting Replacement/Occupancy Sensor Inst	18.27	43,186	0	0	\$6,910	\$0	\$0	\$6,910	\$215	\$0	\$4,575	\$17,079	1.76
23	HVAC Unit Replacement	0.00	6,846	0	0	\$1,095	\$0	\$0	\$1,095	\$0	\$0	\$1,600	\$75,000	67.01
24	Boiler Replacement	0.00	0	1,320	0	\$0	\$1,848	\$0	\$1,848	\$0	\$0	\$1,750	\$60,000	31.52
25	Window Replacement	0.00	18,752	560	0	\$3,000	\$784	\$0	\$3,784	\$0	\$0	\$0	\$349,200	92.28
26	Water Conservation	0.00	0	0	73,125	\$0	\$0	\$512	\$512	\$0	\$0	\$0	\$10,250	20.02
27	PV Solar System	44.85	51,082	0	0	\$8,173	\$0	\$0	\$8,173	\$0	\$20,117	\$44,850	\$358,800	11.10
	Subtotal	63.12	119,866	1,880	73,125	\$19,179	\$2,632	\$512	\$22,322	\$215	\$20,117	\$52,775	\$870,329	19.17

Energy Conservation Measures (ECM) Summary Sheet

7-Woodbridge Township Main Library														
28	Lighting Replacement/Occupancy Sensor Inst	68.38	171,917	0	0	\$25,788	\$0	\$0	\$25,788	\$1,219	\$0	\$23,175	\$111,702	3.28
29	HVAC Unit Replacement	0.00	21,092	509	0	\$3,164	\$713	\$0	\$3,876	\$0	\$0	\$0	\$240,000	61.91
30	Boiler Replacement	0.00	0	3,391	0	\$0	\$4,747	\$0	\$4,747	\$0	\$0	\$5,402	\$270,000	55.74
31	Building Management System	0.00	21,092	2,034	0	\$3,164	\$2,848	\$0	\$6,011	\$0	\$0	\$0	\$75,000	12.48
32	Window Replacement	0.00	77,703	2,208	0	\$11,655	\$3,091	\$0	\$14,747	\$0	\$0	\$0	\$349,200	23.68
33	PV Solar System	138.92	155,774	0	0	\$23,366	\$0	\$0	\$23,366	\$0	\$61,346	\$0	\$972,440	11.48
	Subtotal	207.30	447,578	8,142	0	\$67,137	\$11,399	\$0	\$78,536	\$1,219	\$61,346	\$28,577	\$2,018,342	14.10
8-Iselin Branch Public Library														
34	Lighting Replacement/Occupancy Sensor Inst	0.33	2,024	0	0	\$472	\$0	\$0	\$472	\$16	\$0	\$235	\$2,465	4.57
35	HVAC Unit Replacement	0.00	9,840	0	0	\$2,293	\$0	\$0	\$2,293	\$0	\$0	\$3,100	\$80,000	33.54
36	Window Replacement	0.00	12,745	304	0	\$2,970	\$423	\$0	\$3,392	\$0	\$0	\$0	\$76,800	22.64
37	Water Conservation	0.00	0	22	41,250	\$0	\$31	\$289	\$319	\$0	\$0	\$0	\$3,740	11.71
38	PV Solar System	12.88	14,525	0	0	\$3,384	\$0	\$0	\$3,384	\$0	\$5,720	\$12,880	\$103,040	9.90
	Subtotal	13.21	39,134	326	41,250	\$9,118	\$453	\$289	\$9,860	\$16	\$5,720	\$16,215	\$266,045	16.02
9-Fords Branch Public Library														
39	Lighting Replacement/Occupancy Sensor Inst	4.03	9,559	0	0	\$1,797	\$0	\$0	\$1,797	\$115	\$0	\$550	\$4,653	2.15
40	HVAC Unit Replacement	0.00	11,776	940	0	\$2,214	\$1,372	\$0	\$3,586	\$0	\$0	\$2,190	\$60,000	16.12
41	Domestic Hot Water Heater	0.00	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$50	\$1,000	0.00
42	Window Replacement	0.00	9,376	208	0	\$1,763	\$304	\$0	\$2,066	\$0	\$0	\$0	\$76,800	37.17
43	Water Conservation	0.00	0	26	44,062	\$0	\$36	\$308	\$344	\$0	\$0	\$0	\$3,740	10.87
	Subtotal	4.03	30,711	1,174	44,062	\$5,774	\$1,712	\$308	\$7,794	\$115	\$0	\$2,790	\$146,193	18.13
10-Inman Branch Public Library														
44	Lighting Replacement/Occupancy Sensor Inst	5.35	13,671	0	0	\$2,392	\$0	\$0	\$2,392	\$218	\$0	\$1,325	\$9,104	2.98
45	Air Handling Unit Replacement	0.00	3,476	388	0	\$608	\$551	\$0	\$1,159	\$0	\$0	\$0	\$45,000	38.82
46	Domestic Hot Water Heater	0.00	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$50	\$850	0.00
47	Window Replacement	0.00	6,915	180	0	\$1,210	\$256	\$0	\$1,466	\$0	\$0	\$0	\$68,800	46.94
48	Water Conservation	0.00	0	5	10,125	\$0	\$6	\$71	\$77	\$0	\$0	\$0	\$3,740	48.65
	Subtotal	5.35	24,062	573	10,125	4,211	\$813	\$71	\$5,094	\$218	\$0	\$1,375	\$127,494	23.74
48	Totals	1,659	\$ 2,644,993	49,499	597,420	\$382,150	\$68,147	\$4,224	\$457,440	\$5,723	\$669,217	\$117,692	\$13,438,370	11.76

Preliminary Financing Worksheet 1 - Woodbridge Township - Total Project

Multiple Technologies

Total System Cost

Pro Forma

\$13,438,370

Variables and Assumptions:

Percentage of annual kWh degradation (Solar)

0.50%

Annual inflation rate

3.00%

Value of RECs per kWh at current price

Conservative est. based on market conditions

15 Year Interest Rate

4.50%

Term (Years)

15

Year	Annual kWh Prod. Solar	Est Annual Maint. Cost	Project Cashflows						Possible Financing Options		Addl CREB Benefits If Applicable	
			1 Potential NJ SmartStart Rebates	2 Avoided Cost of Grid Energy (PV)	3 Energy Cost Savings (DSM)	4 Annual O&M Savings (DSM)	5 Solar RECs	6 Project Income	7 15 Year Tax Exempt Lease	8 Yearly Balance	9 Plus CREB Award	10 Yearly Balance
1	1,699,337	-\$33,987	\$117,692	\$3,114,994	\$213,749	\$5,723	\$830,976	\$4,249,146	-\$1,233,687	\$3,015,459	\$456,196	\$3,471,655
2	1,690,840	-\$33,817	\$0	\$3,192,401	\$222,056	\$5,723	\$801,458	\$4,187,821	-\$1,233,687	\$2,954,135	\$433,451	\$3,387,586
3	1,682,386	-\$33,648	\$0	\$3,271,732	\$235,867	\$5,723	\$773,898	\$4,253,573	-\$1,233,687	\$3,019,886	\$409,662	\$3,429,547
4	1,673,974	-\$33,479	\$0	\$3,353,035	\$233,418	\$5,723	\$746,592	\$4,305,289	-\$1,233,687	\$3,071,602	\$384,779	\$3,456,381
5	1,665,604	-\$33,312	\$0	\$3,436,358	\$240,370	\$5,723	\$721,207	\$4,370,345	-\$1,233,687	\$3,136,659	\$358,754	\$3,495,412
6	1,657,276	-\$33,146	\$0	\$3,521,751	\$247,529	\$5,723	\$652,553	\$4,394,411	-\$1,233,687	\$3,160,724	\$331,532	\$3,492,256
7	1,648,990	-\$32,980	\$0	\$3,609,267	\$343,491	\$5,723	\$629,502	\$4,555,003	-\$1,233,687	\$3,321,316	\$303,061	\$3,624,376
8	1,640,745	-\$32,815	\$0	\$3,698,957	\$258,510	\$5,723	\$607,896	\$4,538,272	-\$1,233,687	\$3,304,585	\$273,281	\$3,577,866
9	1,632,541	-\$32,651	\$0	\$3,790,876	\$266,211	\$5,723	\$586,490	\$4,616,650	-\$1,233,687	\$3,382,963	\$242,133	\$3,625,096
10	1,624,379	-\$32,488	\$0	\$3,885,080	\$300,360	\$5,723	\$568,532	\$4,727,208	-\$1,233,687	\$3,493,521	\$209,554	\$3,703,075
11	1,616,257	-\$32,325	\$0	\$3,981,624	\$191,660		\$565,690	\$4,706,649	-\$1,233,687	\$3,472,962	\$175,479	\$3,648,441
12	1,608,175	-\$32,164	\$0	\$4,080,567	\$192,382		\$562,861	\$4,803,647	-\$1,233,687	\$3,569,960	\$139,838	\$3,709,798
13	1,600,134	-\$32,003	\$0	\$4,181,969	\$198,094		\$560,047	\$4,908,107	-\$1,233,687	\$3,674,421	\$102,560	\$3,776,981
14	1,592,134	-\$31,843	\$0	\$4,285,891	\$207,216		\$557,247	\$5,018,512	-\$1,233,687	\$3,784,825	\$63,570	\$3,848,394
15	1,584,173	-\$31,683	\$0	\$4,392,396	\$210,033		\$554,461	\$5,125,206	-\$1,233,687	\$3,891,519	\$22,788	\$3,914,307
16	1,576,252	-\$31,525	\$0	\$4,501,547	\$57,484			\$4,527,506		\$4,527,506		\$4,527,506
17	1,568,371	-\$31,367	\$0	\$4,613,410	\$59,209			\$4,641,251		\$4,641,251		\$4,641,251
18	1,560,529	-\$31,211	\$0	\$4,728,053	\$60,985			\$4,757,828		\$4,757,828		\$4,757,828
19	1,552,727	-\$31,055	\$0	\$4,845,545	\$62,814			\$4,877,305		\$4,877,305		\$4,877,305
20	1,544,963	-\$30,899	\$0	\$4,965,957	\$64,699			\$4,999,757		\$4,999,757		\$4,999,757
21	1,537,238	-\$30,745	\$0	\$5,089,361	\$12,269			\$5,070,886		\$5,070,886		\$5,070,886
22	1,529,552	-\$30,591	\$0	\$5,215,832	\$12,637			\$5,197,878		\$5,197,878		\$5,197,878
23	1,521,904	-\$30,438	\$0	\$5,345,445	\$13,017			\$5,328,024		\$5,328,024		\$5,328,024
24	1,514,295	-\$30,286	\$0	\$5,478,280	\$13,407			\$5,461,401		\$5,461,401		\$5,461,401
25	1,506,723	-\$30,134	\$0	\$5,614,415	\$13,809			\$5,598,090		\$5,598,090		\$5,598,090
		-\$800,590	\$117,692	\$106,194,745	\$3,931,276	\$57,231	\$9,719,410	\$119,219,764	-\$18,505,304	\$100,714,460	\$3,906,637	\$104,621,097

Financing – strategies and options

Preliminary Financing Worksheet 2 - Woodbridge Township - Energy Efficiency Projects

Multiple Technologies

Total Project Cost

Pro Forma

\$2,354,370

Variables and Assumptions:

Annual inflation rate

3.00%

15 Year Interest Rate

4.50%

Term (Years)

15

Year	Project Cashflows				Possible Financing Options	
	1 Potential NJ SmartStart Rebates	2 Energy Cost Savings (DSM)	3 Annual O&M Savings (DSM)	4 Project Income	5 15 Year Tax Exempt Lease	6 Yearly Balance
1	\$59,962	\$213,749	\$5,723	\$279,434	-\$216,185	\$63,249
2	\$0	\$222,056	\$5,723	\$227,779	-\$216,185	\$11,594
3	\$0	\$235,867	\$5,723	\$241,590	-\$216,185	\$25,406
4	\$0	\$233,418	\$5,723	\$239,141	-\$216,185	\$22,956
5	\$0	\$240,370	\$5,723	\$246,093	-\$216,185	\$29,908
6	\$0	\$247,529	\$5,723	\$253,252	-\$216,185	\$37,068
7	\$0	\$343,491	\$5,723	\$349,214	-\$216,185	\$133,029
8	\$0	\$258,510	\$5,723	\$264,234	-\$216,185	\$48,049
9	\$0	\$266,211	\$5,723	\$271,934	-\$216,185	\$55,749
10	\$0	\$300,360	\$5,723	\$306,083	-\$216,185	\$89,898
11	\$0	\$191,660		\$191,660	-\$216,185	-\$24,525
12	\$0	\$192,382		\$192,382	-\$216,185	-\$23,803
13	\$0	\$198,094		\$198,094	-\$216,185	-\$18,091
14	\$0	\$207,216		\$207,216	-\$216,185	-\$8,969
15	\$0	\$210,033		\$210,033	-\$216,185	-\$6,151
16	\$0	\$57,484		\$57,484		\$57,484
17	\$0	\$59,209		\$59,209		\$59,209
18	\$0	\$60,985		\$60,985		\$60,985
19	\$0	\$62,814		\$62,814		\$62,814
20	\$0	\$64,699		\$64,699		\$64,699
21	\$0	\$12,269		\$12,269		\$12,269
22	\$0	\$12,637		\$12,637		\$12,637
23	\$0	\$13,017		\$13,017		\$13,017
24	\$0	\$13,407		\$13,407		\$13,407
25	\$0	\$13,809		\$13,809		\$13,809
	\$59,962	\$3,931,276	\$57,231	\$4,048,469	-\$3,242,770	\$805,699

Financing – strategies and options

Preliminary Financing Worksheet 3 - Woodbridge Township - Solar Projects

PV Solar System
Total System Cost

Pro Forma
\$10,574,250

Variables and Assumptions:

Percentage of annual kWh degradation (Solar)	0.50%
Annual inflation rate	3.00%
Value of RECs per kWh at current price	Conservative est. based on market conditions
15 Year Interest Rate	4.50%
Term (Years)	15

Year	Annual kWh Prod. Solar	Est Annual Maint. Cost	Project Cashflows				Possible Financing Options		Addl CREB Benefits If Applicable	
			1 Potential NJ SmartStart Rebates	2 Avoided Cost of Grid Energy (PV)	3 Solar RECs	4 Project Income	5 15 Year Tax Exempt Lease	6 Yearly Balance	7 Plus CREB Award	8 Yearly Balance
1	1,699,337	-\$33,987	\$57,730	\$11,232,198	\$830,976	\$12,092,641	-\$970,763	\$11,121,878	\$456,196	\$11,578,073
2	1,690,840	-\$33,817	\$0	\$11,511,319	\$801,458	\$12,284,683	-\$970,763	\$11,313,920	\$433,451	\$11,747,371
3	1,682,386	-\$33,648	\$0	\$11,797,375	\$773,898	\$12,543,348	-\$970,763	\$11,572,585	\$409,662	\$11,982,246
4	1,673,974	-\$33,479	\$0	\$12,090,540	\$746,592	\$12,809,376	-\$970,763	\$11,838,613	\$384,779	\$12,223,392
5	1,665,604	-\$33,312	\$0	\$12,390,989	\$721,207	\$13,084,607	-\$970,763	\$12,113,844	\$358,754	\$12,472,598
6	1,657,276	-\$33,146	\$0	\$12,698,906	\$652,553	\$13,324,036	-\$970,763	\$12,353,273	\$331,532	\$12,684,805
7	1,648,990	-\$32,980	\$0	\$13,014,473	\$629,502	\$13,616,719	-\$970,763	\$12,645,956	\$303,061	\$12,949,016
8	1,640,745	-\$32,815	\$0	\$13,337,883	\$607,896	\$13,918,687	-\$970,763	\$12,947,924	\$273,281	\$13,221,205
9	1,632,541	-\$32,651	\$0	\$13,669,329	\$586,490	\$14,228,892	-\$970,763	\$13,258,129	\$242,133	\$13,500,262
10	1,624,379	-\$32,488	\$0	\$14,009,012	\$568,532	\$14,550,780	-\$970,763	\$13,580,017	\$209,554	\$13,789,572
11	1,616,257	-\$32,325	\$0	\$14,357,136	\$565,690	\$14,890,501	-\$970,763	\$13,919,738	\$175,479	\$14,095,217
12	1,608,175	-\$32,164	\$0	\$14,713,911	\$562,861	\$15,244,609	-\$970,763	\$14,273,846	\$139,838	\$14,413,684
13	1,600,134	-\$32,003	\$0	\$15,079,552	\$560,047	\$15,607,596	-\$970,763	\$14,636,833	\$102,560	\$14,739,393
14	1,592,134	-\$31,843	\$0	\$15,454,279	\$557,247	\$15,979,683	-\$970,763	\$15,008,920	\$63,570	\$15,072,489
15	1,584,173	-\$31,683	\$0	\$15,838,317	\$554,461	\$16,361,095	-\$970,763	\$15,390,331	\$22,788	\$15,413,119
16	1,576,252	-\$31,525	\$0	\$16,231,900		\$16,200,375		\$16,200,375		\$16,200,375
17	1,568,371	-\$31,367	\$0	\$16,635,262		\$16,603,895		\$16,603,895		\$16,603,895
18	1,560,529	-\$31,211	\$0	\$17,048,649		\$17,017,438		\$17,017,438		\$17,017,438
19	1,552,727	-\$31,055	\$0	\$17,472,307		\$17,441,253		\$17,441,253		\$17,441,253
20	1,544,963	-\$30,899	\$0	\$17,906,494		\$17,875,595		\$17,875,595		\$17,875,595
21	1,537,238	-\$30,745	\$0	\$18,351,471		\$18,320,726		\$18,320,726		\$18,320,726
22	1,529,552	-\$30,591	\$0	\$18,807,505		\$18,776,914		\$18,776,914		\$18,776,914
23	1,521,904	-\$30,438	\$0	\$19,274,871		\$19,244,433		\$19,244,433		\$19,244,433
24	1,514,295	-\$30,286	\$0	\$19,753,852		\$19,723,566		\$19,723,566		\$19,723,566
25	1,506,723	-\$30,134	\$0	\$20,244,735		\$20,214,601		\$20,214,601		\$20,214,601
		-\$800,590	\$57,730	\$382,922,264	\$9,719,410	\$391,956,046	-\$14,561,446	\$377,394,600	\$3,906,637	\$381,301,237

Financing – strategies and options

APPENDIX B

Arts Center, Woodbridge Township

**Arts Center
Woodbridge Township**

Seq. #	Building	Floor #	Location	Existing Fixture Description	Exist. Qty of Fix.	Proposed Fixture Description	Prop. Qty of Fix.	Sensor Description	Sensor Qty's	Total kW Saved	kWh Saved Lighting Only	kWh Saved Sensors Only	Total kWh Saved	Energy Cost Savings
1	Arts Center	1	Entrance Lobby	25w. Incandescent S/I Flame Tip	8	Remove and Replace Existing Lamp With a New 7w Candle Compact Fluorescent Screw-In	8	NO SENSOR PROPOSED	0	0.14	346	-	346	\$49
2	Arts Center	1	Entrance Lobby	75w. Par 30 Flood S/I	6	Remove and Replace Existing Lamp With a New 18w R30 Compact Fluorescent Screw-In	6	NO SENSOR PROPOSED	0	0.34	821	-	821	\$116
3	Arts Center	1	Office	2X4 Surface Mounted Troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	4	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
4	Arts Center	1	Office	75w. Par 30 Flood S/I	13	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
5	Arts Center	1	Kitchenette	100w Incandescent S/I	1	Remove and Replace Existing Lamp With a New 23w Compact Fluorescent Two Piece Screw-In.	1	NO SENSOR PROPOSED	0	0.08	185	-	185	\$26
6	Arts Center	1	Attic	8' Strip Fixture with (2) F96 Econo-Watt T12 Lamps & (1) 2L EE Magnetic Ballast	2	Rebuild an 8' Fixture. Install a 4-Lamp Electronic Low Power Ballast, Ballast Channel, Socket Bracket, (4) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	2	NO SENSOR PROPOSED	0	0.11	54	-	54	\$8
7	Arts Center	1	Art Floor	4' Strip Fixture with (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	9	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Normal Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	9	NO SENSOR PROPOSED	0	0.29	691	-	691	\$97
8	Arts Center	1	Art Floor	75w. Par 30 Flood S/I	24	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
9	Arts Center	1	Rest Room	100w Incandescent S/I	1	Remove and Replace Existing Lamp With a New 23w Compact Fluorescent Two Piece Screw-In.	1	NO SENSOR PROPOSED	0	0.08	185	-	185	\$26
10	Arts Center	B	Books	8' Strip Fixture with (2) F34 T12 Lamps & (1) 2L Magnetic Ballast	6	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	6	NO SENSOR PROPOSED	0	0.23	547	-	547	\$77
11	Arts Center	B	Books	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
12	Arts Center	B	BR Girls	4' Vanity Fixture with (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	1	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	1	NO SENSOR PROPOSED	0	0.04	91	-	91	\$13
13	Arts Center	B	BR Boys	4' Vanity Fixture with (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	1	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	1	NO SENSOR PROPOSED	0	0.04	91	-	91	\$13
14	Arts Center	B	Furnace Room	4' Industrail Hood Fixture with (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	8	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	8	NO SENSOR PROPOSED	0	0.30	152	-	152	\$21
15	Arts Center	B	Storage Closet	4' Industrail Hood Fixture with (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	1	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	1	NO SENSOR PROPOSED	0	0.04	19	-	19	\$3
					86			44	0	1.68	3,182	-	3,182	\$449

**Community Center
Woodbridge Township**

Seq. #	Building	Floor #	Location	Existing Fixture Description	Exist. Qty of Fix.	Proposed Fixture Description	Prop. Qty of Fix.	Sensor Description	Sensor Qtyts	Total kW Saved	kWh Saved Lighting Only	kWh Saved Sensors Only	Total kWh Saved	Energy Cost Savings
1	Community Center	1	Pool	High Bay Fixture with (1) 400w Metal Halide Lamp and (1) Magnetic HID Ballast	14	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
2	Community Center	1	Chemical Storage	4' Strip Fixture with (2) F32 T8 Lamps & (1) 2L Electronic Ballast	4	Remove and Replace Existing Fixture With a New 4' Vapor Tight Fixture Containing a 2-Lamp Electronic Low Power Ballast and (2) 4' F28 T8 Energy Saving Lamps.	4	NO SENSOR PROPOSED	0	0.08	38	-	38	\$5
3	Community Center	1	Family Dressing Room	1X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	31	-	31	\$4
4	Community Center	1	Family Dressing Room	Recessed Can Can w/ (2) 13w CF PL	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
5	Community Center	1	Family Dressing	1X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	31	-	31	\$4
6	Community Center	1	Family Dressing	1X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	31	-	31	\$4
7	Community Center	1	Family Dressing	1X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	31	-	31	\$4
8	Community Center	1	Men's Locker Room	Recessed Can Can w/ (2) 13w CF PL	17	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
9	Community Center	1	Men's Locker Room	1X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	6	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	6	NO SENSOR PROPOSED	0	0.08	187	-	187	\$26
10	Community Center	1	Men's Locker Room	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
11	Community Center	1	Ladies Locker Room	Recessed Can Can w/ (2) 13w CF PL	17	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
12	Community Center	1	Ladies Locker Room	1X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	6	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	6	NO SENSOR PROPOSED	0	0.08	187	-	187	\$26
13	Community Center	1	Ladies Locker Room	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
14	Community Center	1	Custodian Locker	Recessed Can Can w/ (2) 13w CF PL	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
15	Community Center	1	Custodian Locker	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
16	Community Center	1	Ice Rink	High Bay Fixture w/ (1) 1000w Metal Halide Lamp and Magnetic Ballast	45	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
17	Community Center	1	Ice Rink	8' Strip Fixture with (2) F96 T8 Lamps & (1) 2L Standard Electronic Ballast	20	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
18	Community Center	1	Ice Rink	High Bay Fixture with (1) 400w Metal Halide Lamp and (1) Magnetic HID Ballast	6	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
19	Community Center	1	Kitchen	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	13	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	13	NO SENSOR PROPOSED	0	0.22	530	-	530	\$74
20	Community Center	1	Chef's Office	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	9	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	9	NO SENSOR PROPOSED	0	0.15	367	-	367	\$51
21	Community Center	1	Skate Rental	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	8	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	8	NO SENSOR PROPOSED	0	0.14	326	-	326	\$45
22	Community Center	1	Men's Locker Room	8' Vapor & Moisture Resistant Fixture w/ (4) F32 T8 Lamps & (1) 4-Light Electronic Ballast	6	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	6	NO SENSOR PROPOSED	0	0.16	374	-	374	\$52
23	Community Center	1	Men's Locker Room	1X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	5	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	5	NO SENSOR PROPOSED	0	0.07	156	-	156	\$22
24	Community Center	1	Men's Locker Room	Recessed Can Can w/ (2) 13w CF PL	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
25	Community Center	1	Zamboni	8' Strip Fixture with (4) F32 T8 Lamps & (1) 4L Electronic Ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	NO SENSOR PROPOSED	0	0.08	187	-	187	\$26
26	Community Center	1	Stairwell	High Bay Fixture with (1) 400w Metal Halide Lamp and (1) Magnetic HID Ballast	5	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0

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Seq. #	Building	Floor #	Location	Existing Fixture Description	Exist. Qty of Fix.	Proposed Fixture Description	Prop. Qty of Fix.	Sensor Description	Sensor Qty's	Total kW Saved	kWh Saved Lighting Only	kWh Saved Sensors Only	Total kWh Saved	Energy Cost Savings
27	Community Center	1	Stairwell	4' Vanity Fixture with (2) F32 T8 Lamps & (1) 2L Electronic Ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	31	-	31	\$4
28	Community Center	1	Telephone Room	4' Strip Fixture with (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	2	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	2	NO SENSOR PROPOSED	0	0.08	38	-	38	\$5
29	Community Center	1	Pump Room	4' Strip Fixture with (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	2	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	2	NO SENSOR PROPOSED	0	0.08	38	-	38	\$5
30	Community Center	1	Chiller Room	4' Strip Fixture with (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	9	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	9	NO SENSOR PROPOSED	0	0.34	821	-	821	\$114
31	Community Center	1	Stairwell 2	High Bay Fixture with (1) 400w Metal Halide Lamp and (1) Magnetic HID Ballast	5	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
32	Community Center	1	Stairwell 2	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$11
33	Community Center	1	Electrical Panel Room	4' Strip Fixture with (2) F32 T8 Lamps & (1) 2L Electronic Ballast	6	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	6	NO SENSOR PROPOSED	0	0.08	39	-	39	\$5
34	Community Center	1	Roller Skate Rink	High Bay Fixture w/ (1) 1000w Metal Halide Lamp and Magnetic Ballast	42	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
35	Community Center	1	Roller Skate Rink	8' Strip Fixture with (2) F96 T8 Lamps & (1) 2L Standard Electronic Ballast	19	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
36	Community Center	1	Roller Skate Rink	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	55	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	55	NO SENSOR PROPOSED	0	0.94	2,244	-	2,244	\$312
37	Community Center	1	Storage	4' Strip Fixture with (2) F32 T8 Lamps & (1) 2L Electronic Ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	13	17	30	\$4
38	Community Center	1	Conference Room	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	6	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	6	Wall Switch Occupancy Sensor	1	0.10	245	363	608	\$84
39	Community Center	1	Office	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	Wall Switch Occupancy Sensor	1	0.07	163	242	405	\$56
40	Community Center	1	Office	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$28
41	Community Center	1	Exercise Room	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	13	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	13	NO SENSOR PROPOSED	0	0.22	530	-	530	\$74
42	Community Center	1	Office	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.02	41	-	41	\$6
43	Community Center	1	Storage	1X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	13	-	13	\$2
44	Community Center	1	Electrical Panel Room	4' Strip Fixture with (2) F32 T8 Lamps & (1) 2L Electronic Ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	7	-	7	\$1
45	Community Center	1	Gym	High Bay Fixture with (1) 400w Metal Halide Lamp and (1) Magnetic HID Ballast	16	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
46	Community Center	1	Center Office	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	8	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	8	NO SENSOR PROPOSED	0	0.14	326	-	326	\$45
47	Community Center	1	Storage	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.02	9	-	9	\$1
48	Community Center	1	Center Office 2	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	7	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	7	NO SENSOR PROPOSED	0	0.12	286	-	286	\$40
49	Community Center	1	Storage	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	8	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	8	NO SENSOR PROPOSED	0	0.14	68	-	68	\$9

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50	Community Center	1	Office	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	Wall Switch Occupancy Sensor	1	0.05	122	181	304	\$42
51	Community Center	1	Men's Room	1X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	13	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	13	NO SENSOR PROPOSED	0	0.17	406	-	406	\$56
52	Community Center	1	Men's Room	Recessed Can Can w/ (2) 13w CF PL	6	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
53	Community Center	1	Elevator Room	4' Strip Fxiture with (2) F32 T8 Lamps & (1) 2L Electronic Ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	13	-	13	\$2
54	Community Center	1	Ladies Room	1X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	13	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	13	NO SENSOR PROPOSED	0	0.17	406	-	406	\$56
55	Community Center	1	Ladies Room	Recessed Can Can w/ (2) 13w CF PL	6	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
56	Community Center	2	Exercise Room	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	18	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	18	NO SENSOR PROPOSED	0	0.31	734	-	734	\$102
57	Community Center	2	Exercise Room	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
58	Community Center	2	Lounge	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	18	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	18	NO SENSOR PROPOSED	0	0.31	734	-	734	\$102
59	Community Center	2	Lounge	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
60	Community Center	2	Ladies Room	1X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	9	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	9	NO SENSOR PROPOSED	0	0.12	281	-	281	\$39
61	Community Center	2	Ladies Room	Recessed Can Can w/ (2) 13w CF PL	4	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
62	Community Center	2	Men's Room	1X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	9	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	9	NO SENSOR PROPOSED	0	0.12	281	-	281	\$39
63	Community Center	2	Men's Room	Recessed Can Can w/ (2) 13w CF PL	4	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
64	Community Center	2	Storage	8' Strip Fxiture with (4) F32 T8 Lamps & (1) 4L Electronic Ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.03	13	-	13	\$2
65	Community Center	2	Storage	8' Strip Fxiture with (4) F32 T8 Lamps & (1) 4L Electronic Ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.03	13	-	13	\$2
66	Community Center	2	Electrical Panel	8' Strip Fxiture with (4) F32 T8 Lamps & (1) 4L Electronic Ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.03	13	-	13	\$2
67	Community Center	2	Maintenance Room	8' Strip Fxiture with (4) F32 T8 Lamps & (1) 4L Electronic Ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.03	62	-	62	\$9
68	Community Center	2	Branch Director	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	5	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	5	NO SENSOR PROPOSED	0	0.09	204	-	204	\$28
69	Community Center	2	Computer Lab	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	16	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	16	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	2	0.27	653	968	1,620	\$225
70	Community Center	2	Meeting Room	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	16	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	16	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	1	0.27	653	968	1,620	\$225
71	Community Center	2	Meeting Room	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	16	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	16	NO SENSOR PROPOSED	0	0.27	653	-	653	\$91

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72	Community Center	2	Preschool	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	9	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	9	NO SENSOR PROPOSED	0	0.15	367	-	367	\$51
73	Community Center	2	Craft Room	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	2	0.07	163	242	405	\$56
74	Community Center	2	Roof Access	8' Strip Fixture with (4) F32 T8 Lamps & (1) 4L Electronic Ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.05	26	-	26	\$4
75	Community Center	2	Custodian Office	8' Strip Fixture with (4) F32 T8 Lamps & (1) 4L Electronic Ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.05	125	-	125	\$17
76	Community Center	2	Custodian Office	4' Strip Fixture with (2) F32 T8 Lamps & (1) 2L Electronic Ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	31	-	31	\$4
77	Community Center		Stairwell H1	4' Vapor & Moisture Resistant Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	5	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	5	NO SENSOR PROPOSED	0	0.07	156	-	156	\$22
78	Community Center		Stairwell H2	4' Vapor & Moisture Resistant Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	5	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	5	NO SENSOR PROPOSED	0	0.07	156	-	156	\$22
79	Community Center		Stairwell H2	Parking Lot Fixture Mounted on a Pole w/ (1) 400w Pulse Start Metal Halide Lamp and (1) Magnetic HID Ballast	36	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
80	Community Center		Stairwell H2	100W Metal Halide Recessed Can Fixture	4	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
81	Community Center		Stairwell H2	Recessed Can Can w/ (2) 26w CF PL	17	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
82	Community Center	1	Entrance	Recessed Can Can w/ (1) 23w CF PL	4	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
83	Community Center	1	Lobby	100W Metal Halide Recessed Can Fixture	22	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
84	Community Center	1	Lobby	Decorative Pendant with (6) 39w Compact Fluorescent Lamps	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
85	Community Center	1	Lobby	Wall Sconce w/ (2) PL 13 Compact Fluorescent Lamps	10	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
86	Community Center	1	Lobby	Exit Sign w/ 2w LED	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
87	Community Center	1	Lobby	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	7	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	7	NO SENSOR PROPOSED	0	0.12	286	-	286	\$40
88	Community Center	1	Lobby	Recessed Can Can w/ (1) 23w CF PL	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
89	Community Center	1	Lobby	Recessed Can Can w/ (1) 23w CF PL	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
90	Community Center	1	Lobby	23w Compact Fluorescent S/I	17	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
91	Community Center	1	Lobby	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	6	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	6	NO SENSOR PROPOSED	0	0.10	245	-	245	\$34
92	Community Center	1	Lobby	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	5	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	5	NO SENSOR PROPOSED	0	0.09	204	-	204	\$28
93	Community Center	1	Lobby	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
94	Community Center	1	Lobby	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	7	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	7	NO SENSOR PROPOSED	0	0.12	286	-	286	\$40
95	Community Center	1	Lobby	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	7	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	7	NO SENSOR PROPOSED	0	0.12	286	-	286	\$40
96	Community Center	1	Lobby	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	NO SENSOR PROPOSED	0	0.07	163	-	163	\$23

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97	Community Center	1	Lobby	Recessed Can Can w/ (1) 23w CF PL	5	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
98	Community Center	1	Lobby	Wall Sconce w/ (2) PL 13 Compact Fluorescent Lamps	4	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
99	Community Center	1	Lobby	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
100	Community Center	1	Corridor 101	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	6	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	6	NO SENSOR PROPOSED	0	0.10	245	-	245	\$34
101	Community Center	1	Corridor 101	Recessed Can Can w/ (1) 23w CF PL	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
102	Community Center	1	Corridor 101	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
103	Community Center	1	Corridor 140	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	8	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	8	NO SENSOR PROPOSED	0	0.14	326	-	326	\$45
104	Community Center	1	Corridor 140	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
105	Community Center	1	Dining Area	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	16	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	16	NO SENSOR PROPOSED	0	0.27	653	-	653	\$91
106	Community Center	1	Dining Area	23w Compact Fluorescent S/I	5	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
107	Community Center	1	Dining Area	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
108	Community Center	1	Stairs 144	100W Metal Halide Recessed Can Fixture	7	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
109	Community Center		Stairs 144	Decorative Pendent with (6) 39w Compact Fluorescent Lamps	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
110	Community Center	2	Event Area	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	18	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	18	NO SENSOR PROPOSED	0	0.31	734	-	734	\$102
111	Community Center	2	Event Area	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	9	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	9	NO SENSOR PROPOSED	0	0.15	367	-	367	\$51
112	Community Center	2	Event Area	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	9	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	9	NO SENSOR PROPOSED	0	0.15	367	-	367	\$51
113	Community Center	2	Event Area	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	12	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	12	NO SENSOR PROPOSED	0	0.20	490	-	490	\$68
114	Community Center	2	Event Area	Wall Sconce w/ (2) PL 13 Compact Fluorescent Lamps	8	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
115	Community Center	2	Event Area	23w Compact Fluorescent S/I	8	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
116	Community Center	2	Event Area	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
117	Community Center	2	Corridor 202	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	7	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	7	NO SENSOR PROPOSED	0	0.12	286	-	286	\$40
118	Community Center	2	Corridor 202	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
119	Community Center	2	Corridor 220	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	7	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	7	NO SENSOR PROPOSED	0	0.12	286	-	286	\$40
120	Community Center	2	Corridor 220	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
121	Community Center	2	Corridor 217	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	32	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
122	Community Center	2	Corridor 217	Wall Sconce w/ (2) PL 13 Compact Fluorescent Lamps	10	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
123	Community Center	2	Corridor 217	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
					953		494		10	8.47	19,041	3,101	22,142	\$3,078

**Evergreen Senior Center
Woodbridge Township**

Seq. #	Building	Floor #	Location	Existing Fixture Description	Exist. Qty of Fix.	Proposed Fixture Description	Prop. Qty of Fix.	Sensor Description	Sensor Qty's	Total kW Saved	kWh Saved Lighting Only	kWh Saved Sensors Only	Total kWh Saved	Energy Cost Savings
1	Evergreen Senior Center	1	Corridor	150w R40 Flood Incandescent S/I	5	Remove and Replace Existing Lamp With a New 42w Compact Fluorescent Two Piece Screw-In.	5	NO SENSOR PROPOSED	0	0.54	1,966	-	1,966	\$318
2	Evergreen Senior Center	1	Corridor	2X2 recessed troffer with (2) F34 T12 U6 Lamps & (1) 2-Light Electronic ballast	3	Re-build existing troffer fixture w/ (2) F17 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	3	NO SENSOR PROPOSED	0	0.13	459	-	459	\$74
3	Evergreen Senior Center	1	Corridor	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.03	95	-	95	\$15
4	Evergreen Senior Center	1	Corridor	150w R40 Flood Incandescent S/I	1	Remove and Replace Existing Lamp With a New 42w Compact Fluorescent Two Piece Screw-In.	1	NO SENSOR PROPOSED	0	0.11	393	-	393	\$64
5	Evergreen Senior Center	1	Corridor	150w R40 Flood Incandescent S/I	6	Remove and Replace Existing Lamp With a New 42w Compact Fluorescent Two Piece Screw-In.	6	NO SENSOR PROPOSED	0	0.65	2,359	-	2,359	\$382
6	Evergreen Senior Center	1	Corridor	150w R40 Flood Incandescent S/I	2	Remove and Replace Existing Lamp With a New 42w Compact Fluorescent Two Piece Screw-In.	2	NO SENSOR PROPOSED	0	0.22	786	-	786	\$127
7	Evergreen Senior Center	1	Corridor	150w R40 Flood Incandescent S/I	5	Remove and Replace Existing Lamp With a New 42w Compact Fluorescent Two Piece Screw-In.	5	NO SENSOR PROPOSED	0	0.54	1,966	-	1,966	\$318
8	Evergreen Senior Center	1	Corridor	150w R40 Flood Incandescent S/I	1	Remove and Replace Existing Lamp With a New 42w Compact Fluorescent Two Piece Screw-In.	1	NO SENSOR PROPOSED	0	0.11	393	-	393	\$64
9	Evergreen Senior Center	1	Corridor	Exit Sign w/ 2w LED	6	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
10	Evergreen Senior Center	1	Gym	450w Mercury Vapor High Bay Fixture	10	Remove and Replace Existing Fixture With a New Industrial Fixture Containing a 4-Lamp Hi Output T5 Dimming Ballast, and (4) 4' T5 F54 HO Energy Saving Lamps. Wire Guard Included.	10	NO SENSOR PROPOSED	0	2.16	5,184	-	5,184	\$840
11	Evergreen Senior Center	1	Gym	Exit Sign w/ (2) 20w Incandescent Lamps & Emergency Head	4	Remove and Replace existing exit sign with a new LED exit sign with Emergency Head.	4	NO SENSOR PROPOSED	0	0.15	1,332	-	1,332	\$216
12	Evergreen Senior Center	1	Kitchen	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	NO SENSOR PROPOSED	0	0.24	389	-	389	\$63
13	Evergreen Senior Center	1	Office	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	4	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	4	NO SENSOR PROPOSED	0	0.47	1,133	-	1,133	\$184
14	Evergreen Senior Center	1	Storage	8' Strip Fixture with (2) F96 Econo-Watt T12 Lamps & (1) 2L EE Magnetic Ballast	1	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Normal Power Ballast, (2) 8' T8 Energy Saving Lamps. New Lamp Sockets.	1	NO SENSOR PROPOSED	0	0.02	10	-	10	\$2
15	Evergreen Senior Center	1	Game Room	8' Fixture with Egg Style Metal Lens w/ (4) F34 T12 Lamps & (2) 2-Light Magnetic Ballasts	12	Remove and Replace Existing Fixture With a New Industrial Fixture Containing a 4-Lamp Low Powered Electronic T8 Ballast, and (4) 4' T8 F28 Energy Saving Lamps, and Silver Reflector.	12	NO SENSOR PROPOSED	0	0.91	1,505	-	1,505	\$244
16	Evergreen Senior Center	1	Boys	ROOM LOCKED	0	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
17	Evergreen Senior Center	1	Girls	ROOM LOCKED	0	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
18	Evergreen Senior Center	1	Class Room	8' Fixture with Egg Style Metal Lens w/ (4) F34 T12 Lamps & (2) 2-Light Magnetic Ballasts	6	Remove and Replace Existing Fixture With a New Industrial Fixture Containing a 4-Lamp Low Powered Electronic T8 Ballast, and (4) 4' T8 F28 Energy Saving Lamps, and Silver Reflector.	6	Wide View Low Voltage (w/PP-20) Wall Mounted Sensor-40' Range (8-15' Mtg. Height)	1	0.46	1,094	423	1,518	\$246
19	Evergreen Senior Center	1	Class Room	4' Fixture with Egg Style Lens with (2) F34 T12 Lamps & (1) 4L Electronic Ballast	3	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	3	NO SENSOR PROPOSED	0	0.11	274	-	274	\$44
20	Evergreen Senior Center	1	Class Room	8' Fixture with Egg Style Metal Lens w/ (4) F34 T12 Lamps & (2) 2-Light Magnetic Ballasts	1	Remove and Replace Existing Fixture With a New Industrial Fixture Containing a 4-Lamp Low Powered Electronic T8 Ballast, and (4) 4' T8 F28 Energy Saving Lamps, and Silver Reflector.	1	Wide View Low Voltage (w/PP-20) Wall Mounted Sensor-40' Range (8-15' Mtg. Height)	1	0.08	182	71	253	\$41
21	Evergreen Senior Center	1	Class Room	4' Fixture with Egg Style Lens with (2) F34 T12 Lamps & (1) 4L Electronic Ballast	1	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	1	NO SENSOR PROPOSED	0	0.04	91	-	91	\$15
22	Evergreen Senior Center	1	Storage	100w Incandescent S/I	1	Remove and Replace Existing Lamp With a New 23w Compact Fluorescent Two Piece Screw-In.	1	NO SENSOR PROPOSED	0	0.08	39	-	39	\$6
23	Evergreen Senior Center	1	After Care Office	8' Fixture with Egg Style Metal Lens w/ (4) F34 T12 Lamps & (2) 2-Light Magnetic Ballasts	1	Remove and Replace Existing Fixture With a New Industrial Fixture Containing a 4-Lamp Low Powered Electronic T8 Ballast, and (4) 4' T8 F28 Energy Saving Lamps, and Silver Reflector.	1	Wall Switch Occupancy Sensor	1	0.08	182	71	253	\$41

**Evergreen Senior Center
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24	Evergreen Senior Center	1	After Care Office	4' Fixture with Egg Style Lens with (2) F34 T12 Lamps & (1) 4L Electronic Ballast	1	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	1	NO SENSOR PROPOSED	0	0.04	91	-	91	\$15
25	Evergreen Senior Center	1	Men's Room	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	NO SENSOR PROPOSED	0	0.24	389	-	389	\$63
26	Evergreen Senior Center	1	Ladies Room	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	NO SENSOR PROPOSED	0	0.24	389	-	389	\$63
27	Evergreen Senior Center	1	Lounge	8' Fixture with Egg Style Metal Lens w/ (4) F34 T12 Lamps & (2) 2-Light Magnetic Ballasts	1	Remove and Replace Existing Fixture With a New Industrial Fixture Containing a 4-Lamp Low Powered Electronic T8 Ballast, and (4) 4' T8 F28 Energy Saving Lamps, and Silver Reflector.	1	Wide View Low Voltage (w/PP-20) Wall Mounted Sensor-40' Range (8-15' Mtg. Height)	1	0.08	125	49	174	\$28
28	Evergreen Senior Center	1	Lounge	4' Fixture with Egg Style Lens with (2) F34 T12 Lamps & (1) 4L Electronic Ballast	1	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	1	NO SENSOR PROPOSED	0	0.04	63	-	63	\$10
29	Evergreen Senior Center	1	Office	8' Fixture with Egg Style Metal Lens w/ (4) F34 T12 Lamps & (2) 2-Light Magnetic Ballasts	1	Remove and Replace Existing Fixture With a New Industrial Fixture Containing a 4-Lamp Low Powered Electronic T8 Ballast, and (4) 4' T8 F28 Energy Saving Lamps, and Silver Reflector.	1	NO SENSOR PROPOSED	0	0.08	182	-	182	\$30
30	Evergreen Senior Center	1	Office	4' Fixture with Egg Style Lens with (2) F34 T12 Lamps & (1) 4L Electronic Ballast	1	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	1	NO SENSOR PROPOSED	0	0.04	91	-	91	\$15
31	Evergreen Senior Center	1	Multi Service Program	8' Strip Fixture with (2) F34 T12 Lamps & (1) 2L Magnetic Ballast	24	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	24	NO SENSOR PROPOSED	0	0.91	1,505	-	1,505	\$244
32	Evergreen Senior Center	1	Multi Service Program	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
33	Evergreen Senior Center	1	Office	4' Wrap Fixture w/ (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic Ballast	4	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	4	NO SENSOR PROPOSED	0	0.47	1,133	-	1,133	\$184
34	Evergreen Senior Center	1	Chair Storage	60w. Incandescent S/I	1	Remove and Replace Existing Lamp With a New 18w Compact Fluorescent Screw-In	1	NO SENSOR PROPOSED	0	0.04	21	-	21	\$3
35	Evergreen Senior Center	1	Kitchen	4' Wrap Fixture w/ (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic Ballast	4	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	4	Wall Switch Occupancy Sensor	1	0.47	779	97	876	\$142
36	Evergreen Senior Center	1	Sewing Room	4' Wrap Fixture w/ (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic Ballast	4	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	4	Wall Switch Occupancy Sensor	1	0.47	779	97	876	\$142
37	Evergreen Senior Center	1	Ladies Room	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	NO SENSOR PROPOSED	0	0.24	389	-	389	\$63
38	Evergreen Senior Center	1	Men's Room	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	NO SENSOR PROPOSED	0	0.24	389	-	389	\$63
39	Evergreen Senior Center	1	Boiler Room	Industrial Hood 4' Fixture w/ (2) F32 T8 Lamps & (1) 2L Electronic Ballast	5	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	5	NO SENSOR PROPOSED	0	0.07	33	-	33	\$5
40	Evergreen Senior Center	1	Stock Room	100w Incandescent S/I	1	Remove and Replace Existing Lamp With a New 23w Compact Fluorescent Two Piece Screw-In.	1	NO SENSOR PROPOSED	0	0.08	127	-	127	\$21
41	Evergreen Senior Center	1	Lawn Mower Repair	8' Fixture with Egg Style Metal Lens w/ (4) F34 T12 Lamps & (2) 2-Light Magnetic Ballasts	6	Remove and Replace Existing Fixture With a New Industrial Fixture Containing a 4-Lamp Low Powered Electronic T8 Ballast, and (4) 4' T8 F28 Energy Saving Lamps, and Silver Reflector.	6	NO SENSOR PROPOSED	0	0.46	752	-	752	\$122
42	Evergreen Senior Center	1	Lawn Mower Repair	4' Fixture with Egg Style Lens with (2) F34 T12 Lamps & (1) 4L Electronic Ballast	3	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	3	NO SENSOR PROPOSED	0	0.11	188	-	188	\$30

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43	Evergreen Senior Center	1	Class Room	8' Fixture with Egg Style Metal Lens w/ (4) F34 T12 Lamps & (2) 2-Light Magnetic Ballasts	6	Remove and Replace Existing Fixture With a New Industrial Fixture Containing a 4-Lamp Low Powered Electronic T8 Ballast, and (4) 4' T8 F28 Energy Saving Lamps, and Silver Reflector.	6	Wide View Low Voltage (w/PP-20) Wall Mounted Sensor-40' Range (8-15' Mtg. Height)	1	0.46	1,094	423	1,518	\$246
44	Evergreen Senior Center	1	Class Room	4' Fixture with Egg Style Lens with (2) F34 T12 Lamps & (1) 4L Electronic Ballast	3	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	3	NO SENSOR PROPOSED	0	0.11	274	-	274	\$44
45	Evergreen Senior Center	1	Computer Room	8' Fixture with Egg Style Metal Lens w/ (4) F34 T12 Lamps & (2) 2-Light Magnetic Ballasts	6	Remove and Replace Existing Fixture With a New Industrial Fixture Containing a 4-Lamp Low Powered Electronic T8 Ballast, and (4) 4' T8 F28 Energy Saving Lamps, and Silver Reflector.	6	NO SENSOR PROPOSED	0	0.46	1,094	-	1,094	\$177
46	Evergreen Senior Center	1	Computer Room	4' Fixture with Egg Style Lens with (2) F34 T12 Lamps & (1) 4L Electronic Ballast	3	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	3	NO SENSOR PROPOSED	0	0.11	274	-	274	\$44
47	Evergreen Senior Center	1	Class Room	8' Fixture with Egg Style Metal Lens w/ (4) F34 T12 Lamps & (2) 2-Light Magnetic Ballasts	6	Remove and Replace Existing Fixture With a New Industrial Fixture Containing a 4-Lamp Low Powered Electronic T8 Ballast, and (4) 4' T8 F28 Energy Saving Lamps, and Silver Reflector.	6	Wide View Low Voltage (w/PP-20) Wall Mounted Sensor-40' Range (8-15' Mtg. Height)	1	0.46	1,094	423	1,518	\$246
48	Evergreen Senior Center	1	Class Room	4' Fixture with Egg Style Lens with (2) F34 T12 Lamps & (1) 4L Electronic Ballast	3	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	3	NO SENSOR PROPOSED	0	0.11	274	-	274	\$44
49	Evergreen Senior Center	1	Class Room	8' Fixture with Egg Style Metal Lens w/ (4) F34 T12 Lamps & (2) 2-Light Magnetic Ballasts	6	Remove and Replace Existing Fixture With a New Industrial Fixture Containing a 4-Lamp Low Powered Electronic T8 Ballast, and (4) 4' T8 F28 Energy Saving Lamps, and Silver Reflector.	6	Wide View Low Voltage (w/PP-20) Wall Mounted Sensor-40' Range (8-15' Mtg. Height)	1	0.46	1,094	423	1,518	\$246
50	Evergreen Senior Center	1	Class Room	4' Fixture with Egg Style Lens with (2) F34 T12 Lamps & (1) 4L Electronic Ballast	3	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	3	NO SENSOR PROPOSED	0	0.11	274	-	274	\$44
51	Evergreen Senior Center	1	Computer Storage	8' Fixture with Egg Style Metal Lens w/ (4) F34 T12 Lamps & (2) 2-Light Magnetic Ballasts	6	Remove and Replace Existing Fixture With a New Industrial Fixture Containing a 4-Lamp Low Powered Electronic T8 Ballast, and (4) 4' T8 F28 Energy Saving Lamps, and Silver Reflector.	6	Wide View Low Voltage (w/PP-20) Wall Mounted Sensor-40' Range (8-15' Mtg. Height)	1	0.46	228	88	316	\$51
52	Evergreen Senior Center	1	Computer Storage	4' Fixture with Egg Style Lens with (2) F34 T12 Lamps & (1) 4L Electronic Ballast	3	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	3	NO SENSOR PROPOSED	0	0.11	57	-	57	\$9
53	Evergreen Senior Center	1	Boys	135w Incandescent S/l	2	Remove and Replace Existing Lamp With a New 32w Compact Fluorescent Two Piece Screw-In.	2	NO SENSOR PROPOSED	0	0.21	340	-	340	\$55
54	Evergreen Senior Center	1	Girls	135w Incandescent S/l	2	Remove and Replace Existing Lamp With a New 32w Compact Fluorescent Two Piece Screw-In.	2	NO SENSOR PROPOSED	0	0.21	340	-	340	\$55
55	Evergreen Senior Center	1	Computer Repair	8' Fixture with Egg Style Metal Lens w/ (4) F34 T12 Lamps & (2) 2-Light Magnetic Ballasts	6	Remove and Replace Existing Fixture With a New Industrial Fixture Containing a 4-Lamp Low Powered Electronic T8 Ballast, and (4) 4' T8 F28 Energy Saving Lamps, and Silver Reflector.	6	NO SENSOR PROPOSED	0	0.46	1,094	-	1,094	\$177
56	Evergreen Senior Center	1	Computer Repair	4' Fixture with Egg Style Lens with (2) F34 T12 Lamps & (1) 4L Electronic Ballast	3	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	3	NO SENSOR PROPOSED	0	0.11	274	-	274	\$44
57	Evergreen Senior Center	1	Office	8' Fixture with Egg Style Metal Lens w/ (4) F34 T12 Lamps & (2) 2-Light Magnetic Ballasts	6	Remove and Replace Existing Fixture With a New Industrial Fixture Containing a 4-Lamp Low Powered Electronic T8 Ballast, and (4) 4' T8 F28 Energy Saving Lamps, and Silver Reflector.	6	NO SENSOR PROPOSED	0	0.46	1,094	-	1,094	\$177
58	Evergreen Senior Center	1	Office	4' Fixture with Egg Style Lens with (2) F34 T12 Lamps & (1) 4L Electronic Ballast	3	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	3	NO SENSOR PROPOSED	0	0.11	274	-	274	\$44
59	Evergreen Senior Center	1	Class Room	8' Fixture with Egg Style Metal Lens w/ (4) F34 T12 Lamps & (2) 2-Light Magnetic Ballasts	6	Remove and Replace Existing Fixture With a New Industrial Fixture Containing a 4-Lamp Low Powered Electronic T8 Ballast, and (4) 4' T8 F28 Energy Saving Lamps, and Silver Reflector.	6	NO SENSOR PROPOSED	0	0.46	1,094	-	1,094	\$177

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60	Evergreen Senior Center	1	Class Room	4' Fixture with Egg Style Lens with (2) F34 T12 Lamps & (1) 4L Electronic Ballast	3	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	3	NO SENSOR PROPOSED	0	0.11	274	-	274	\$44			
61	Evergreen Senior Center	1	Class Room	8' Fixture with Egg Style Metal Lens w/ (4) F34 T12 Lamps & (2) 2-Light Magnetic Ballasts	6	Remove and Replace Existing Fixture With a New Industrial Fixture Containing a 4-Lamp Low Powered Electronic T8 Ballast, and (4) 4' T8 F28 Energy Saving Lamps, and Silver Reflector.	6	NO SENSOR PROPOSED	0	0.46	1,094	-	1,094	\$177			
62	Evergreen Senior Center	1	Class Room	4' Fixture with Egg Style Lens with (2) F34 T12 Lamps & (1) 4L Electronic Ballast	3	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	3	NO SENSOR PROPOSED	0	0.11	274	-	274	\$44			
63	Evergreen Senior Center	1	Storage	8' Fixture with Egg Style Metal Lens w/ (4) F34 T12 Lamps & (2) 2-Light Magnetic Ballasts	6	Remove and Replace Existing Fixture With a New Industrial Fixture Containing a 4-Lamp Low Powered Electronic T8 Ballast, and (4) 4' T8 F28 Energy Saving Lamps, and Silver Reflector.	6	NO SENSOR PROPOSED	0	0.46	228	-	228	\$37			
64	Evergreen Senior Center	1	Storage	4' Fixture with Egg Style Lens with (2) F34 T12 Lamps & (1) 4L Electronic Ballast	3	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	3	NO SENSOR PROPOSED	0	0.11	57	-	57	\$9			
65	Evergreen Senior Center	1	Book Storage	8' Fixture with Egg Style Metal Lens w/ (4) F34 T12 Lamps & (2) 2-Light Magnetic Ballasts	3	Remove and Replace Existing Fixture With a New Industrial Fixture Containing a 4-Lamp Low Powered Electronic T8 Ballast, and (4) 4' T8 F28 Energy Saving Lamps, and Silver Reflector.	3	NO SENSOR PROPOSED	0	0.23	114	-	114	\$18			
66	Evergreen Senior Center	1	Book Storage	8' Strip Fixture with (4) F34 T12 Lamps & (1) 4L Magnetic Ballast	3	Re-lamp & Re-ballast existing fixture. Install a 4-Lamp Electronic Low Power Ballast, (4) 4' 28W T8 Energy Saving Lamps, New Lamp Sockets.	3	NO SENSOR PROPOSED	0	0.23	114	-	114	\$18			
					243						235	10	17.96	39,679	2,165	41,845	\$6,779

**Fords Library
Woodbridge Township**

Seq. #	Building	Floor #	Location	Existing Fixture Description	Exist. Qty of Fix.	Proposed Fixture Description	Prop. Qty of Fix.	Sensor Description	Sensor Qty's	Total kW Saved	kWh Saved Lighting Only	kWh Saved Sensors Only	Total kWh Saved	Energy Cost Savings
1	Fords Library	1	Main Floor	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	19	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	19	NO SENSOR PROPOSED	0	0.32	775	-	775	\$138
2	Fords Library	1	Main Floor	2X2 Recessed Fixture with (2) F32 T8 U-Lamps & (1) 3L Electronic Ballast	33	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
3	Fords Library	1	Main Floor	Recessed Can Can w/ (2) 13w CF PL	76	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
4	Fords Library	1	Main Floor	8' Direct/Indirect Fixture with (8) F32 T8 Lamps & (2) 4L Electronic Ballast	21	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	21	NO SENSOR PROPOSED	0	1.09	2,621	-	2,621	\$467
5	Fords Library	1	Main Floor	4' Direct/Indirect Fixture with (4) F32 T8 Lamps & (1) 4L Electronic Ballast	7	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	7	NO SENSOR PROPOSED	0	0.18	437	-	437	\$78
6	Fords Library	1	Main Floor	8' Strip Fixture with (4) F28 T5 Lamps & (1) 4L Electronic Ballast	21	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
7	Fords Library	1	Main Floor	4' Strip Fixture with (2) F28 T5 Lamps & (1) 2L Electronic Ballast	7	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
8	Fords Library	1	Main Floor	Exit Sign w/ 2w LED	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
9	Fords Library	1	Quiet Study	2X2 Recessed Fixture with (2) F32 T8 U-Lamps & (1) 3L Electronic Ballast	6	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
10	Fords Library	1	Back Area	4X4 recessed troffer with (8) F34 Econo-Watt T12 Lamps & (2) 4-Light EE Magnetic ballast	4	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Normal Power 2-Lamp Electronic Ballast & Silver Reflector	8	NO SENSOR PROPOSED	0	0.90	2,150	-	2,150	\$383
11	Fords Library	1	Back Area	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
12	Fords Library	1	Back Area	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	4	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
13	Fords Library	1	Office	4X4 recessed troffer with (8) F34 Econo-Watt T12 Lamps & (2) 4-Light EE Magnetic ballast	1	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Normal Power 2-Lamp Electronic Ballast & Silver Reflector	2	NO SENSOR PROPOSED	0	0.22	538	-	538	\$96
14	Fords Library	1	Supervising Assistant	4X4 recessed troffer with (8) F34 Econo-Watt T12 Lamps & (2) 4-Light EE Magnetic ballast	1	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Normal Power 2-Lamp Electronic Ballast & Silver Reflector	2	NO SENSOR PROPOSED	0	0.22	538	-	538	\$96
15	Fords Library	1	Clerical Work	4X4 recessed troffer with (8) F34 Econo-Watt T12 Lamps & (2) 4-Light EE Magnetic ballast	1	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Normal Power 2-Lamp Electronic Ballast & Silver Reflector	2	NO SENSOR PROPOSED	0	0.22	538	-	538	\$96
16	Fords Library	1	Electrical Panel Room	4' Wrap Fixture w/ (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic Ballast	2	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	2	NO SENSOR PROPOSED	0	0.08	38	-	38	\$7
17	Fords Library	1	Break Room	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	NO SENSOR PROPOSED	0	0.24	566	-	566	\$101
18	Fords Library	1	Break Room	25w. Incandescent S/I A-Lamp	4	Remove and Replace Existing Lamp With a New 13w Compact Fluorescent Two Piece Screw-In.	4	NO SENSOR PROPOSED	0	0.05	115	-	115	\$21
19	Fords Library	1	Kitchen	2X2 recessed troffer with (2) F34 T12 U6 Lamps & (1) 2-Light Electronic ballast	1	Re-build existing troffer fixture w/ (2) F32 T8 U-Lamps, & (1) Low Power 2-Lamp Electronic Ballast	1	NO SENSOR PROPOSED	0	0.02	43	-	43	\$8
20	Fords Library	1	MPR	2X2 Recessed Fixture with (2) F32 T8 U-Lamps & (1) 3L Electronic Ballast	18	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
21	Fords Library	1	MPR	Exit Sign w/ 2w LED	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
22	Fords Library	1	Women's	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	62	-	62	\$11
23	Fords Library	1	Women's	4' Vanity Fixture with (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	1	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	1	NO SENSOR PROPOSED	0	0.04	91	-	91	\$16
24	Fords Library	1	Men's	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	62	-	62	\$11
25	Fords Library	1	Staff Bath	100w Incandescent S/I	1	Remove and Replace Existing Lamp With a New 23w Compact Fluorescent Two Piece Screw-In.	1	NO SENSOR PROPOSED	0	0.08	185	-	185	\$33
26	Fords Library	1	Janitor's Closet	4' Wrap Fixture w/ (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic Ballast	1	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	1	NO SENSOR PROPOSED	0	0.04	19	-	19	\$3
27	Fords Library	1	Storage	4' Wrap Fixture w/ (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic Ballast	2	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	2	NO SENSOR PROPOSED	0	0.08	38	-	38	\$7

**Fords Library
Woodbridge Township**

Seq. #	Building	Floor #	Location	Existing Fixture Description	Exist. Qty of Fix.	Proposed Fixture Description	Prop. Qty of Fix.	Sensor Description	Sensor Qtys	Total kW Saved	kWh Saved Lighting Only	kWh Saved Sensors Only	Total kWh Saved	Energy Cost Savings
28	Fords Library	1	Outside	Parking Lot Fixture with (1) 175w High Pressure Sodium Lamp and (1) Magnetic HID Ballast	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
29	Fords Library	1	Outside	Wall Pack Fixture with (1) 150w High Pressure Sodium Lamp and (1) Magnetic HID Ballast	3	Remove and Replace Existing Fixture With a New Outdoor Flood Fixture Containing a 100w Metal Halide Lamp	3	NO SENSOR PROPOSED	0	0.20	743	-	743	\$132
					250			82	0	4.03	9,559	-	9,559	\$1,702

**Health Center
Woodbridge Township**

Seq. #	Building	Floor #	Location	Existing Fixture Description	Exist. Qty of Fix.	Proposed Fixture Description	Prop. Qty of Fix.	Sensor Description	Sensor Qtyts	Total kW Saved	kWh Saved Lighting Only	kWh Saved Sensors Only	Total kWh Saved	Energy Cost Savings
1	Health Center	1	Administration	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	8	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	8	NO SENSOR PROPOSED	0	0.94	2,266	-	2,266	\$362
2	Health Center	1	Fax Room	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	4	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	4	NO SENSOR PROPOSED	0	0.47	1,133	-	1,133	\$181
3	Health Center	1	Storage	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	Wall Switch Occupancy Sensor	1	0.24	118	15	133	\$21
4	Health Center	1	Copy Room	Surface Mounted Drum Fixture w/ (1) 32w Circle line fluorescent lamp	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
5	Health Center	1	Bathroom	60w. Incandescent S/l	2	Remove and Replace Existing Lamp With a New 18w Compact Fluorescent Screw-In	2	NO SENSOR PROPOSED	0	0.08	202	-	202	\$32
6	Health Center	1	Conference Room	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	8	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	8	NO SENSOR PROPOSED	0	0.94	2,266	-	2,266	\$362
7	Health Center	1	Nursing Division	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	3	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	3	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	1	0.35	850	106	955	\$153
8	Health Center	1	Office 1	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	Wall Switch Occupancy Sensor	1	0.24	566	71	637	\$102
9	Health Center	1	Office 2	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	Wall Switch Occupancy Sensor	1	0.24	566	71	637	\$102
10	Health Center	1	Ladies Room	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	1	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	1	NO SENSOR PROPOSED	0	0.12	430	-	430	\$69
11	Health Center	1	Ladies Room	1x4 Recessed Troffer w/ (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	2	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	2	NO SENSOR PROPOSED	0	0.08	277	-	277	\$44
12	Health Center	1	Maintenance	75w. Par 30 Flood S/l	1	Remove and Replace Existing Lamp With a New 18w R30 Compact Fluorescent Screw-In	1	NO SENSOR PROPOSED	0	0.06	57	-	57	\$9
13	Health Center	1	Men's Room	1x4 Recessed Troffer w/ (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	2	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	2	NO SENSOR PROPOSED	0	0.08	277	-	277	\$44
14	Health Center	1	Boiler Room	75w. Par 30 Flood S/l	5	Remove and Replace Existing Lamp With a New 18w R30 Compact Fluorescent Screw-In	5	NO SENSOR PROPOSED	0	0.29	143	-	143	\$23
15	Health Center	1	Boiler Room	4' Strip Fixture with (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	1	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	1	NO SENSOR PROPOSED	0	0.04	19	-	19	\$3
16	Health Center	1	Storage	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	4	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	4	NO SENSOR PROPOSED	0	0.47	236	-	236	\$38
17	Health Center	1	Assembly Room	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	12	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	12	NO SENSOR PROPOSED	0	1.42	3,398	-	3,398	\$544
18	Health Center	1	Assembly Room	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
19	Health Center	1	Server Room	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	5	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	5	NO SENSOR PROPOSED	0	0.59	1,416	-	1,416	\$227
20	Health Center	1	Electrical Panel	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	1	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	1	NO SENSOR PROPOSED	0	0.12	118	-	118	\$19
21	Health Center	1	Division of Aging	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	NO SENSOR PROPOSED	0	0.24	566	-	566	\$91
22	Health Center	1	Office 1	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	1	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	1	NO SENSOR PROPOSED	0	0.12	283	-	283	\$45
23	Health Center	1	Kitchenette	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	1	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	1	NO SENSOR PROPOSED	0	0.12	283	-	283	\$45

**Health Center
Woodbridge Township**

Seq. #	Building	Floor #	Location	Existing Fixture Description	Exist. Qty of Fix.	Proposed Fixture Description	Prop. Qty of Fix.	Sensor Description	Sensor Qtyts	Total kW Saved	kWh Saved Lighting Only	kWh Saved Sensors Only	Total kWh Saved	Energy Cost Savings
24	Health Center	1	Office 2	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	1	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	1	NO SENSOR PROPOSED	0	0.12	283	-	283	\$45
25	Health Center	1	Nursing Division	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	6	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	6	NO SENSOR PROPOSED	0	0.71	1,699	-	1,699	\$272
26	Health Center	1	Exam Room 1	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Normal Power 2-Lamp Electronic Ballast & Silver Reflector	2	Wall Switch Occupancy Sensor	1	0.22	224	34	258	\$41
27	Health Center	1	Exam Room 2	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Normal Power 2-Lamp Electronic Ballast & Silver Reflector	2	Wall Switch Occupancy Sensor	1	0.22	224	34	258	\$41
28	Health Center	1	Office	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	4	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	4	Wall Switch Occupancy Sensor	1	0.47	1,133	141	1,274	\$204
29	Health Center	1	Exam Room 3 & 4	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	6	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Normal Power 2-Lamp Electronic Ballast & Silver Reflector	6	NO SENSOR PROPOSED	0	0.67	672	-	672	\$108
30	Health Center	1	Men's Room	1x4 Recessed Troffer w/ (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	1	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	1	NO SENSOR PROPOSED	0	0.04	138	-	138	\$22
31	Health Center	1	Ladies Room	1x4 Recessed Troffer w/ (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	1	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	1	NO SENSOR PROPOSED	0	0.04	138	-	138	\$22
32	Health Center	1	Drug Alliance	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	8	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	8	NO SENSOR PROPOSED	0	0.94	2,266	-	2,266	\$362
33	Health Center	1	Office	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	Wall Switch Occupancy Sensor	1	0.24	566	71	637	\$102
34	Health Center	1	Office	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	Wall Switch Occupancy Sensor	1	0.24	566	71	637	\$102
35	Health Center	1	Health Education	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	6	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	6	NO SENSOR PROPOSED	0	0.71	708	-	708	\$113
36	Health Center	1	Catholic Charities	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	4	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	4	NO SENSOR PROPOSED	0	0.47	1,133	-	1,133	\$181
37	Health Center	1	Office	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	NO SENSOR PROPOSED	0	0.24	566	-	566	\$91
38	Health Center	1	Office	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	NO SENSOR PROPOSED	0	0.24	566	-	566	\$91
39	Health Center	1	Division of Environmental Health	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	12	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	12	NO SENSOR PROPOSED	0	1.42	3,398	-	3,398	\$544
40	Health Center	1	Health Inspector	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	6	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	6	Wall Switch Occupancy Sensor	1	0.71	1,699	212	1,911	\$306
41	Health Center	1	Division of Health	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	3	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	3	NO SENSOR PROPOSED	0	0.35	850	-	850	\$136
42	Health Center	1	Director	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	6	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	6	NO SENSOR PROPOSED	0	0.71	1,699	-	1,699	\$272
43	Health Center	1	Hallway	1x4 Recessed Troffer w/ (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	39	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	39	NO SENSOR PROPOSED	0	1.48	5,394	-	5,394	\$863
44	Health Center	1	Hallway	23w Compact Fluorescent S/I	16	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
45	Health Center	1	Hallway	Exit Sign w/ 2w LED	8	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
46	Health Center	1	Outside	Wall Pack Fixture with (1) 250w High Pressure Sodium Lamp and (1) Magnetic HID Ballast	6	Remove and Replace Existing Fixture With a New Outdoor Flood Fixture Containing a 100w Pulse Start Metal Halide Lamp	6	NO SENSOR PROPOSED	0	0.66	2,402	-	2,402	\$384

**Health Center
Woodbridge Township**

Seq. #	Building	Floor #	Location	Existing Fixture Description	Exist. Qty of Fix.	Proposed Fixture Description	Prop. Qty of Fix.	Sensor Description	Sensor Qtys	Total kW Saved	kWh Saved Lighting Only	kWh Saved Sensors Only	Total kWh Saved	Energy Cost Savings
47	Health Center	1	Outside	Recessed Can Can w/ (1) 75w Incan. Par 30 Screw In	3	Remove and Replace Existing Lamp With a New 23w R30 Compact Fluorescent Screw-In	3	NO SENSOR PROPOSED	0	0.16	568	-	568	\$91
					219			193	10	18.27	42,363	823	43,186	\$6,910

**Inman Library
Woodbridge Township**

Seq. #	Building	Floor #	Location	Existing Fixture Description	Exist. Qty of Fix.	Proposed Fixture Description	Prop. Qty of Fix.	Sensor Description	Sensor Qty	Total kW Saved	kWh Saved Lighting Only	kWh Saved Sensors Only	Total kWh Saved	Energy Cost Savings
1	Inman Library	1	Library Floor	1x4 Surface Mounted Troffer w/ (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	72	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Normal Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	72	NO SENSOR PROPOSED	0	2.30	5,530	-	5,530	\$973
2	Inman Library	1	Library Floor	23w Compact Fluorescent S/I	54	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
3	Inman Library	1	Library Floor	4' Wrap Fixture w/ (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic Ballast	7	Re-lamp & Re-ballast existing fixture. Install a 4-Lamp Electronic Low Power Ballast, (4) 4' 28W T8 Energy Saving Lamps, New Lamp Sockets.	7	NO SENSOR PROPOSED	0	0.53	1,277	-	1,277	\$225
4	Inman Library	1	Library Floor	23w Compact Fluorescent S/I	19	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
5	Inman Library	1	Hallway	4' Wrap Fixture w/ (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic Ballast	4	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	4	NO SENSOR PROPOSED	0	0.15	553	-	553	\$97
6	Inman Library	1	Hallway	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
7	Inman Library	1	Break Room	1x4 Surface Mounted Troffer w/ (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	4	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	4	NO SENSOR PROPOSED	0	0.15	365	-	365	\$64
8	Inman Library	1	MPR	1x4 Surface Mounted Troffer w/ (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	18	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	18	NO SENSOR PROPOSED	0	0.68	1,642	-	1,642	\$289
9	Inman Library	1	MPR	23w Compact Fluorescent S/I	24	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
10	Inman Library	1	MPR	4' Wrap Fixture w/ (1) F34 Econo-Watt T12 Lamp & (1) 1-Light Magnetic Ballast	5	Re-lamp & Re-ballast existing fixture. Install a 1-Lamp Electronic Low Power Ballast, (1) 4' 28w T8 Energy Saving Lamp, New Lamp Sockets.	5	NO SENSOR PROPOSED	0	0.13	300	-	300	\$53
11	Inman Library	1	Men's Room	4' Wrap Fixture w/ (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic Ballast	2	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	2	NO SENSOR PROPOSED	0	0.08	182	-	182	\$32
12	Inman Library	1	Men's Room	2' Vanity Fixture with (2) F20 T12 Lamp & (1) 2L Magnetic Ballast	1	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Normal Power Ballast, (2) 2' T8 Energy Saving Lamps, New Lamp Sockets.	1	NO SENSOR PROPOSED	0	0.03	70	-	70	\$12
13	Inman Library	1	JC	60w. Incandescent S/I	1	Remove and Replace Existing Lamp With a New 18w Compact Fluorescent Screw-In	1	NO SENSOR PROPOSED	0	0.04	21	-	21	\$4
14	Inman Library	1	Hallway	4' Wrap Fixture w/ (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic Ballast	4	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	4	NO SENSOR PROPOSED	0	0.15	553	-	553	\$97
15	Inman Library	1	Hallway	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
16	Inman Library	1	Ladies Room	4' Wrap Fixture w/ (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic Ballast	1	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	1	NO SENSOR PROPOSED	0	0.04	91	-	91	\$16
17	Inman Library	1	Ladies Room	23w Compact Fluorescent S/I	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
18	Inman Library	1	Ladies Room	2' Vanity Fixture with (2) F20 T12 Lamp & (1) 2L Magnetic Ballast	1	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Normal Power Ballast, (2) 2' T8 Energy Saving Lamps, New Lamp Sockets.	1	NO SENSOR PROPOSED	0	0.03	70	-	70	\$12
19	Inman Library	1	Office	1x4 Surface Mounted Troffer w/ (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	4	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	4	NO SENSOR PROPOSED	0	0.15	365	-	365	\$64
20	Inman Library	1	Office	4' Wrap Fixture w/ (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic Ballast	1	Remove and Replace Existing Fixture With a New 1x4 Surface Mounted Wrap Fixture Containing a 2-Lamp Electronic Low Power Ballast, Silver Reflector, and (2) 4' 28w T8 Energy Saving Lamps.	1	NO SENSOR PROPOSED	0	0.12	283	-	283	\$50
21	Inman Library	1	Attic	60w. Incandescent S/I	3	Remove and Replace Existing Lamp With a New 18w Compact Fluorescent Screw-In	3	NO SENSOR PROPOSED	0	0.13	63	-	63	\$11
22	Inman Library	1	Outside	Pole mounted cobra-head fixture containing 400w High Pressure Sodium Lamp and (1) HID ballast	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
23	Inman Library	1	Outside	250w Quartz	4	Remove and Replace Existing Fixture With a New Outdoor Flood Fixture Containing a 70w Metal Halide Lamp	4	NO SENSOR PROPOSED	0	0.64	2,330	-	2,330	\$410
24	Inman Library	1	Outside	Wall Pack Fixture w/ (1) 50w High Pressure Sodium Lamp and Magnetic Ballast	2	Remove and Replace Existing Fixture With a New Outdoor Flood Fixture Containing a 50w Metal Halide Lamp	2	NO SENSOR PROPOSED	0	(0.01)	(22)	-	-22	-\$4
					237			134	0	5.35	13,672	-	13,672	\$2,406

**Iselin Library
Woodbridge Township**

Seq. #	Building	Floor #	Location	Existing Fixture Description	Exist. Qty of Fix.	Proposed Fixture Description	Prop. Qty of Fix.	Sensor Description	Sensor Qty's	Total kW Saved	kWh Saved Lighting Only	kWh Saved Sensors Only	Total kWh Saved	Energy Cost Savings
1	Iselin Library	1	Main Office Floor	Pendent Hung Cylindrical fixture containing (4) F40 Biax lamps and (2) 2L Electronic Ballasts	38	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
2	Iselin Library	1	Main Office Floor	Wall Pack Fixture with (1) 70w Metal Halide Lamp and (1) Magnetic HID Ballast	5	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
3	Iselin Library	1	Main Office Floor	8' Strip Fixture with (4) F28 T8 Lamps & (1) 4L Electronic Ballast	26	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
4	Iselin Library	1	Main Office Floor	2X2 Recessed Fixture with (2) F40 Biax T8 Lamps & (1) 2L Electronic Ballast	16	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
5	Iselin Library	1	Main Office Floor	Recessed Can Can w/ (2) 13w CF PL	6	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
6	Iselin Library	1	Main Office Floor	Exit Sign w/ 2w LED	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
7	Iselin Library	1	Entrance Vestibule	Pendent Hung Cylindrical fixture containing (4) F40 Biax lamps and (2) 2L Electronic Ballasts	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
8	Iselin Library	1	Meeting Room B	2X4 recessed troffer with (2) F54 T5 Lamps & (1) 2L Electronic ballast	9	No Work Proposed	0	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	2	-	-	892	892	\$182
9	Iselin Library	1	Meeting Room B	1x4 Troffer with (1) F54 T5 Lamp & (1) 1L Electronic Ballast	6	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
10	Iselin Library	1	Meeting Room B	Exit Sign w/ 2w LED	5	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
11	Iselin Library	1	Kitchen	4' Strip Fixture with (1) F54 T5 Lamp & (1) 1L Electronic Ballast	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
12	Iselin Library	1	Slop Sink	4' Strip Fixture with (1) F54 T5 Lamp & (1) 1L Electronic Ballast	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
13	Iselin Library	1	Maintenance	4' Strip Fixture with (1) F54 T5 Lamp & (1) 1L Electronic Ballast	5	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
14	Iselin Library	1	Maintenance	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
15	Iselin Library	1	Kitchen	2X4 recessed troffer with (2) F54 T5 Lamps & (1) 2L Electronic ballast	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
16	Iselin Library	1	Staff Bathroom	2X2 Recessed Fixture with (2) F40 Biax T8 Lamps & (1) 2L Electronic Ballast	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
17	Iselin Library	1	Office Area	1x4 Troffer with (1) F54 T5 Lamp & (1) 1L Electronic Ballast	6	No Work Proposed	0	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	2	-	-	302	302	\$62
18	Iselin Library	1	Office Area	2X2 Recessed Fixture with (2) F40 Biax T8 Lamps & (1) 2L Electronic Ballast	6	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
19	Iselin Library	1	Office	2X2 Recessed Fixture with (2) F40 Biax T8 Lamps & (1) 2L Electronic Ballast	4	No Work Proposed	0	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	1	-	-	239	239	\$49
20	Iselin Library	1	Attic	60w. Incandescent S/I	1	Remove and Replace Existing Lamp With a New 18w Compact Fluorescent Screw-In	1	NO SENSOR PROPOSED	0	0.04	21	-	21	\$4
21	Iselin Library	1	Attic	4' Strip Fixture with (1) F34 Econo-Watt T12 Lamp & (1) 1L Magnetic Ballast	6	Re-lamp & Re-ballast existing fixture. Install a 1-Lamp Electronic Low Power Ballast, (1) 4' 28w T8 Energy Saving Lamp, New Lamp Sockets.	6	NO SENSOR PROPOSED	0	0.15	75	-	75	\$15
22	Iselin Library	1	Women's	2X2 Recessed Fixture with (2) F40 Biax T8 Lamps & (1) 2L Electronic Ballast	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
23	Iselin Library	1	Men's	2X2 Recessed Fixture with (2) F40 Biax T8 Lamps & (1) 2L Electronic Ballast	4	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
24	Iselin Library	1	Projection Storage	2X2 Recessed Fixture with (2) F40 Biax T8 Lamps & (1) 2L Electronic Ballast	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
25	Iselin Library	1	Outside	Wall Pack Fixture with (1) 150w High Pressure Sodium Lamp and (1) Magnetic HID Ballast	2	Remove and Replace Existing Fixture With a New Outdoor Flood Fixture Containing a 100w Metal Halide Lamp	2	NO SENSOR PROPOSED	0	0.14	495	-	495	\$101
					160			9	5	0.33	591	1,433	2,024	\$413

**Main Library
Woodbridge Township**

Seq. #	Building	Floor #	Location	Existing Fixture Description	Exist. Qty of Fix.	Proposed Fixture Description	Prop. Qty of Fix.	Sensor Description	Sensor Qty's	Total kW Saved	kWh Saved Lighting Only	kWh Saved Sensors Only	Total kWh Saved	Energy Cost Savings
1	Main Library	1	Main Floor	2x2 recessed troffer with (1) 400w Mercury Vapor lamp and ballast combination.	130	Remove and Replace Existing Fixture With a New 2x4 Recessed Troffer Fixture Containing a Silver Reflector, 4-Lamp Electronic High Output Ballast, and (4) 4' T5 F54 HO Lamps.	130	NO SENSOR PROPOSED	0	28.08	67,392	-	67,392	\$9,502
2	Main Library	1	Main Floor	2X4 recessed troffer with (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic ballast	13	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Normal Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	13	NO SENSOR PROPOSED	0	0.42	998	-	998	\$141
3	Main Library	1	Main Floor	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
4	Main Library	1	Main Floor	Exit Sign w/ (2) 20w Incandescent Lamps	1	Remove and Replace existing exit sign with a new LED exit sign.	1	NO SENSOR PROPOSED	0	0.04	333	-	333	\$47
5	Main Library	1	New Break Room	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	12	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	12	NO SENSOR PROPOSED	0	1.42	3,398	-	3,398	\$479
6	Main Library	1	Ladies Room	2X4 recessed troffer with (3) F34 Econo-Watt T12 Lamps & (1) 3-Light EE Magnetic ballast	2	Re-lamp & Re-ballast existing fixture. Install a 3-Lamp Electronic Low Power Ballast, (3) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	2	NO SENSOR PROPOSED	0	0.08	202	-	202	\$28
7	Main Library	1	Ladies Room	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
8	Main Library	1	Men's Room	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
9	Main Library	1	Men's Room	2X4 recessed troffer with (3) F34 Econo-Watt T12 Lamps & (1) 3-Light EE Magnetic ballast	2	Re-lamp & Re-ballast existing fixture. Install a 3-Lamp Electronic Low Power Ballast, (3) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	2	NO SENSOR PROPOSED	0	0.08	202	-	202	\$28
10	Main Library	1	Back Office Area	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	34	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	34	NO SENSOR PROPOSED	0	4.01	9,629	-	9,629	\$1,358
11	Main Library	1	Back Office Area	2X2 recessed troffer with (2) F34 T12 U6 Lamps & (1) 2-Light Electronic ballast	3	Re-build existing troffer fixture w/ (2) F32 T8 U-Lamps, & (1) Low Power 2-Lamp Electronic Ballast	3	NO SENSOR PROPOSED	0	0.05	130	-	130	\$18
12	Main Library	1	Corridor	2X4 recessed troffer with (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic ballast	3	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	3	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	1	0.11	415	161	575	\$81
13	Main Library	1	Office	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	3	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	3	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	1	0.35	850	106	955	\$135
14	Main Library	1	Office	2X4 recessed troffer with (3) F34 Econo-Watt T12 Lamps & (1) 3-Light EE Magnetic ballast	6	Re-lamp & Re-ballast existing fixture. Install a 3-Lamp Electronic Low Power Ballast, (3) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	6	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	1	0.25	605	318	922	\$130
15	Main Library	1	Bathroom	2' Vanity Fixture with (2) F17 T8 Lamps & (1) 2-Light Electronic Ballast	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
16	Main Library	1	Stairwell	2X4 recessed troffer with (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic ballast	7	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	7	NO SENSOR PROPOSED	0	0.27	968	-	968	\$137
17	Main Library	3	Air Handling Room	4' Industrail Hood Fixture with (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	4	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	4	NO SENSOR PROPOSED	0	0.15	76	-	76	\$11
18	Main Library	2	Book Examination Room	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	13	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	13	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	1	1.53	3,682	459	4,140	\$584
19	Main Library	2	Book Examination Room	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
20	Main Library	2	Walkway	2X2 recessed troffer with (2) F34 T12 U6 Lamps & (1) 2-Light Electronic ballast	5	Re-build existing troffer fixture w/ (2) F32 T8 U-Lamps, & (1) Low Power 2-Lamp Electronic Ballast	5	NO SENSOR PROPOSED	0	0.09	216	-	216	\$30
21	Main Library	2	Office Lobby	4' Industrail Hood Fixture with (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	18	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	18	NO SENSOR PROPOSED	0	0.68	1,642	-	1,642	\$231

**Main Library
Woodbridge Township**

Seq. #	Building	Floor #	Location	Existing Fixture Description	Exist. Qty of Fix.	Proposed Fixture Description	Prop. Qty of Fix.	Sensor Description	Sensor Qtyts	Total kW Saved	kWh Saved Lighting Only	kWh Saved Sensors Only	Total kWh Saved	Energy Cost Savings
22	Main Library	2	Office 1	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.05	125	141	266	\$37
23	Main Library	2	Kitchenette	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	NO SENSOR PROPOSED	0	0.24	566	-	566	\$80
24	Main Library	2	Bathroom	2' Vanity Fixture with (2) F20 T12 Lamp & (1) 2L Magnetic Ballast	1	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Normal Power Ballast, (2) 2' T8 Energy Saving Lamps, New Lamp Sockets.	1	NO SENSOR PROPOSED	0	0.03	70	-	70	\$10
25	Main Library	2	Director	2X4 recessed troffer with (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic ballast	10	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	10	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	1	0.38	912	353	1,265	\$178
26	Main Library	2	Director	2X2 recessed troffer with (2) F34 T12 U6 Lamps & (1) 2-Light Electronic ballast	2	Re-build existing troffer fixture w/ (2) F32 T8 U-Lamps, & (1) Low Power 2-Lamp Electronic Ballast	2	NO SENSOR PROPOSED	0	0.04	86	-	86	\$12
27	Main Library	2	Office 2	2X4 recessed troffer with (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic ballast	4	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	4	Wall Switch Occupancy Sensor	1	0.15	365	141	506	\$71
28	Main Library	2	Children's Services	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	3	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	3	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	1	0.35	850	106	955	\$135
29	Main Library	2	Office 3	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	Wall Switch Occupancy Sensor	1	0.24	566	71	637	\$90
30	Main Library	2	Office 4	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	4	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	4	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	1	0.47	1,133	141	1,274	\$180
31	Main Library	2	Office 5	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	4	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	4	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	1	0.47	1,133	141	1,274	\$180
32	Main Library	2	Office 6	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	Wall Switch Occupancy Sensor	1	0.24	566	71	637	\$90
33	Main Library	2	Book Keeper	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	3	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	3	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	1	0.35	850	106	955	\$135
34	Main Library	2	Storage	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	Wall Switch Occupancy Sensor	1	0.24	118	15	133	\$19
35	Main Library	G	Entrance Lobby	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	NO SENSOR PROPOSED	0	0.24	859	-	859	\$121
36	Main Library	G	Entrance Lobby	2X4 recessed troffer with (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic ballast	14	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	14	NO SENSOR PROPOSED	0	0.53	1,936	-	1,936	\$273
37	Main Library	G	Ladies Room	2X4 recessed troffer with (3) F34 Econo-Watt T12 Lamps & (1) 3-Light EE Magnetic ballast	2	Re-lamp & Re-ballast existing fixture. Install a 3-Lamp Electronic Low Power Ballast, (3) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	2	NO SENSOR PROPOSED	0	0.08	202	-	202	\$28
38	Main Library	G	Ladies Room	2X2 recessed troffer with (2) F34 T12 U6 Lamps & (1) 2-Light Electronic ballast	2	Re-build existing troffer fixture w/ (2) F32 T8 U-Lamps, & (1) Low Power 2-Lamp Electronic Ballast	2	NO SENSOR PROPOSED	0	0.04	86	-	86	\$12
39	Main Library	G	Men's Room	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
40	Main Library	G	Men's Room	2X4 recessed troffer with (3) F34 Econo-Watt T12 Lamps & (1) 3-Light EE Magnetic ballast	2	Re-lamp & Re-ballast existing fixture. Install a 3-Lamp Electronic Low Power Ballast, (3) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	2	NO SENSOR PROPOSED	0	0.08	202	-	202	\$28

**Main Library
Woodbridge Township**

Seq. #	Building	Floor #	Location	Existing Fixture Description	Exist. Qty of Fix.	Proposed Fixture Description	Prop. Qty of Fix.	Sensor Description	Sensor Qty	Total kW Saved	kWh Saved Lighting Only	kWh Saved Sensors Only	Total kWh Saved	Energy Cost Savings
41	Main Library	G	Children's Center	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	63	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	63	NO SENSOR PROPOSED	0	7.43	17,842	-	17,842	\$2,516
42	Main Library	G	Office Area	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	9	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	9	NO SENSOR PROPOSED	0	1.06	2,549	-	2,549	\$359
43	Main Library	G	Meeting Room A	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	20	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	20	NO SENSOR PROPOSED	0	2.36	5,664	-	5,664	\$799
44	Main Library	G	Meeting Room A	Exit Sign w/ 2w LED	4	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
45	Main Library	G	Back Hallway	2X4 recessed troffer with (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic ballast	10	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	10	NO SENSOR PROPOSED	0	0.38	1,383	-	1,383	\$195
46	Main Library	G	Back Hallway	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
47	Main Library	G	Back Hallway	Exit Sign w/ (2) 20w Incandescent Lamps	1	Remove and Replace existing exit sign with a new LED exit sign.	1	NO SENSOR PROPOSED	0	0.04	333	-	333	\$47
48	Main Library	G	Back Hallway	4X4 recessed troffer with (4) F34 T12 Lamps & (1) 4-Light Magnetic ballast	1	Re-lamp & Re-ballast existing fixture. Install a 4-Lamp Electronic Low Power Ballast, (4) 4' 28W T8 Energy Saving Lamps, New Lamp Sockets.	1	NO SENSOR PROPOSED	0	0.08	277	-	277	\$39
49	Main Library	G	Computer Room	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	6	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	6	NO SENSOR PROPOSED	0	0.71	1,699	-	1,699	\$240
50	Main Library	G	Back Room	2X4 recessed troffer with (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic ballast	6	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	6	NO SENSOR PROPOSED	0	0.23	547	-	547	\$77
51	Main Library	G	Inter Library Loan	2X4 recessed troffer with (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic ballast	18	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	18	NO SENSOR PROPOSED	0	0.68	1,642	-	1,642	\$231
52	Main Library	G	Men's Room	2X2 recessed troffer with (2) F34 T12 U6 Lamps & (1) 2-Light Electronic ballast	2	Re-build existing troffer fixture w/ (2) F32 T8 U-Lamps, & (1) Low Power 2-Lamp Electronic Ballast	2	NO SENSOR PROPOSED	0	0.04	86	-	86	\$12
53	Main Library	G	Men's Room	2' Vanity Fixture with (2) F20 T12 Lamp & (1) 2L Magnetic Ballast	1	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Normal Power Ballast, (2) 2' T8 Energy Saving Lamps, New Lamp Sockets.	1	NO SENSOR PROPOSED	0	0.03	70	-	70	\$10
54	Main Library	G	Ladies Room	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
55	Main Library	G	Ladies Room	2' Vanity Fixture with (2) F20 T12 Lamp & (1) 2L Magnetic Ballast	1	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Normal Power Ballast, (2) 2' T8 Energy Saving Lamps, New Lamp Sockets.	1	NO SENSOR PROPOSED	0	0.03	70	-	70	\$10
56	Main Library	G	Ladies Room	2X4 recessed troffer with (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic ballast	1	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	1	NO SENSOR PROPOSED	0	0.04	91	-	91	\$13
57	Main Library	G	Break Room	4X4 recessed troffer with (4) F34 T12 Lamps & (1) 4-Light Magnetic ballast	6	Re-lamp & Re-ballast existing fixture. Install a 4-Lamp Electronic Low Power Ballast, (4) 4' 28W T8 Energy Saving Lamps, New Lamp Sockets.	6	NO SENSOR PROPOSED	0	0.46	1,094	-	1,094	\$154
58	Main Library	G	Kitchenette	2X4 recessed troffer with (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic ballast	1	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	1	NO SENSOR PROPOSED	0	0.04	91	-	91	\$13
59	Main Library	G	Kitchenette	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
60	Main Library	G	Friend's Book Room	2X4 recessed troffer with (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic ballast	6	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Normal Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	6	NO SENSOR PROPOSED	0	0.19	461	-	461	\$65
61	Main Library	G	Admin Supply	2X4 recessed troffer with (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic ballast	8	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	8	NO SENSOR PROPOSED	0	0.30	730	-	730	\$103
62	Main Library	G	Janitor's Closet	2X2 recessed troffer with (2) F34 T12 U6 Lamps & (1) 2-Light Electronic ballast	1	Re-build existing troffer fixture w/ (2) F32 T8 U-Lamps, & (1) Low Power 2-Lamp Electronic Ballast	1	NO SENSOR PROPOSED	0	0.02	9	-	9	\$1
63	Main Library	G	Maintenance Supply	2X4 recessed troffer with (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic ballast	2	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	2	Wall Switch Occupancy Sensor	1	0.08	182	71	253	\$36
64	Main Library	G	Back Stairwell	2X4 recessed troffer with (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic ballast	4	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	4	NO SENSOR PROPOSED	0	0.15	553	-	553	\$78
65	Main Library	G	Back Stairwell	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0

**Main Library
Woodbridge Township**

Seq. #	Building	Floor #	Location	Existing Fixture Description	Exist. Qty of Fix.	Proposed Fixture Description	Prop. Qty of Fix.	Sensor Description	Sensor Qty's	Total kW Saved	kWh Saved Lighting Only	kWh Saved Sensors Only	Total kWh Saved	Energy Cost Savings
66	Main Library	G	Librarian's Office	2X4 recessed troffer with (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic ballast	29	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	29	NO SENSOR PROPOSED	0	1.10	2,645	-	2,645	\$373
67	Main Library	G	Technician's Area	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	38	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	38	NO SENSOR PROPOSED	0	4.48	10,762	-	10,762	\$1,517
68	Main Library	G	Office 1	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	3	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	3	Wall Switch Occupancy Sensor	1	0.35	850	106	955	\$135
69	Main Library	G	Office 2	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	3	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	3	Wall Switch Occupancy Sensor	1	0.35	850	106	955	\$135
70	Main Library	G	Hallway	2X4 recessed troffer with (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic ballast	5	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	5	NO SENSOR PROPOSED	0	0.19	692	-	692	\$98
71	Main Library	G	Maintenance Office	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	3	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	3	NO SENSOR PROPOSED	0	0.35	850	-	850	\$120
72	Main Library	G	Garage	4' Wrap Fixture w/ (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic Ballast	12	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	12	NO SENSOR PROPOSED	0	0.46	1,660	-	1,660	\$234
73	Main Library	G	Maintenance Supervisor	4' Wrap Fixture w/ (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic Ballast	2	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	2	NO SENSOR PROPOSED	0	0.08	182	-	182	\$26
74	Main Library	G	Mail Room	4' Wrap Fixture w/ (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic Ballast	2	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	2	NO SENSOR PROPOSED	0	0.08	182	-	182	\$26
75	Main Library	G	Foyer	4' Wrap Fixture w/ (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic Ballast	4	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	4	NO SENSOR PROPOSED	0	0.15	553	-	553	\$78
76	Main Library	G	Boiler Room	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	1	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	1	NO SENSOR PROPOSED	0	0.12	59	-	59	\$8
77	Main Library	G	Boiler Room	4' Industriail Hood Fixture with (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	13	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	13	NO SENSOR PROPOSED	0	0.49	247	-	247	\$35
78	Main Library	G	Bathroom	2X2 recessed troffer with (2) F34 T12 U6 Lamps & (1) 2-Light Electronic ballast	1	Re-build existing troffer fixture w/ (2) F32 T8 U-Lamps, & (1) Low Power 2-Lamp Electronic Ballast	1	NO SENSOR PROPOSED	0	0.02	43	-	43	\$6
79	Main Library	G	Bathroom	2' Vanity Fxiture with (2) F20 T12 Lamp & (1) 2L Magnetic Ballast	1	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Normal Power Ballast, (2) 2' T8 Energy Saving Lamps, New Lamp Sockets.	1	NO SENSOR PROPOSED	0	0.03	70	-	70	\$10
80	Main Library	G	Bathroom	60w. Incandescent S/I	2	Remove and Replace Existing Lamp With a New 18w Compact Fluorescent Screw-In	2	NO SENSOR PROPOSED	0	0.08	202	-	202	\$28
81	Main Library		Outside	Recessed Can w/ 100W Merc. Vapor	17	Relamp existing fixture with a new 50w Self Ballasted Metal Halide Integrated Lamp	17	NO SENSOR PROPOSED	0	1.19	4,332	-	4,332	\$611
82	Main Library		Outside	Wall Pack Fixture w/ (1) 100w High Pressure Sodium Lamp and Magnetic Ballast	3	Remove and Replace Existing Fixture With a New Outdoor Flood Fixture Containing a 50w Metal Halide Lamp	3	NO SENSOR PROPOSED	0	0.17	622	-	622	\$88
83	Main Library		Outside	Parking Lot Fixture Mounted on a Pole w/ (1) 250w Mercury Vapor Lamp and (1) Magnetic HID Ballast	26	New MH Parking Structure Type Fixture w/ (1) 175w MH lamp & (1) Electronic HID Ballast. Each fixture to have a Photo Cell Sensor for Daylight on/off Control.	26	NO SENSOR PROPOSED	0	2.08	7,571	-	7,571	\$1,068
84	Main Library		Storage	8' Strip Fxiture with (2) F96 Econo-Watt T12 Lamps & (1) 2L EE Magnetic Ballast	4	Rebuild an 8' Fixture. Install a 4-Lamp Electronic Low Power Ballast, Ballast Channel, Socket Bracket, (4) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	4	NO SENSOR PROPOSED	0	0.22	108	-	108	\$15
85	Main Library		Penthouse	4' Industriail Hood Fixture with (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	6	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Normal Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	6	NO SENSOR PROPOSED	0	0.19	96	-	96	\$14
					676			661	17	68.38	169,308	2,610	171,917	\$24,240

**Municipal Building
Woodbridge Township**

Seq. #	Building	Floor #	Location	Existing Fixture Description	Exist. Qty of Fix.	Proposed Fixture Description	Prop. Qty of Fix.	Sensor Description	Sensor Qty	Total kW Saved	kWh Saved Lighting Only	kWh Saved Sensors Only	Total kWh Saved	Energy Cost Savings
1	Municipal Building		Site Lighting	Parking Lot Fixture Mounted on a Pole w/ (1) 400w Pulse Start Metal Halide Lamp and (1) Magnetic HID Ballast	9	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
2	Municipal Building		Site Lighting	Recessed Can Can w/ (2) 13w CF PL	11	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
3	Municipal Building		Site Lighting	18w Par 36 Compact Fluorescent S/I	16	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
4	Municipal Building		Site Lighting	18w Par 36 Compact Fluorescent S/I	8	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
5	Municipal Building	1	Reception	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
6	Municipal Building	1	Reception	Recessed Can Can w/ (2) 13w CF PL	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
7	Municipal Building	1	Lobby	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	8	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	8	NO SENSOR PROPOSED	0	0.10	379	-	379	\$47
8	Municipal Building	1	Lobby	Recessed Can Can w/ (2) 13w CF PL	16	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
9	Municipal Building	1	Lobby	60w. Incandescent S/I	2	Remove and Replace Existing Lamp With a New 18w Compact Fluorescent Screw-In	2	NO SENSOR PROPOSED	0	0.08	306	-	306	\$38
10	Municipal Building	1	Lobby	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
11	Municipal Building	1	Rm 150	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	16	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	16	NO SENSOR PROPOSED	0	0.27	653	-	653	\$81
12	Municipal Building	1	File	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
13	Municipal Building	1	Vault	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
14	Municipal Building	1	Rm 153	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
15	Municipal Building	1	Rm 155	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
16	Municipal Building	1	Conference	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
17	Municipal Building	1	Women	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
18	Municipal Building	1	Men	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
19	Municipal Building	1	Council Chambers	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	14	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	14	NO SENSOR PROPOSED	0	0.24	571	-	571	\$71
20	Municipal Building	1	Council Chambers	Recessed Can Can w/ (2) 13w CF PL	19	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
21	Municipal Building	1	Council Chambers	60w. Incandescent S/I	6	Remove and Replace Existing Lamp With a New 18w Compact Fluorescent Screw-In	6	NO SENSOR PROPOSED	0	0.25	605	-	605	\$75
22	Municipal Building	1	Council Chambers	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
23	Municipal Building	1	Tax Assessor	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	7	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	7	NO SENSOR PROPOSED	0	0.12	286	-	286	\$35
24	Municipal Building	1	Tax Assessor	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	5	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
25	Municipal Building	1	Tax Assessor	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	19	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	19	NO SENSOR PROPOSED	0	0.32	775	-	775	\$96
26	Municipal Building	1	Storage	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	11	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	11	NO SENSOR PROPOSED	0	0.19	94	-	94	\$12

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Seq. #	Building	Floor #	Location	Existing Fixture Description	Exist. Qty of Fix.	Proposed Fixture Description	Prop. Qty of Fix.	Sensor Description	Sensor Qtyts	Total kW Saved	kWh Saved Lighting Only	kWh Saved Sensors Only	Total kWh Saved	Energy Cost Savings
27	Municipal Building	1	Vault	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
28	Municipal Building	1	Taax Collector	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
29	Municipal Building	1	Rm 114	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
30	Municipal Building	1	Rm 113	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
31	Municipal Building	1	Rm 113	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
32	Municipal Building	1	Corridor	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	8	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	8	NO SENSOR PROPOSED	0	0.10	379	-	379	\$47
33	Municipal Building	1	Corridor	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	124	-	124	\$15
34	Municipal Building	1	Corridor	Exit Sign w/ 2w LED	4	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
35	Municipal Building	1	Corridor	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	5	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	5	NO SENSOR PROPOSED	0	0.07	237	-	237	\$29
36	Municipal Building	1	Corridor	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
37	Municipal Building	1	Mens	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	4	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
38	Municipal Building	1	Mens	4' Wrap Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	47	-	47	\$6
39	Municipal Building	1	Mens	2' Wrap Fixture w/ (2) F17 T8 Lamps & (1) 2L Electronic Ballast	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
40	Municipal Building	1	Womens	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	4	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
41	Municipal Building	1	Womens	2' Wrap Fixture w/ (2) F17 T8 Lamps & (1) 2L Electronic Ballast	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
42	Municipal Building	1	Womens	4' Wrap Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	47	-	47	\$6
43	Municipal Building	1	Municipal Court	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	25	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	25	NO SENSOR PROPOSED	0	0.43	1,020	-	1,020	\$126
44	Municipal Building	1	Court Room	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	8	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	8	NO SENSOR PROPOSED	0	0.14	326	-	326	\$40
45	Municipal Building	1	Court Room	Recessed Can Can w/ (2) 13w CF PL	20	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
46	Municipal Building	1	Court Room	60w. Incandescent S/I	4	Remove and Replace Existing Lamp With a New 18w Compact Fluorescent Screw-In	4	NO SENSOR PROPOSED	0	0.17	403	-	403	\$50
47	Municipal Building	1	Court Room	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
48	Municipal Building	1	Court Room	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	62	-	62	\$8
49	Municipal Building	1	Rm	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
50	Municipal Building	1	Prosecutors Office	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	NO SENSOR PROPOSED	0	0.05	122	-	122	\$15
51	Municipal Building	1	Prosecutors Office	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	6	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
52	Municipal Building	1	Payments	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	4	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
53	Municipal Building	1	Payments	Exit Sign w/ 2w LED	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0

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54	Municipal Building	1	Payments	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	62	-	62	\$8
55	Municipal Building	1	Courts Dept.	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	30	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	30	NO SENSOR PROPOSED	0	0.51	1,224	-	1,224	\$152
56	Municipal Building	1	Court Admin. Rm 147	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
57	Municipal Building	1	Corridor	2X2 recessed troffer with (2) F17 T8 Lamps & (1) 2-Light Electronic ballast	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
58	Municipal Building	1	Court Director Rm 128	2X2 recessed troffer with (3) F17 T8 Lamps & (1) 3-Light Electronic ballast	2	No Work Proposed	0	Wall Switch Occupancy Sensor	1	-	-	84	84	\$10
59	Municipal Building	1	Conference	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
60	Municipal Building	1	Conference	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	NO SENSOR PROPOSED	0	0.07	163	-	163	\$20
61	Municipal Building	1	Conference	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
62	Municipal Building	1	Conference	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	12	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	12	NO SENSOR PROPOSED	0	0.20	490	-	490	\$61
63	Municipal Building	1	Violations	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	10	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	10	NO SENSOR PROPOSED	0	0.17	408	-	408	\$51
64	Municipal Building	1	Violations	Exit Sign w/ 2w LED	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
65	Municipal Building	1	ER.	8' Wrap Fixture w/ (2) F96 Energy Saving T8 Lamps & (1) 2-Light Electronic Ballast	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
66	Municipal Building	1	ER.	8' Wrap Fixture w/ (2) F96 Energy Saving T8 Lamps & (1) 2-Light Electronic Ballast	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
67	Municipal Building	1	Storage	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	NO SENSOR PROPOSED	0	0.07	34	-	34	\$4
68	Municipal Building	1	Storage	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	6	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	6	NO SENSOR PROPOSED	0	0.08	39	-	39	\$5
69	Municipal Building	1	Janitors Closet	60w. Incandescent S/I	1	Remove and Replace Existing Lamp With a New 18w Compact Fluorescent Screw-In	1	NO SENSOR PROPOSED	0	0.04	21	-	21	\$3
70	Municipal Building	3	Corridor	Recessed Can Can w/ (2) 13w CF PL	8	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
71	Municipal Building	3	Corridor	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	8	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	8	NO SENSOR PROPOSED	0	0.10	379	-	379	\$47
72	Municipal Building	3	Rm	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	NO SENSOR PROPOSED	0	0.07	163	-	163	\$20
73	Municipal Building	3	Rm	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
74	Municipal Building	3	Rm	8' Wrap Fixture w/ (2) F96 Energy Saving T8 Lamps & (1) 2-Light Electronic Ballast	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
75	Municipal Building	3	Rec. & Res.	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	8	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	8	NO SENSOR PROPOSED	0	0.14	326	-	326	\$40
76	Municipal Building	3	Rm 321	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	Wall Switch Occupancy Sensor	1	0.05	122	181	304	\$38
77	Municipal Building	3	Corridor	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
78	Municipal Building	3	Rm 340	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	92	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	92	NO SENSOR PROPOSED	0	1.56	3,754	-	3,754	\$465
79	Municipal Building	3	Rm 340	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	7	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0

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80	Municipal Building	3	Rm 343	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	Wall Switch Occupancy Sensor	1	0.07	163	242	405	\$50
81	Municipal Building	3	Rm 344	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
82	Municipal Building	3	Rm 384	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
83	Municipal Building	3	Rm 385	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
84	Municipal Building	3	Rm 386	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
85	Municipal Building	3	Rm 387	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
86	Municipal Building	3	Rm 388	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	Wall Switch Occupancy Sensor	1	0.07	163	242	405	\$50
87	Municipal Building	3	Conference	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	NO SENSOR PROPOSED	0	0.07	163	-	163	\$20
88	Municipal Building	3	Copy Rm	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	Wall Switch Occupancy Sensor	1	0.07	163	242	405	\$50
89	Municipal Building	3	Conf. 2	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
90	Municipal Building	3	Conf. 1	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	NO SENSOR PROPOSED	0	0.07	163	-	163	\$20
91	Municipal Building	3	File	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
92	Municipal Building	3	File	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
93	Municipal Building	3	Purchasing Dept.	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	32	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	32	Wall Switch Occupancy Sensor	1	0.54	1,306	1,935	3,241	\$402
94	Municipal Building	3	Purchasing Dept.	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	3	No Work Proposed	0	Wall Switch Occupancy Sensor	1	-	-	154	154	\$19
95	Municipal Building	3	Personal Director	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
96	Municipal Building	3	Ins. Comm.	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
97	Municipal Building	3	Finance	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
98	Municipal Building	3	Payroll 1	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
99	Municipal Building	3	Payroll 2	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
100	Municipal Building	3	CFO	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	NO SENSOR PROPOSED	0	0.07	163	-	163	\$20
101	Municipal Building	3	Storage	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	13	-	13	\$2

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102	Municipal Building	3	Storage	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	5	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	5	NO SENSOR PROPOSED	0	0.07	33	-	33	\$4
103	Municipal Building	3	Storage	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
104	Municipal Building	3	Corridor	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	NO SENSOR PROPOSED	0	0.04	142	-	142	\$18
105	Municipal Building	3	Corridor	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
106	Municipal Building	3	Rm 376	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	12	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	12	NO SENSOR PROPOSED	0	0.20	490	-	490	\$61
107	Municipal Building	3	Mayors Office	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	9	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	9	NO SENSOR PROPOSED	0	0.15	367	-	367	\$46
108	Municipal Building	3	Mayors Office	Recessed Can Can w/ (2) 13w CF PL	4	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
109	Municipal Building	3	BR.	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
110	Municipal Building	3	Rm 374	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
111	Municipal Building	3	Rm 373	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
112	Municipal Building	3	Conference	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	6	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	6	NO SENSOR PROPOSED	0	0.10	245	-	245	\$30
113	Municipal Building	3	Conference	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
114	Municipal Building	3	Office	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	NO SENSOR PROPOSED	0	0.04	94	-	94	\$12
115	Municipal Building	3	Chief of Staff Rm 394	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	NO SENSOR PROPOSED	0	0.07	163	-	163	\$20
116	Municipal Building	3	Bus. Administrator	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	Wall Switch Occupancy Sensor	1	0.07	163	242	405	\$50
117	Municipal Building	3	Bus. Administrator	Recessed Can Can w/ (2) 13w CF PL	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
118	Municipal Building	3	Mayors Office	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	Wall Switch Occupancy Sensor	1	0.05	122	181	304	\$38
119	Municipal Building	3	Mayors Office	Recessed Can Can w/ (2) 13w CF PL	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
120	Municipal Building	3	Grants Officer	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
121	Municipal Building	3	Grants Officer	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
122	Municipal Building	3	Corridor	50W Metal Halide Recessed Can Fixture	4	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
123	Municipal Building	3	Corridor	Wall Sconce w/ (4) PL 13 Compact Fluorescent Lamps	8	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
124	Municipal Building	3	Storage	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	NO SENSOR PROPOSED	0	0.04	20	-	20	\$2
125	Municipal Building	3	Storage	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.02	9	-	9	\$1
126	Municipal Building	3	Janitor	4' Wrap Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	7	-	7	\$1

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127	Municipal Building	3	Storage	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	7	-	7	\$1
128	Municipal Building	G	Entrance Lobby	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	228	-	228	\$28
129	Municipal Building	G	Entrance Corridor	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	8	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	8	NO SENSOR PROPOSED	0	0.10	911	-	911	\$113
130	Municipal Building	G	Entrance Corridor	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
131	Municipal Building	G	Entrance Corridor	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
132	Municipal Building	G	Elevator Room	4' Wrap Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	13	-	13	\$2
133	Municipal Building	G	Men's Room	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	1	No Work Proposed	0	Wall Switch Occupancy Sensor	1	-	-	187	187	\$23
134	Municipal Building	G	Ladies Room	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	1	No Work Proposed	0	Wall Switch Occupancy Sensor	1	-	-	187	187	\$23
135	Municipal Building	G	Maintenance Hallway	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	NO SENSOR PROPOSED	0	0.07	596	-	596	\$74
136	Municipal Building	G	Management	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.05	125	141	266	\$33
137	Municipal Building	G	Mail Room	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.05	125	141	266	\$33
138	Municipal Building	G	Maintenance Storage	4' Wrap Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	NO SENSOR PROPOSED	0	0.05	26	-	26	\$3
139	Municipal Building	G	Boiler Room	4' Wrap Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	15	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	15	NO SENSOR PROPOSED	0	0.20	468	-	468	\$58
140	Municipal Building	G	Boiler Room	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
141	Municipal Building	G	Emergency Stairwell	4' Wrap Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	10	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	10	NO SENSOR PROPOSED	0	0.13	1,139	-	1,139	\$141
142	Municipal Building	G	Emergency Stairwell	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
143	Municipal Building	G	Electrical Panel Room	4' Wrap Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	6	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	6	NO SENSOR PROPOSED	0	0.08	39	-	39	\$5
144	Municipal Building	G(Police)	Main Hallway	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	14	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	14	NO SENSOR PROPOSED	0	0.18	1,594	-	1,594	\$198
145	Municipal Building	G	Exit Vestibule	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	114	-	114	\$14
146	Municipal Building	G	Cell Hallway	4' Vapor & Moisture Resistant Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	NO SENSOR PROPOSED	0	0.04	342	-	342	\$42
147	Municipal Building	G	Cells	4' Vapor & Moisture Resistant Fixture w/ (4) F32 T8 Lamps & (1) 4-Light Electronic Ballast	8	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	8	NO SENSOR PROPOSED	0	0.21	1,822	-	1,822	\$226
148	Municipal Building	G	Patrol Storage	4' Vapor & Moisture Resistant Fixture w/ (4) F32 T8 Lamps & (1) 4-Light Electronic Ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.03	13	-	13	\$2
149	Municipal Building	G	Storage/Supplies	4' Vapor & Moisture Resistant Fixture w/ (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic Ballast	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
150	Municipal Building	G	Women's Locker Room	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	5	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	5	NO SENSOR PROPOSED	0	0.07	569	-	569	\$71

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151	Municipal Building	G	Women's Locker Room	Recessed Can Can w/ (2) 13w CF PL	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
152	Municipal Building	G	Women's Locker Room	4' Vanity Fixture with (2) F32 T8 Lamps & (1) 2L Electronic Ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	228	-	228	\$28
153	Municipal Building	G	Exercise Room	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	6	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	6	Wall Switch Occupancy Sensor	1	0.08	187	242	429	\$53
154	Municipal Building	G	Operations Planning	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	9	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	9	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	2	0.23	2,050	2,318	4,368	\$542
155	Municipal Building	G	Records Storage	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	Wall Switch Occupancy Sensor	1	0.05	122	181	304	\$38
156	Municipal Building	G	Men's Locker Room	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	14	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	14	NO SENSOR PROPOSED	0	0.18	1,594	-	1,594	\$198
157	Municipal Building	G	Men's Locker Room	Recessed Can Can w/ (2) 13w CF PL	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
158	Municipal Building	G	Men's Locker Room	4' Vanity Fixture with (2) F32 T8 Lamps & (1) 2L Electronic Ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	NO SENSOR PROPOSED	0	0.04	342	-	342	\$42
159	Municipal Building	G	Janitor's Closet	Recessed Can Can w/ (2) 13w CF PL	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
160	Municipal Building	G	Main Telecom Room	4' Wrap Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	NO SENSOR PROPOSED	0	0.04	342	-	342	\$42
161	Municipal Building	G	Electrical Room	4' Wrap Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	NO SENSOR PROPOSED	0	0.04	20	-	20	\$2
162	Municipal Building	G	Communications Center	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	15	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	15	NO SENSOR PROPOSED	0	0.26	2,234	-	2,234	\$277
163	Municipal Building	G	Communications Center	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	4	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
164	Municipal Building	G	Communications Center	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
165	Municipal Building	G	Police Communications Room	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	NO SENSOR PROPOSED	0	0.07	596	-	596	\$74
166	Municipal Building	G	Interview Room	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
167	Municipal Building	G	Muster Room	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	1	0.10	911	1,030	1,941	\$241
168	Municipal Building	G	Special Investigation	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	14	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	14	NO SENSOR PROPOSED	0	0.24	2,085	-	2,085	\$259
169	Municipal Building	G	Office	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
170	Municipal Building	G	Coat Room	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	7	-	7	\$1
171	Municipal Building	G	Narcotics Storage	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	31	-	31	\$4

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172	Municipal Building	G	Supervisor	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	1	0.03	82	121	203	\$25
173	Municipal Building	G	Stairwell Office	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	1	0.10	250	282	532	\$66
174	Municipal Building	G	Emergency Management	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	9	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	9	NO SENSOR PROPOSED	0	0.23	2,050	-	2,050	\$254
175	Municipal Building	G	Supplies	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	Wall Switch Occupancy Sensor	1	0.08	187	212	399	\$49
176	Municipal Building	G	Kitchen	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	298	-	298	\$37
177	Municipal Building	G	Ladies Room	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
178	Municipal Building	G	Men's Room	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
179	Municipal Building	G	Corridor Small Locker Room	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	114	-	114	\$14
180	Municipal Building	G	Training Room	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	6	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	6	NO SENSOR PROPOSED	0	0.16	374	-	374	\$46
181	Municipal Building	G	Computer Repair	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.03	62	-	62	\$8
182	Municipal Building	G	Computer Repair	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	1	No Work Proposed	0	Wall Switch Occupancy Sensor	1	-	-	51	51	\$6
183	Municipal Building	G	Records Room	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	14	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	14	NO SENSOR PROPOSED	0	0.36	874	-	874	\$108
184	Municipal Building	G	Office 1	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.05	125	141	266	\$33
185	Municipal Building	G	Office 2	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Dual Technology Occupancy Sensor	1	0.05	125	141	266	\$33
186	Municipal Building	G	Shift Commander	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	NO SENSOR PROPOSED	0	0.07	596	-	596	\$74
187	Municipal Building	G	Report Writing Room	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	NO SENSOR PROPOSED	0	0.05	447	-	447	\$55
188	Municipal Building	G	Operations Planning	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	21	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	21	NO SENSOR PROPOSED	0	0.36	3,127	-	3,127	\$388
189	Municipal Building	G	Operations Planning	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
190	Municipal Building	G	Storage 1	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	13	-	13	\$2
191	Municipal Building	G	Storage 2	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	17	-	17	\$2
192	Municipal Building	G	Patrol Admin Lieutenant	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.05	125	141	266	\$33

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Seq. #	Building	Floor #	Location	Existing Fixture Description	Exist. Qty of Fix.	Proposed Fixture Description	Prop. Qty of Fix.	Sensor Description	Sensor Qty	Total kW Saved	kWh Saved Lighting Only	kWh Saved Sensors Only	Total kWh Saved	Energy Cost Savings
193	Municipal Building	G	Patrol Division Commander	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	1	0.05	125	141	266	\$33
194	Municipal Building	G	Patrol Admin.	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.05	125	141	266	\$33
195	Municipal Building	G	Office 1	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.03	62	-	62	\$8
196	Municipal Building	G	Office 2	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.05	125	141	266	\$33
197	Municipal Building	G	Operations Division Commander	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.05	456	515	971	\$120
198	Municipal Building	G	Accreditation	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.05	125	141	266	\$33
199	Municipal Building	G	Elevator Machinery	4' Wrap Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	13	-	13	\$2
200	Municipal Building	G	Storage	4' Wrap Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	13	-	13	\$2
201	Municipal Building	G	Holding Room	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	NO SENSOR PROPOSED	0	0.04	342	-	342	\$42
202	Municipal Building	G	Holding Room	Recessed Can Can w/ (2) 13w CF PL	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
203	Municipal Building	G	Breatalizer	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	298	-	298	\$37
204	Municipal Building	G	Processing	2X4 recessed troffer with (4) F32 T8 Lamps & (1) 4-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.05	456	-	456	\$56
205	Municipal Building	G	Women's Cell Block	4' Vapor & Moisture Resistant Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	114	-	114	\$14
206	Municipal Building	G	Women's Cell Block	4' Vapor & Moisture Resistant Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	114	-	114	\$14
207	Municipal Building	G	Women's Cell Block	4' Vapor & Moisture Resistant Fixture w/ (4) F32 T8 Lamps & (1) 4-Light Electronic Ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	NO SENSOR PROPOSED	0	0.10	911	-	911	\$113
208	Municipal Building	G	Storage	4' Vapor & Moisture Resistant Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	7	-	7	\$1
209	Municipal Building	G	Sally Port	1x1 under canopy - w/ (1) 100w High Pressure Sodium Fixture and (1) HID Ballast	7	Remove and Replace Existing Fixture with a New 4' Vapor Proof Fixture with a Reflector Containing (2) 4' F32 T8 Energy Saving Lamps and a 2-Lamp Normal Power Electronic Ballast. Fixture to be hung even with bottom of cement web.	7	NO SENSOR PROPOSED	0	0.47	4,108	-	4,108	\$509
210	Municipal Building	G	Bike Storage	4' Wrap Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	13	-	13	\$2
211	Municipal Building	G	Parking Deck	1x1 under canopy - w/ (1) 100w High Pressure Sodium Fixture and (1) HID Ballast	70	Remove and Replace Existing Fixture with a New 4' Vapor Proof Fixture with a Reflector Containing (2) 4' F32 T8 Energy Saving Lamps and a 2-Lamp Normal Power Electronic Ballast. Fixture to be hung even with bottom of cement web.	70	NO SENSOR PROPOSED	0	4.69	41,084	-	41,084	\$5,094
212	Municipal Building	G	Parking Deck	Parking Lot Fixture Mounted on a Pole w/ (1) 400w High Pressure Sodium Lamp and (1) Magnetic HID Ballast	7	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0

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213	Municipal Building	G	Stairwell 1	4' Wrap Fixture with (1) F32 T12 Lamp & (1) 1L Magnetic Ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	NO SENSOR PROPOSED	0	0.02	158	-	158	\$20
214	Municipal Building	G	Stairwell 2	4' Wrap Fixture with (1) F32 T12 Lamp & (1) 1L Magnetic Ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	NO SENSOR PROPOSED	0	0.02	158	-	158	\$20
215	Municipal Building	2	Hallway	2X4 recessed troffer with (2) F32 T8 Lamps & (1) 2-Light Electronic ballast	11	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	11	NO SENSOR PROPOSED	0	0.14	1,253	-	1,253	\$155
216	Municipal Building	2	Hallway	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
217	Municipal Building	2	Hallway	Recessed Can Can w/ (2) 13w CF PL	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
218	Municipal Building	2	Hallway	Wall Sconce w/ (2) PL 13 Compact Fluorescent Lamps	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
219	Municipal Building	2	TV-35 Hall	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	NO SENSOR PROPOSED	0	0.07	163	-	163	\$20
220	Municipal Building	2	TV-35 Hall	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
221	Municipal Building	2	Control Room	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
222	Municipal Building	2	Edit Room B	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
223	Municipal Building	2	Edit Room A	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
224	Municipal Building	2	Studio	4' Wrap Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	NO SENSOR PROPOSED	0	0.05	125	-	125	\$15
225	Municipal Building	2	Storage	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	17	-	17	\$2
226	Municipal Building	2	Ch 36	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
227	Municipal Building	2	Station Manager	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
228	Municipal Building	2	Evidence	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	15	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	15	NO SENSOR PROPOSED	0	0.26	2,234	-	2,234	\$277
229	Municipal Building	2	Narcotics Evidence	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	NO SENSOR PROPOSED	0	0.05	447	-	447	\$55
230	Municipal Building	2	Criminal Investigation	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	50	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	50	NO SENSOR PROPOSED	0	0.85	7,446	-	7,446	\$923
231	Municipal Building	2	Interview 1	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.02	41	-	41	\$5
232	Municipal Building	2	Interview 2	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
233	Municipal Building	2	Interview 3	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
234	Municipal Building	2	Storage	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
235	Municipal Building	2	Chief's Conference Room	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	Wall Switch Occupancy Sensor	1	0.07	163	242	405	\$50
236	Municipal Building	2	CID Division	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	298	442	739	\$92

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237	Municipal Building	2	Assignment Sargent	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	NO SENSOR PROPOSED	0	0.07	596	-	596	\$74
238	Municipal Building	2	Transcriber	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
239	Municipal Building	2	Office	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
240	Municipal Building	2	Office	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	NO SENSOR PROPOSED	0	0.07	163	-	163	\$20
241	Municipal Building	2	Lieutenant	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
242	Municipal Building	2	Detective	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
243	Municipal Building	2	Interview Room	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
244	Municipal Building	2	Juvenile	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	16	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	16	NO SENSOR PROPOSED	0	0.27	653	-	653	\$81
245	Municipal Building	2	Sargent	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	Wall Switch Occupancy Sensor	1	0.05	122	181	304	\$38
246	Municipal Building	2	Counseling	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	Wall Switch Occupancy Sensor	1	0.05	122	181	304	\$38
247	Municipal Building	2	Interview	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	Wall Switch Occupancy Sensor	1	0.05	122	181	304	\$38
248	Municipal Building	2	Interview	Exit Sign w/ 2w LED	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
249	Municipal Building	2	Interview Room	4' Wrap Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	31	-	31	\$4
250	Municipal Building	2	Photo Lab	40w. Incandescent S/I	8	Remove and Replace Existing Lamp With a New 13w Compact Fluorescent Two Piece Screw-In.	8	NO SENSOR PROPOSED	0	0.22	518	-	518	\$64
251	Municipal Building	2	Photo Lab	4' Vapor & Moisture Resistant Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	31	-	31	\$4
252	Municipal Building	2	Photo Lab	4' Vapor & Moisture Resistant Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	31	-	31	\$4
253	Municipal Building	2	Ladies Room	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
254	Municipal Building	2	Ladies Room	4' Vanity Fixture with (2) F32 T8 Lamps & (1) 2L Electronic Ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	NO SENSOR PROPOSED	0	0.04	342	-	342	\$42
255	Municipal Building	2	Janitor's Closet	4' Wrap Fixture w/ (2) F32 T8 Lamps & (1) 2-Light Electronic Ballast	1	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	1	NO SENSOR PROPOSED	0	0.01	7	-	7	\$1
256	Municipal Building	2	IS Training	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	9	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	9	NO SENSOR PROPOSED	0	0.15	367	-	367	\$46
257	Municipal Building	2	Internal Affairs	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	4	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
258	Municipal Building	2	Internal Affairs	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	5	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	5	NO SENSOR PROPOSED	0	0.09	204	-	204	\$25
259	Municipal Building	2	Internal Affairs	Exit Sign w/ 2w LED	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0

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260	Municipal Building	2	Office	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
261	Municipal Building	2	Conference Room	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	NO SENSOR PROPOSED	0	0.03	82	-	82	\$10
262	Municipal Building	2	Conference Room 2	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	NO SENSOR PROPOSED	0	0.07	163	-	163	\$20
263	Municipal Building	2	D.V.	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	5	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	5	NO SENSOR PROPOSED	0	0.09	204	-	204	\$25
264	Municipal Building	2	Cafeteria	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	5	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	5	NO SENSOR PROPOSED	0	0.09	745	-	745	\$92
265	Municipal Building	2	Cafeteria	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
266	Municipal Building	2	Police Administration	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	7	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	7	NO SENSOR PROPOSED	0	0.12	286	-	286	\$35
267	Municipal Building	2	Deputy Chief	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	4	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	4	Wall Switch Occupancy Sensor	1	0.07	163	242	405	\$50
268	Municipal Building	2	Administration	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	Wall Switch Occupancy Sensor	1	0.05	122	181	304	\$38
269	Municipal Building	2	Chief	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	5	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	5	Wall Switch Occupancy Sensor	1	0.09	204	302	506	\$63
270	Municipal Building	2	Information Systems	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	15	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	15	NO SENSOR PROPOSED	0	0.26	612	-	612	\$76
271	Municipal Building	2	Help Desk	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
272	Municipal Building	2	Programmer	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
273	Municipal Building	2	Office	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
274	Municipal Building	2	PC Coordinator	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	82	121	203	\$25
275	Municipal Building	2	Director	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	3	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	3	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	1	0.05	122	181	304	\$38
276	Municipal Building	2	Work Room	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	1	0.03	82	121	203	\$25
277	Municipal Building	2	1S Storage	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	2	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	2	Wall Switch Occupancy Sensor	1	0.03	17	25	42	\$5
278	Municipal Building	2	Computer Room	2X4 recessed troffer with (3) F32 T8 Lamps & (1) 2-Light Electronic ballast	23	Re-lamp existing fixture with an Energy Saving 28w Lamp to standardize lamp types for maintenance. Existing Ballast stays in place	23	NO SENSOR PROPOSED	0	0.39	3,425	-	3,425	\$425
279	Municipal Building	G	Outside	100W Metal Halide Recessed Can Fixture	4	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
					1,408			1,128	63	23.34	119,631	15,043	134,674	\$16,700

**Pump Station
Woodbridge Township**

Seq. #	Building	Floor #	Location	Existing Fixture Description	Exist. Qty of Fix.	Proposed Fixture Description	Prop. Qty of Fix.	Sensor Description	Sensor Qty's	Total kW Saved	kWh Saved Lighting Only	kWh Saved Sensors Only	Total kWh Saved	Energy Cost Savings
1	Woodbridge Pump Station	1	Locker Room	4' Vanity Fixture with (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	8	Remove and Replace Existing Fixture With a New 4' Strip Fixture Containing a 2-Lamp Electronic Low Power Ballast and (2) 4' F28 T8 Energy Saving Lamps.	8	NO SENSOR PROPOSED	0	0.30	2,663	-	2,663	\$399
2	Woodbridge Pump Station	1	Locker Room	75w. Incandescent S/I	4	Remove and Replace Existing Lamp With a New 18w Compact Fluorescent Screw-In	4	NO SENSOR PROPOSED	0	0.23	1,997	-	1,997	\$300
3	Woodbridge Pump Station	1	Lunch Room	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	6	No Work Proposed	0	Low Voltage (w/ PP-20) PIR Ceiling Sensor (8-15' Mtg. Height) 360 Deg. Coverage 12' Circular Viewing Pattern @ 9' High	1	-	-	1,122	1,122	\$168
4	Woodbridge Pump Station	1	Ladies Room	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
5	Woodbridge Pump Station	1	Hallway	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	4	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
6	Woodbridge Pump Station	1	Superintendent	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	4	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	4	Wall Switch Occupancy Sensor	1	0.47	1,133	141	1,274	\$191
7	Woodbridge Pump Station	1	Office	2X4 recessed troffer with (4) F34 Econo-Watt T12 Lamps & (1) 4-Light Magnetic ballast	2	Re-build existing troffer fixture w/ (2) F28 T8 Lamps, & (1) Low Power 2-Lamp Electronic Ballast & Silver Reflector	2	NO SENSOR PROPOSED	0	0.24	566	-	566	\$85
8	Woodbridge Pump Station	1	Men's Room	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	3	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
9	Woodbridge Pump Station	1	Janitor's Closet	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	1	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
10	Woodbridge Pump Station	1	Time Clock	2X2 recessed troffer with (2) F32 T8 U6 Lamps & (1) 2-Light Electronic ballast	2	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
11	Woodbridge Pump Station	1	Motor Control Room	4' Industrail Hood Fixture with (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	12	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	12	NO SENSOR PROPOSED	0	0.46	3,995	-	3,995	\$599
12	Woodbridge Pump Station	1	Stairwell	Wall Pack Fixture with (1) 70w Metal Halide Lamp and (1) Magnetic HID Ballast	6	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
13	Woodbridge Pump Station	1	Motor Room	High Bay Fixture with (1) 400w Metal Halide Lamp and (1) Magnetic HID Ballast	9	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
14	Woodbridge Pump Station	1	Motor Room	4' Vapor & Moisture Resistant Fixture w/ (2) F34 Econo-Watt T12 Lamps & (1) 2-Light Magnetic Ballast	4	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	4	NO SENSOR PROPOSED	0	0.15	1,332	-	1,332	\$200
15	Woodbridge Pump Station	1	Pump Room	High Bay Fixture with (1) 400w Metal Halide Lamp and (1) Magnetic HID Ballast	8	No Work Proposed	0	NO SENSOR PROPOSED	0	-	-	-	0	\$0
16	Woodbridge Pump Station	1	Bar Screen	Low Bay Fixture with (1) 400w Mercury Vapor Lamp and (1) Magnetic HID Ballast	16	Remove and Replace Existing Fixture with a New 4' Vapor Proof Fixture with a Reflector Containing (2) 4' F54 T5 HO Lamps and a 2-Lamp High Power T5 Electronic Ballast.	16	NO SENSOR PROPOSED	0	5.28	46,253	-	46,253	\$6,938
17	Woodbridge Pump Station	1	Generator Room	4' Industrail Hood Fixture with (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	8	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	8	NO SENSOR PROPOSED	0	0.30	2,663	-	2,663	\$399
18	Woodbridge Pump Station	1	Panel Room	4' Vanity Fixture with (2) F34 Econo-Watt T12 Lamps & (1) 2L Magnetic Ballast	8	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Low Power Ballast, (2) 4' 28w T8 Energy Saving Lamps, New Lamp Sockets.	8	NO SENSOR PROPOSED	0	0.30	2,663	-	2,663	\$399
19	Woodbridge Pump Station	1	Compressor Room	Industrial Hood 8' Fixture with (2) F96 Econo-Watt T12 Lamps & (1) 2L EE Magnetic Ballast	2	Re-lamp & Re-ballast existing fixture. Install a 2-Lamp Electronic Normal Power Ballast, (2) 8' T8 Energy Saving Lamps, New Lamp Sockets.	2	NO SENSOR PROPOSED	0	0.04	350	-	350	\$53
20	Woodbridge Pump Station	1	Outside	Wall Pack Fixture w/ (1) 100w High Pressure Sodium Lamp and Magnetic Ballast	13	Remove and Replace Existing Fixture With a New Outdoor Flood Fixture Containing a 50w Metal Halide Lamp	13	NO SENSOR PROPOSED	0	0.74	2,697	-	2,697	\$405
21	Woodbridge Pump Station	1	Outside	150w R40 Flood Incandescent S/I	6	Remove and Replace Existing Lamp With a New 42w Compact Fluorescent Two Piece Screw-In.	6	NO SENSOR PROPOSED	0	0.65	2,359	-	2,359	\$354
					129			87	2	9.17	68,671	1,263	69,934	\$10,490

APPENDIX C

Historical Data Analysis 1-2010

Utility Bill - Woodbridge Municipal Building						
		Electric		Gas		
		Utility: PSE&G		Utility: Elizabethtown Gas		
		Acct. #: 51-149-963-12		Acct. #: 6726228571		
Date		Meter #: 778010221 - LPLS		Meter#: 09139785-GDS		
Month	Year	kWh	Measured Load (kW)	Therms	Total BTU	BTU/Sqft
January	2008		Data not provided	9,435	943,520,000	10,070
February	2008			8,286	828,600,000	8,843
March	2008	245,108		8,489	848,850,000	9,059
April	2008	283,332		7,539	753,920,000	8,046
May	2008	334,800		8,220	822,000,000	8,773
June	2008	421,437		5,742	574,200,000	6,128
July	2008	430,315		3,948	394,770,000	4,213
August	2008	406,477		4,250	425,030,000	4,536
September	2008	362,606		4,426	442,590,000	4,723
October	2008	287,466		5,500	550,010,000	5,870
Novemeber	2008	260,234		8,046	804,610,000	8,587
December	2008	270,071		11,124	1,112,360,000	11,872
January	2009	266,430				
February	2009	248,313				

Woobridge Municipal Building - 93,700 Sq ft

Utility Bill - Woodbridge Community Center								
		Electric					Gas	
		Utility: PSE&G					Utility: Elizabethtown Gas	
		Acct. #: 42-007-337-06					Acct. #: 4633641731	
Date		Meter #: 778017945 - LPLS					Meter#: 00236751-GDS	
Month	Year	kWh	Measured Load (kW)	Month	Year	Therms	Total BTU	BTU/Sqft
December	2008	250,000	463	January	2008	9,630	962,950,000	11,700
January	2009	239,386	480	February	2008	51,473	5,147,260,000	62,543
February	2009	227,347	440	March	2008		0	0
March	2009	242,333	468	April	2008	4,369	436,870,000	5,308
April	2009	254,387	764	May	2008	3,683	368,310,000	4,475
May	2009	282,136	569	June	2008	3,495	349,490,000	4,247
June	2009	300,911	582	July	2008	3,452	345,200,000	4,194
July	2009	307,961	598	August	2008	3,884	388,440,000	4,720
August	2009	316,933	656	September	2008	3,718	371,750,000	4,517
September	2009	278,550	569	October	2008	11,856	1,185,580,000	14,406
October	2009	265,078	704	Novemeber	2008	10,229	1,022,935,000	12,429
Nobember	2009	242,354	580	December	2008	8,603	860,290,000	10,453

Woobridge Community Center - 82,300 Sq ft

Utility Bill - Woodbridge Township Pump Station								
		Electric				Gas		
		Utility: PSE&G				Utility: Elizabethtown Gas		
		Acct. #: 51-142-977-75				Acct. #: 7843890681		
Date		Meter #: 778018242 - LPLP				Meter#: 05102102-GDS		
Month	Year	kWh	Measured Load (kW)	Month	Year	Therms	Total BTU	BTU/Sqft
January	2009	345,772	0	January	2008	1,288	128,810,000	20,446
February	2009	355,102	0	February	2008	423	42,270,000	6,710
March	2009	284,407	0	March	2008	470	46,960,000	7,454
April	2009	270,985	556	April	2008	335	33,520,000	5,321
May	2009	313,116	1583	May	2008	487	48,700,000	7,730
June	2009	311,790	1563	June	2008	398	39,820,000	6,321
July	2009	380,913	1043	July	2008	379	37,890,000	6,014
August	2009	324,975	1343	August	2008	156	15,600,000	2,476
September	2009	309,945	1232	September	2008	196	19,560,000	3,105
October	2009	309,838	767	October	2008	184	18,370,000	2,916
November	2009	312,101	1666					
December	2009	303,647	810					

Woodbridge Township Pump Station - 6,300 Sq ft

Utility Bill - Evergreen Senior Center								
Electric				Gas				
Utility: PSE&G				Utility: Elizabethtown Gas				
Acct. #: 51-882-068-11				Acct. #: 7660567641				
Meter #: 1160469 - MD				Meter#: 08708285-GDS				
Month	Year	kWh	Measured Load (kW)	Month	Year	Therms	Total BTU	BTU/Sqft
November	2008	9,240	55	March	2008	9,739	973,900,000	34,474
December	2008	7,560	32					
January	2009	7,500	32					
February	2009	12,120	44					
March	2009	10,800	30					
April	2009	10,620	68					
May	2009	9,240	50					
June	2009	12,480	65					
July	2009	12,240	75					
August	2009	10,380	53					
September	2009	7,020	31					
October	2009	10,509	32					

Evergreen Senior Center - 28,250 Sq ft

Utility Bill - Baron Arts Center						
Electric				Gas		
Utility: PSE&G				Utility: Elizabethtown Gas		
Acct. #: 51-266-304-66				Acct. #: 7251373740		
Meter #: 726026612 - MD				Meter#: 06370688-GDS		
Month	Year	kWh	Measured Load (kW)	Therms	Total BTU	BTU/Sqft
January	2008			579	57,910,000	25,511
February	2008			552	55,230,000	24,330
March	2008			443	44,260,000	19,498
April	2008	2,533	10	200	19,960,000	8,793
May	2008	2,729	18	120	12,000,000	5,286
June	2008	3,400	13	4	410,000	181
July	2008	6,766	21	4	420,000	185
August	2008	5,586	24	3	310,000	137
September	2008	4,183	18	4	420,000	185
October	2008	4,105	19	70	7,000,000	3,084
November	2008	3,451	16	272	27,160,000	11,965
December	2008	6,615	15	474	47,420,000	20,890
January	2009	5,673	15			
February	2009	5,009	15			
March	2009	3,859	14			
April	2009	6,063	20			
May	2009	3,325	14			
June	2009	3,683	10			
July	2009	4,508	18			
August	2009	4,626	20			
September	2009	3,364	13			
October	2009	5,693	14			
November	2009	6,748	18			

Baron Arts Center - 2,270 Sq ft

Utility Bill - Woodbridge Township Health Center								
Electric				Gas				
Utility: PSE&G				Utility: Elizabethtown Gas				
Acct. #: 51-228-094-61				Acct. #: 1201542780				
Meter #: 278001658 - MD				Meter#: 00033307-GDS				
Month	Year	kWh	Measured Load (kW)	Month	Year	Therms	Total BTU	BTU/Sqft
October	2008	8,610	47	January	2008	1,655	165,510,000	16,551
November	2008	7,680	48	February	2008	1,458	145,750,000	14,575
December	2008	6,780	27	March	2008	1,193	119,340,000	11,934
January	2009	300	27	April	2008	720	72,020,000	7,202
February	2009	6,660	26	May	2008	249	24,850,000	2,485
March	2009	6,930	27	June	2008	28	2,770,000	277
April	2009	5,460	27	July	2008	27	2,660,000	266
May	2009	10,740	44	August	2008	29	2,910,000	291
June	2009	12,930	47	September	2008	28	2,790,000	279
July	2009	18,090	47	October	2008	223	22,310,000	2,231
August	2009	14,100	55	November	2008	995	99,530,000	9,953
September	2009	8,580	45	December	2008	1,653	165,340,000	16,534

Woodbridge Township Health Center - 10,000 Sq ft

Utility Bill - Woodbridge Township Main Library							
		Electric		Gas			Water
		Utility: PSE&G		Utility: Elizabethtown Gas			Utility: Middlesex Water
		Acct. #: 51-228-094-61		Acct. #: 5916828571			Acct. #: 24-000-628-474
Date		Meter #: 278001658 MD		Meter#: 09438676-GDS			Meter#: 370045583/470045583 GSM
Month	Year	kWh	Measured Load (kW)	Therms	Total BTU	BTU/Sqft	Gals
January	2008			4,337	433,660,000	8,340	
February	2008			4,271	427,080,000	8,213	
March	2008			3,145	314,480,000	6,048	
April	2008	83,760		1,177	117,730,000	2,264	
May	2008	89,280		353	35,250,000	678	
June	2008	106,320		0	0	0	
July	2008	125,040		0	0	0	194
August	2008	119,280		0	0	0	187
September	2008	112,560		0	0	0	163
October	2008	90,440		331	33,100,000	637	109
Novemeber	2008	81,800		2,298	229,780,000	4,419	30
December	2008	77,280		4,439	443,900,000	8,537	50
January	2009	68,400					25
February	2009	78,720					64
March	2009	71,280					28
April	2009						33
May	2009						49

Woodbridge Township Main Library - 52,000 Sq ft

Utility Bill - Iselin Branch Public Library									
Electric				Gas					Water
Utility: PSE&G				Utility: Elizabethtown Gas					Utility: Middlesex Water
Acct. #: 51-759-293-05				Acct. #: 3554588530					Acct. #: 20-000-249-953
Meter #: 1577454 ED MD				Meter#: 06602444- GDS					Meter#: 47213133 GSQ
Month	Year	kWh	Measured Load (kW)	Month	Year	Therms	Total BTU	BTU/Sqft	Gals
December	2008	8,320	28	January	2008	1,320	132,010,000	15,174	
January	2009	7,520	28	February	2008	1,228	122,780,000	14,113	
February	2009	18,400	25	March	2008	935	93,450,000	10,741	
March	2009	6,000	23	April	2008	364	36,410,000	4,185	
April	2009	7,600	22	May	2008	79	7,860,000	903	
May	2009	8,720	22	June	2008	33	3,320,000	382	10
June	2009	80	22	July	2008	11	1,140,000	131	
July	2009	80	22	August	2008	17	1,680,000	193	
August	2009	80	22	September	2008	15	1,460,000	168	10
September	2009	80	22	October	2008	148	14,830,000	1,705	
October	2009	80	22	Novemeber	2008	799	79,930,000	9,187	
November	2009	240	48	December	2008	1,439	143,910,000	16,541	15

Iselin Branch Public Library - 8,700 Sq ft

Utility Bill - Fords Branch Public Library									
Electric				Gas					Water
Utility: PSE&G				Utility: Elizabethtown Gas					Utility: Middlesex Water
Acct. #: 51-740-379-07				Acct. #: 7752059481					Acct. #: 24-000-340-417
Meter #: 278001643 ED MD				Meter#: 06280881-GDS					Meter#: 47213133 GSQ
Month	Year	kWh	Measured Load (kW)	Month	Year	Therms	Total BTU	BTU/Sqft	Gals
November	2008	11,160	37	January	2008	1,165	116,510,000	7,282	
December	2008	6,660	35	February	2008	1,051	105,080,000	6,568	
January	2008	10,110	51	March	2008	822	82,180,000	5,136	
February	2008	12,090	38	April	2008	287	28,740,000	1,796	
March	2008	6,630	44	May	2008	1	100,000	6	
April	2008	14,520	61	June	2008	0	0	0	
May	2008	15,390	58	July	2008	0	0	0	
June	2008	15,810	60	August	2008	0	0	0	13
July	2008	15,690	76	September	2008	0	0	0	
August	2008	16,170	101	October	2008	18	1,780,000	111	
September	2008	10,230	66	Novemeber	2008	409	40,850,000	2,553	13
October	2008	9,840	34	December	2008	949	94,900,000	5,931	
				January	2009				
				February	2009				7
				March	2009				
				April	2009				
				May	2009				12

Fords Branch Public Library - 16,000 Sq ft

Utility Bill - Inman Branch Public Library									
Electric				Gas					Water
Utility: PSE&G				Utility: Elizabethtown Gas					Utility: Middlesex Water
Acct. #: 51-882-109-16				Acct. #: 640061570					Acct. #: 24-000-396-572
Meter #: 728001924 MD-PSAL				Meter#: 06220427-GDS					Meter#: 47040363 GSQ
Month	Year	kWh	Measured Load (kW)	Month	Year	Therms	Total BTU	BTU/Sqft	Gals
November	2008	11,160	37	January	2008	748	74,750,000	16,989	
December	2008	6,660	35	February	2008	740	73,980,000	16,814	
January	2009	10,110	51	March	2008	614	61,360,000	13,945	
February	2009	12,090	38	April	2008	289	28,870,000	6,561	
March	2009	6,630	44	May	2008	109	10,860,000	2,468	
April	2009	14,520	61	June	2008	20	1,970,000	448	
May	2009	15,390	58	July	2008	22	2,180,000	495	
June	2009	15,810	60	August	2008	20	1,990,000	452	7
July	2009	15,690	76	September	2008	22	2,200,000	500	
August	2009	16,170	101	October	2008	138	13,780,000	3,132	
September	2009	10,230	66	Novemeber	2008	572	57,150,000	12,989	6
October	2009	9,840	34	December	2008	843	84,250,000	19,148	
				January	2009				
				February	2009				6
				March	2009				
				April	2009				
				May	2009				7

Inman Branch Public Library - 4,400 Sq ft

APPENDIX D
STATEMENT OF ENERGY PERFORMANCE
Health Center

STATEMENT OF ENERGY PERFORMANCE

Health Center

Building ID: 1840637
For 12-month Period Ending: December 31, 2008¹
Date SEP becomes ineligible: N/A

Date SEP Generated: September 16, 2009

Facility
 Health Center
 2 George Frederick Plaza
 Woodbridge, NJ 07095

Facility Owner
 Woodbridge Township
 Woodbridge
 Woodbridge, NJ 07090

Primary Contact for this Facility
 ed mathis
 woodbridge
 woodbridge, NJ 07090

Year Built: 1969
Gross Floor Area (ft²): 10,000

Energy Performance Rating² (1-100) 58

Site Energy Use Summary³

Electricity - Grid Purchase(kBtu)	422,542
Natural Gas - (kBtu) ⁴	0
Total Energy (kBtu)	422,542

Energy Intensity⁵

Site (kBtu/ft ² /yr)	42
Source (kBtu/ft ² /yr)	141

Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO ₂ e/year)	64
---	----

Electric Distribution Utility

PSE&G - Public Service Elec & Gas Co

National Average Comparison

National Average Site EUI	47
National Average Source EUI	156
% Difference from National Average Source EUI	-10%
Building Type	Medical Office

Stamp of Certifying Professional

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

Meets Industry Standards⁶ for Indoor Environmental Conditions:

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

Certifying Professional

ed mathis
 woodbridge
 woodbridge, NJ 07090

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	Health Center	Is this the official building name to be displayed in the ENERGY STAR Registry of Labeled Buildings?		<input type="checkbox"/>
Type	Medical Office	Is this an accurate description of the space in question?		<input type="checkbox"/>
Location	2 George Frederick Plaza, Woodbridge, NJ 07095	Is this address accurate and complete? Correct weather normalization requires an accurate zip code.		<input type="checkbox"/>
Single Structure	Single Facility	Does this SEP represent a single structure? SEPs cannot be submitted for multiple-building campuses (with the exception of acute care or children's hospitals) nor can they be submitted as representing only a portion of a building		<input type="checkbox"/>

health center (Medical Office)

CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	
Gross Floor Area	10,000 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.		<input type="checkbox"/>
Number of Workers	20	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.		<input type="checkbox"/>
Weekly operating hours	40 Hours	Is this the total number of hours per week that the Medical Office space is 75% occupied? This number should exclude hours when the facility is occupied only by maintenance, security, or other support personnel. For facilities with a schedule that varies during the year, "operating hours/week" refers to the total weekly hours for the schedule most often followed.		<input type="checkbox"/>
Percent Cooled	100 %	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		<input type="checkbox"/>
Percent Heated	100 %	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		<input type="checkbox"/>

ENERGY STAR® Data Checklist for Commercial Buildings

Energy Consumption

Power Generation Plant or Distribution Utility: PSE&G - Public Service Elec & Gas Co

Fuel Type: Electricity		
Meter: Electric (kWh (thousand Watt-hours)) Space(s): Entire Facility Generation Method: Grid Purchase		
Start Date	End Date	Energy Use (kWh (thousand Watt-hours))
12/01/2008	12/31/2008	6,780.00
11/01/2008	11/30/2008	7,680.00
10/01/2008	10/31/2008	8,610.00
09/01/2008	09/30/2008	15,750.00
08/01/2008	08/31/2008	17,970.00
07/01/2008	07/31/2008	16,860.00
06/01/2008	06/30/2008	12,540.00
05/01/2008	05/31/2008	7,260.00
04/01/2008	04/30/2008	7,410.00
03/01/2008	03/31/2008	7,740.00
02/01/2008	02/29/2008	7,410.00
01/01/2008	01/31/2008	7,830.00
Electric Consumption (kWh (thousand Watt-hours))		123,840.00
Electric Consumption (kBtu (thousand Btu))		422,542.08
Total Electricity (Grid Purchase) Consumption (kBtu (thousand Btu))		422,542.08
Is this the total Electricity (Grid Purchase) consumption at this building including all Electricity meters?		<input type="checkbox"/>

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

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.	<input type="checkbox"/>

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
Health Center
2 George Frederick Plaza
Woodbridge, NJ 07095

Facility Owner
Woodbridge Township
Woodbridge
Woodbridge, NJ 07090

Primary Contact for this Facility
ed mathis
woodbridge
woodbridge, NJ 07090

General Information

Health Center	
Gross Floor Area Excluding Parking: (ft ²)	10,000
Year Built	1969
For 12-month Evaluation Period Ending Date:	December 31, 2008

Facility Space Use Summary

health center	
Space Type	Medical Office
Gross Floor Area(ft ²)	10,000
Number of Workers	20
Weekly operating hours	40
Percent Cooled	100
Percent Heated	100

Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 12/31/2008)	Baseline (Ending Date 12/31/2008)	Rating of 75	Target	National Average
Energy Performance Rating	58	58	75	N/A	50
Energy Intensity					
Site (kBtu/ft ²)	42	42	33	N/A	47
Source (kBtu/ft ²)	141	141	109	N/A	156
Energy Cost					
\$/year	\$ 21,463.00	\$ 21,463.00	\$ 16,530.32	N/A	\$ 23,723.60
\$/ft ² /year	\$ 2.15	\$ 2.15	\$ 1.66	N/A	\$ 2.38
Greenhouse Gas Emissions					
MtCO ₂ e/year	64	64	49	N/A	71
kgCO ₂ e/ft ² /year	6	6	5	N/A	7

More than 50% of your building is defined as Medical 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.

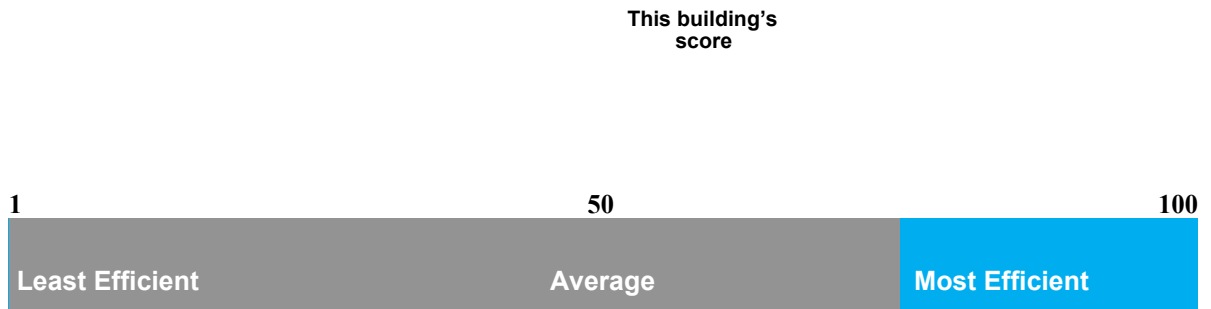
Statement of Energy Performance

2008

Health Center
2 George Frederick Plaza
Woodbridge, NJ 07095

Portfolio Manager Building ID: 1840637

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 141 kBtu per square foot per year.*

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

APPENDIX D
STATEMENT OF ENERGY PERFORMANCE
Municipal Bldg

STATEMENT OF ENERGY PERFORMANCE

Municipal Bldg

Building ID: 1840510
For 12-month Period Ending: December 31, 2008¹
Date SEP becomes ineligible: N/A

Date SEP Generated: September 16, 2009

Facility	Facility Owner	Primary Contact for this Facility
Municipal Bldg 1 Main St Woodbridge, NJ 07095	Woodbridge Township Woodbridge Woodbridge, NJ 07090	ed mathis woodbridge woodbridge, NJ 07090

Year Built: 1996
Gross Floor Area (ft²): 93,000

Energy Performance Rating² (1-100) 2

Site Energy Use Summary³

Electricity - Grid Purchase(kBtu)	12,911,397
Natural Gas (kBtu) ⁴	8,500,500
Total Energy (kBtu)	21,411,897

Energy Intensity⁵

Site (kBtu/ft ² /yr)	230
Source (kBtu/ft ² /yr)	559

Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO ₂ e/year)	2,418
---	-------

Electric Distribution Utility

PSE&G - Public Service Elec & Gas Co

National Average Comparison

National Average Site EUI	107
National Average Source EUI	260
% Difference from National Average Source EUI	115%
Building Type	Office

Meets Industry Standards⁶ for Indoor Environmental Conditions:

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

<p>Stamp of Certifying Professional</p> <p>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.</p>

Certifying Professional

ed mathis
woodbridge
woodbridge, NJ 07090

Notes:

- 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.
- 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.
- Values represent energy consumption, annualized to a 12-month period.
- 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.
- Values represent energy intensity, annualized to a 12-month period.
- 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	Municipal Bldg	Is this the official building name to be displayed in the ENERGY STAR Registry of Labeled Buildings?		<input type="checkbox"/>
Type	Office	Is this an accurate description of the space in question?		<input type="checkbox"/>
Location	1 Main St, Woodbridge, NJ 07095	Is this address accurate and complete? Correct weather normalization requires an accurate zip code.		<input type="checkbox"/>
Single Structure	Single Facility	Does this SEP represent a single structure? SEPs cannot be submitted for multiple-building campuses (with the exception of acute care or children's hospitals) nor can they be submitted as representing only a portion of a building		<input type="checkbox"/>

office (Office)

CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	
Gross Floor Area	53,000 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.		<input type="checkbox"/>
Weekly operating hours	40 Hours	Is this the total number of hours per week that the Office space is 75% occupied? This number should exclude hours when the facility is occupied only by maintenance, security, or other support personnel. For facilities with a schedule that varies during the year, "operating hours/week" refers to the total weekly hours for the schedule most often followed.		<input type="checkbox"/>
Workers on Main Shift	80	Is this the number of employees present during the main shift? Note this is not the total number of employees or visitors who are in a building during an entire 24 hour period. For example, if there are two daily 8 hour shifts of 100 workers each, the Workers on Main Shift value is 100. The normal worker density ranges between 0.3 and 10 workers per 1000 square feet (92.8 square meters)		<input type="checkbox"/>
Number of PCs	80	Is this the number of personal computers in the Office?		<input type="checkbox"/>
Percent Cooled	50% or more	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?		<input type="checkbox"/>
Percent Heated	50% or more	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?		<input type="checkbox"/>

police (Office)

CRITERION	VALUE AS ENTERED IN PORTFOLIO MANAGER	VERIFICATION QUESTIONS	NOTES	
-----------	---------------------------------------	------------------------	-------	--

Gross Floor Area	40,000 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.	<input type="checkbox"/>
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.	<input type="checkbox"/>
Workers on Main Shift	80	Is this the number of employees present during the main shift? Note this is not the total number of employees or visitors who are in a building during an entire 24 hour period. For example, if there are two daily 8 hour shifts of 100 workers each, the Workers on Main Shift value is 100. The normal worker density ranges between 0.3 and 10 workers per 1000 square feet (92.8 square meters)	<input type="checkbox"/>
Number of PCs	80	Is this the number of personal computers in the Office?	<input type="checkbox"/>
Percent Cooled	50% or more	Is this the percentage of the total floor space within the facility that is served by mechanical cooling equipment?	<input type="checkbox"/>
Percent Heated	50% or more	Is this the percentage of the total floor space within the facility that is served by mechanical heating equipment?	<input type="checkbox"/>

ENERGY STAR® Data Checklist for Commercial Buildings

Energy Consumption

Power Generation Plant or Distribution Utility: PSE&G - Public Service Elec & Gas Co

Fuel Type: Electricity		
Meter: Electric (kWh (thousand Watt-hours)) Space(s): Entire Facility Generation Method: Grid Purchase		
Start Date	End Date	Energy Use (kWh (thousand Watt-hours))
12/01/2008	12/31/2008	270,071.00
11/01/2008	11/30/2008	260,234.00
10/01/2008	10/31/2008	287,466.00
09/01/2008	09/30/2008	362,606.00
08/01/2008	08/31/2008	406,477.00
07/01/2008	07/31/2008	430,315.00
06/01/2008	06/30/2008	421,437.00
05/01/2008	05/31/2008	334,800.00
04/01/2008	04/30/2008	283,332.00
03/01/2008	03/31/2008	245,108.00
02/01/2008	02/29/2008	232,048.00
01/01/2008	01/31/2008	250,220.00
Electric Consumption (kWh (thousand Watt-hours))		3,784,114.00
Electric Consumption (kBtu (thousand Btu))		12,911,396.97
Total Electricity (Grid Purchase) Consumption (kBtu (thousand Btu))		12,911,396.97
Is this the total Electricity (Grid Purchase) consumption at this building including all Electricity meters?		<input type="checkbox"/>
Fuel Type: Natural Gas		
Meter: Gas (therms) Space(s): Entire Facility		
Start Date	End Date	Energy Use (therms)
12/01/2008	12/31/2008	11,124.00
11/01/2008	11/30/2008	8,046.00
10/01/2008	10/31/2008	5,500.00
09/01/2008	09/30/2008	4,426.00
08/01/2008	08/31/2008	4,250.00
07/01/2008	07/31/2008	3,948.00
06/01/2008	06/30/2008	5,742.00
05/01/2008	05/31/2008	8,220.00
04/01/2008	04/30/2008	7,539.00
03/01/2008	03/31/2008	8,489.00

02/01/2008	02/29/2008	8,286.00
01/01/2008	01/31/2008	9,435.00
Gas Consumption (therms)		85,005.00
Gas Consumption (kBtu (thousand Btu))		8,500,500.00
Total Natural Gas Consumption (kBtu (thousand Btu))		8,500,500.00
Is this the total Natural Gas consumption at this building including all Natural Gas meters?		<input type="checkbox"/>

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

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.	<input type="checkbox"/>

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
Municipal Bldg
1 Main St
Woodbridge, NJ 07095

Facility Owner
Woodbridge Township
Woodbridge
Woodbridge, NJ 07090

Primary Contact for this Facility
ed mathis
woodbridge
woodbridge, NJ 07090

General Information

Municipal Bldg	
Gross Floor Area Excluding Parking: (ft ²)	93,000
Year Built	1996
For 12-month Evaluation Period Ending Date:	December 31, 2008

Facility Space Use Summary

office		police	
Space Type	Office	Space Type	Office
Gross Floor Area(ft ²)	53,000	Gross Floor Area(ft ²)	40,000
Weekly operating hours	40	Weekly operating hours	168
Workers on Main Shift	80	Workers on Main Shift	80
Number of PCs	80	Number of PCs	80
Percent Cooled	50% or more	Percent Cooled	50% or more
Percent Heated	50% or more	Percent Heated	50% or more

Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 12/31/2008)	Baseline (Ending Date 12/31/2008)	Rating of 75	Target	National Average
Energy Performance Rating	2	2	75	N/A	50
Energy Intensity					
Site (kBtu/ft ²)	230	230	79	N/A	107
Source (kBtu/ft ²)	559	559	193	N/A	260
Energy Cost					
\$/year	\$ 637,293.35	\$ 637,293.35	\$ 219,415.58	N/A	\$ 296,641.45
\$/ft ² /year	\$ 6.85	\$ 6.85	\$ 2.36	N/A	\$ 3.19
Greenhouse Gas Emissions					
MtCO ₂ /year	2,418	2,418	833	N/A	1,126
kgCO ₂ /ft ² /year	26	26	9	N/A	12

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

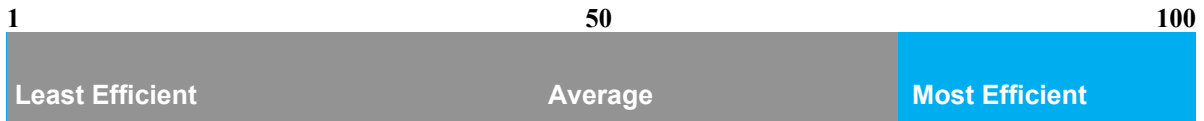
2008

Municipal Bldg
1 Main St
Woodbridge, NJ 07095

Portfolio Manager Building ID: 1840510

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's score



This building uses 559 kBtu per square foot per year.*

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

APPENDIX E

GLACIAL ENERGY - ALTERNATIVE ELECTRICAL SUPPLIER QUOTE

Savings Analysis Proposal - PSE&G

Glacial Energy



This proposal illustrates how you can maximize your energy cost savings by choosing Glacial Energy as your preferred electricity supplier. This proposal is based on your organization's estimated usage (kwh) and demand (kw) over the coming year.

Secure your savings today!

Contract Summary - Forecasted Price

Company Name: Woodbridge Township (Hourly)
Billing Address: 185 Woodbridge Ave, Sewaren, NJ 07077

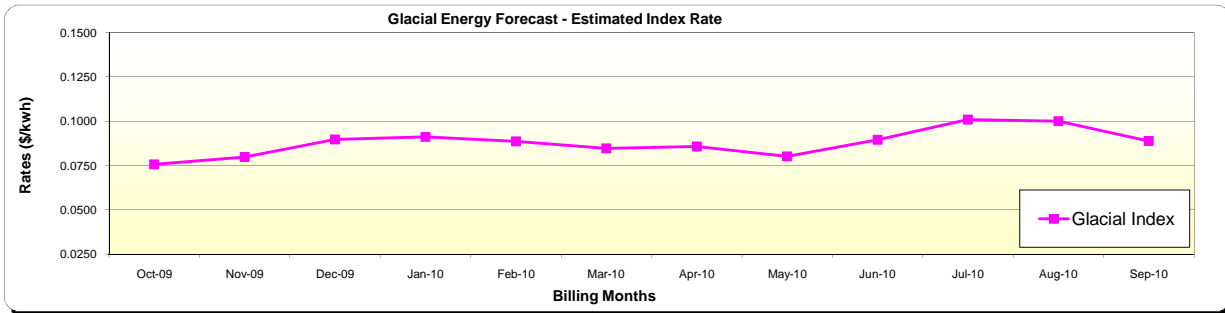
Start Month: Oct-09
Number of LDC Accounts: 1
Retail Margin Adder: N/A

Forecasted Customer Usage Data Summary

Usage (kwh): 3,717,702
Avg Monthly Usage (kwh): 309,809
Peak Monthly kw: 1619
Peak Load Factor: 26%
Capacity PLC: 457
Transmission PLC: 411

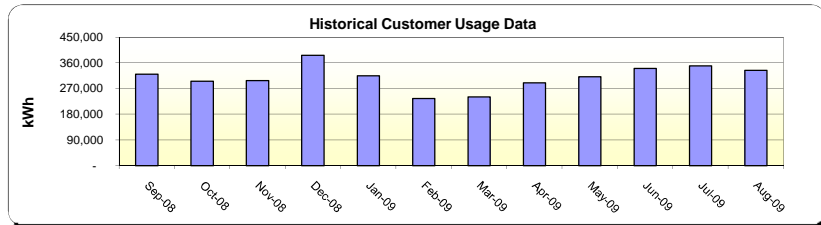
Estimated Rate over the next 12 months

Glacial Energy Index: \$ 0.08835
Glacial Charges: \$ 328,466



- Glacial Index Includes:**
- a. Estimated weighted average Wholesale Energy price
 - b. Ancillary Services & requirements
 - c. Zonal Congestion
 - d. Market Scheduling and Forecasting Fees
 - e. PJM ISO Fees
 - f. Transmission Losses & Charges
 - g. Capacity Charges
 - h. NJ SUT

- Glacial Index Excludes:**
- a. Any charges from the LDC companies - Wires
 - b. Non NJ SUT Taxes (SUT rates & charges noted above)



LDC Account No:	Physical Address:
1PE000010364992747731	185 Woodbridge Ave, Sewaren, NJ 07077

1. The Glacial Index price is based in large part on forecasted ISO charges and estimated future zonal energy prices.

Savings Analysis Proposal - PSE&G

Glacial Energy



This proposal illustrates how you can maximize your energy cost savings by choosing Glacial Energy as your preferred electricity supplier. This proposal is based on your organization's estimated usage (kwh) and demand (kw) over the coming year.

Contract Summary - Historical Charges

Company Name: Woodbridge Township (Hourly)
Billing Address: 185 Woodbridge Ave, Sewaren, NJ 07077

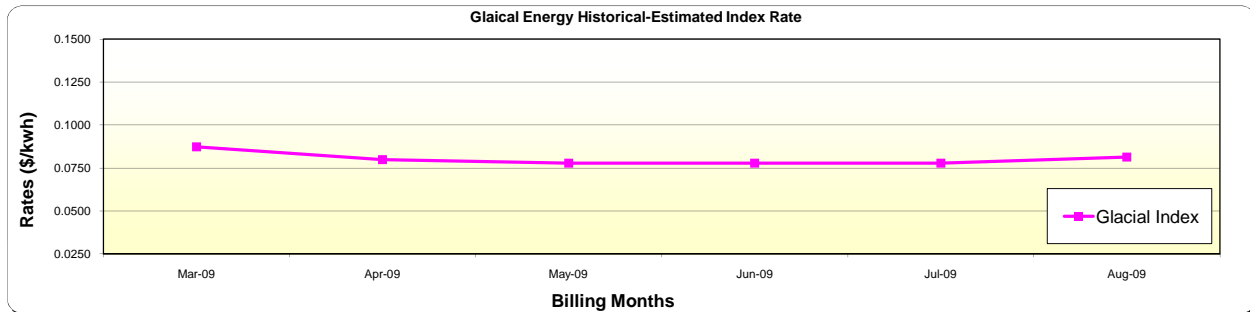
Historical Timeframe (mo.): 6
Start Month: Mar-09
Number of LDC Accounts: 1

6 month Period Summary

Usage (kwh): 1,864,176
Avg Monthly Usage (kwh): 310,696
Peak Monthly kw: 1,619
Peak Load Factor: 26%
Capacity PLC: 457
Transmission PLC: 411

Estimated Historical Charges

Historical Glacial Index: \$ 0.07996
Historical Glacial Charges: \$ 149,052



- Glacial Index Includes:**
- a. Estimated Weighted average Wholesale Energy price
 - b. Ancillary Services & requirements
 - c. Zonal Congestion
 - d. Market Scheduling and Forecasting Fees
 - e. PJM ISO Fees
 - f. Transmission Losses & Charges
 - g. Capacity Charges
 - h. NJ SUT

- Glacial Index Excludes:**
- a. Any charges from the LDC companies - Wires
 - b. Non NJ SUT Taxes

1. The historic tariff rate comparison is based on historical usage and current, pending or estimated utility rates (inclusive of NJ SUT) for the appropriate rate schedule(s).

Savings Analysis Proposal - PSE&G

Glacial Energy



This proposal illustrates how you can maximize your energy cost savings by choosing Glacial Energy as your preferred electricity supplier. This proposal is based on your organization's estimated usage (kwh) and demand (kw) over the coming year.

Secure your savings today!

Contract Summary - Forecasted Price Comparison

Company Name: Woodbridge Township-000009082750215046
Billing Address: 400 Inman Ave, Colonia, NJ 07067

Start Month: Nov-09
Number of LDC Accounts: 1
Retail Margin Adder: N/A

Forecasted Customer Usage Data Summary

Usage (kwh):	133,061
Avg Monthly Usage (kwh):	11,088
Peak Monthly kw:	75
Peak Load Factor:	20%
Capacity PLC:	68
Transmission PLC:	61

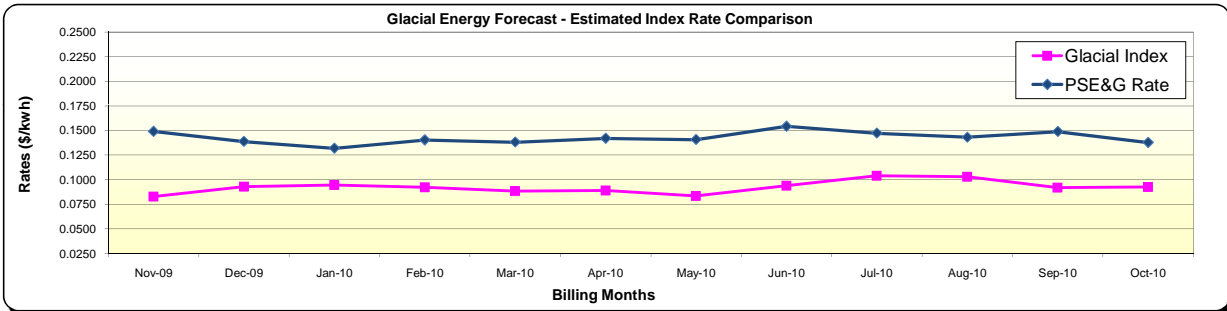
Estimated Rate over the next 12 months

Avg Rate (\$/kwh)*: \$ 0.13230
Annual Utility Charges: \$ 17,604

Glacial Energy Index: \$ 0.08641
Glacial Charges: \$ 11,498

Savings Summary

Estimated Savings vs. Utility \$ 6,106
Savings (Glacial vs. Utility) 35%

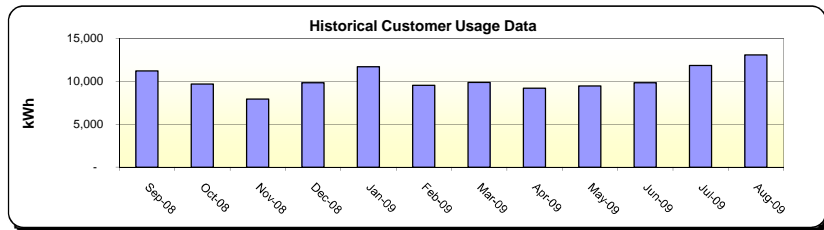


Glacial Index Includes:

- a. Estimated weighted average Wholesale Energy price
- b. Ancillary Services & requirements
- c. Zonal Congestion
- d. Market Scheduling and Forecasting Fees
- e. PJM ISO Fees
- f. Transmission Losses & Charges
- g. Capacity Charges
- h. NJ SUT

Glacial Index Excludes:

- a. Any charges from the LDC companies - Wires
- b. Non NJ SUT Taxes (SUT rates & charges noted above)



LDC Account No:	Physical Address:
1 PE000009082750215046	400 Inman Ave, Colonia, NJ 07067

1. The Glacial Index price is based in large part on forecasted ISO charges and estimated future zonal energy prices.
 2. The forward tariff rates are based on the latest, pending or estimated utility rates (inclusive of NJ SUT), applicable for this rate schedule(s).
 Rate Listed is an average over the next 12 months. Your current average utility rate for November 2009 is \$0.14905/kwh.
 The graph above beyond 9/30/2009, reflect published rate changes and/or rate estimations.

Savings Analysis Proposal - PSE&G

Glacial Energy



This proposal illustrates how you can maximize your energy cost savings by choosing Glacial Energy as your preferred electricity supplier. This proposal is based on your organization's estimated usage (kwh) and demand (kw) over the coming year.

Contract Summary - Historical Utility Charges

Company Name: Woodbridge Township-000009082750215046
Billing Address: 400 Inman Ave, Colonia, NJ 07067

Historical Timeframe (mo.): 6
Start Month: Mar-09
Number of LDC Accounts: 1

6 month Period Summary

Usage (kwh): 63,369
Avg Monthly Usage (kwh): 10,562
Peak Monthly kw: 75
Peak Load Factor: 19%
Capacity PLC: 68
Transmission PLC: 61

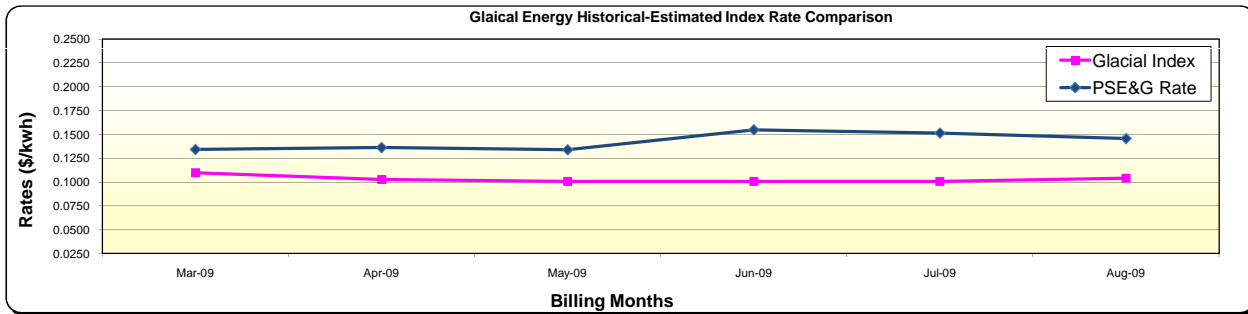
Estimated Historical Utility Charges

Avg Rate (\$/kwh): \$ 0.14325
Annual Utility Charges: \$ 9,078

Historical Glacial Index: \$ 0.10302
Historical Glacial Charges: \$ 6,528

Savings Summary

Historical Savings vs. Utility \$ 2,550
Historical Savings (Glacial vs. Utility) 28%



Glacial Index Includes:

- a. Estimated Weighted average Wholesale Energy price
- b. Ancillary Services & requirements
- c. Zonal Congestion
- d. Market Scheduling and Forecasting Fees
- e. PJM ISO Fees
- f. Transmission Losses & Charges
- g. Capacity Charges
- h. NJ SUT

Glacial Index Excludes:

- a. Any charges from the LDC companies - Wires
- b. Non NJ SUT Taxes

1. The historic tariff rate comparison is based on historical usage and current, pending or estimated utility rates (inclusive of NJ SUT) for the appropriate rate schedule(s).

Savings Analysis Proposal - PSE&G

Glacial Energy



This proposal illustrates how you can maximize your energy cost savings by choosing Glacial Energy as your preferred electricity supplier. This proposal is based on your organization's estimated usage (kwh) and demand (kw) over the coming year.

Secure your savings today!

Contract Summary - Forecasted Price Comparison

Company Name: Woodbridge Township-000009325966177315
Billing Address: 1 George Frederick Plaza, Woodbridge, NJ 07095

Start Month: Nov-09
Number of LDC Accounts: 1
Retail Margin Adder: N/A

Forecasted Customer Usage Data Summary

Usage (kwh):	90,349
Avg Monthly Usage (kwh):	7,529
Peak Monthly kw:	33
Peak Load Factor:	31%
Capacity PLC:	30
Transmission PLC:	27

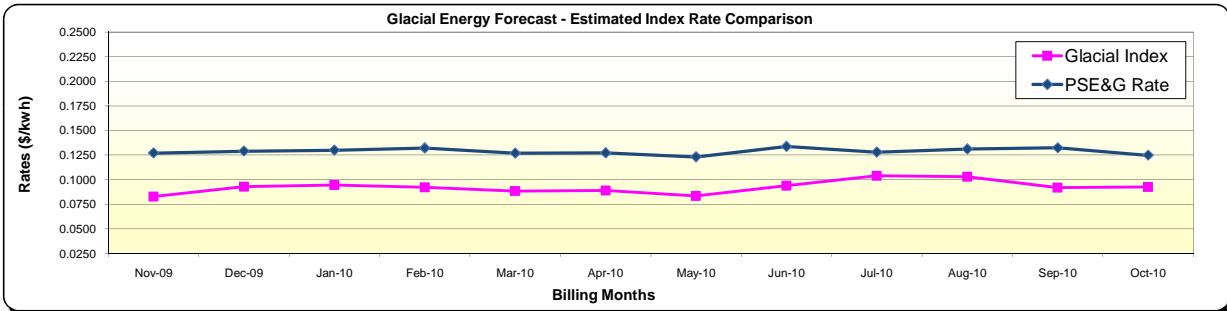
Estimated Rate over the next 12 months

Avg Rate (\$/kwh)*: \$ 0.12044
Annual Utility Charges: \$ 10,882

Glacial Energy Index: \$ 0.08724
Glacial Charges: \$ 7,882

Savings Summary

Estimated Savings vs. Utility \$ 3,000
Savings (Glacial vs. Utility) 28%

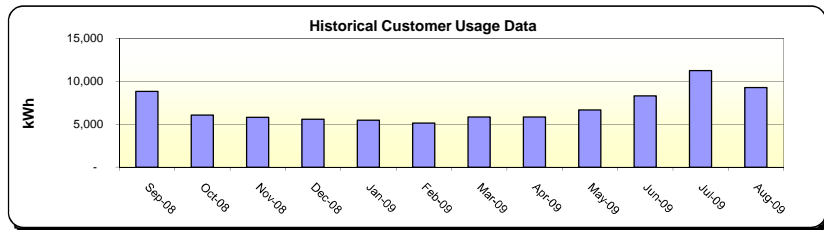


Glacial Index Includes:

- a. Estimated weighted average Wholesale Energy price
- b. Ancillary Services & requirements
- c. Zonal Congestion
- d. Market Scheduling and Forecasting Fees
- e. PJM ISO Fees
- f. Transmission Losses & Charges
- g. Capacity Charges
- h. NJ SUT

Glacial Index Excludes:

- a. Any charges from the LDC companies - Wires
- b. Non NJ SUT Taxes (SUT rates & charges noted above)



LDC Account No:	Physical Address:
1 PE000009325966177315	1 George Frederick Plaza, Woodbridge, NJ 07095

1. The Glacial Index price is based in large part on forecasted ISO charges and estimated future zonal energy prices.
 2. The forward tariff rates are based on the latest, pending or estimated utility rates (inclusive of NJ SUT), applicable for this rate schedule(s).
 Rate Listed is an average over the next 12 months. Your current average utility rate for November 2009 is \$0.12708/kwh.
 The graph above beyond 9/30/2009, reflect published rate changes and/or rate estimations.

Savings Analysis Proposal - PSE&G

Glacial Energy



This proposal illustrates how you can maximize your energy cost savings by choosing Glacial Energy as your preferred electricity supplier. This proposal is based on your organization's estimated usage (kwh) and demand (kw) over the coming year.

Contract Summary - Historical Utility Charges

Company Name: Woodbridge Township-000009325966177315
Billing Address: 1 George Frederick Plaza, Woodbridge, NJ 07095

Historical Timeframe (mo.): 6
Start Month: Mar-09
Number of LDC Accounts: 1

6 month Period Summary

Usage (kwh): 47,323
Avg Monthly Usage (kwh): 7,887
Peak Monthly kw: 33
Peak Load Factor: 33%
Capacity PLC: 30
Transmission PLC: 27

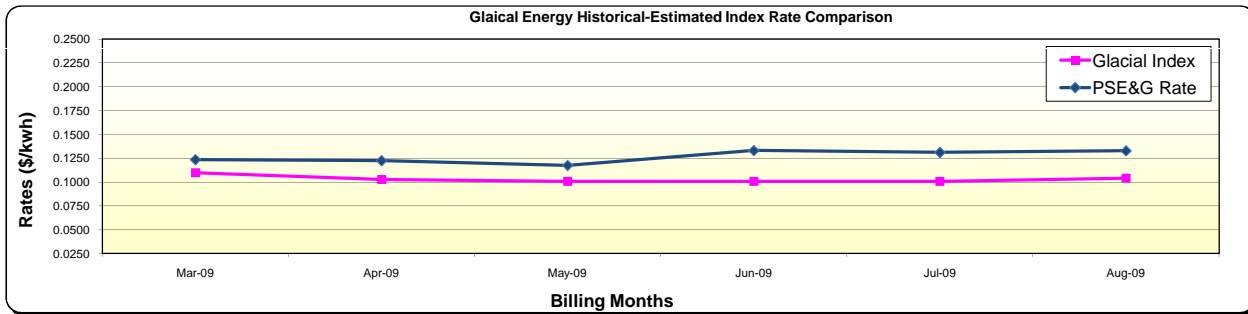
Estimated Historical Utility Charges

Avg Rate (\$/kwh): \$ 0.12786
Annual Utility Charges: \$ 6,051

Historical Glacial Index: \$ 0.10258
Historical Glacial Charges: \$ 4,855

Savings Summary

Historical Savings vs. Utility \$ 1,196
Historical Savings (Glacial vs. Utility) 20%



Glacial Index Includes:

- a. Estimated Weighted average Wholesale Energy price
- b. Ancillary Services & requirements
- c. Zonal Congestion
- d. Market Scheduling and Forecasting Fees
- e. PJM ISO Fees
- f. Transmission Losses & Charges
- g. Capacity Charges
- h. NJ SUT

Glacial Index Excludes:

- a. Any charges from the LDC companies - Wires
- b. Non NJ SUT Taxes

1. The historic tariff rate comparison is based on historical usage and current, pending or estimated utility rates (inclusive of NJ SUT) for the appropriate rate schedule(s).

Savings Analysis Proposal - PSE&G

Glacial Energy



This proposal illustrates how you can maximize your energy cost savings by choosing Glacial Energy as your preferred electricity supplier. This proposal is based on your organization's estimated usage (kwh) and demand (kw) over the coming year.

Secure your savings today!

Contract Summary - Forecasted Price Comparison

Company Name: Woodbridge Township-000009659498113797
Billing Address: 582 Rahway Ave, Woodbridge, NJ 07095

Start Month: Nov-09
Number of LDC Accounts: 1
Retail Margin Adder: N/A

Forecasted Customer Usage Data Summary

Usage (kwh):	58,470
Avg Monthly Usage (kwh):	4,873
Peak Monthly kw:	20
Peak Load Factor:	33%
Capacity PLC:	18
Transmission PLC:	16

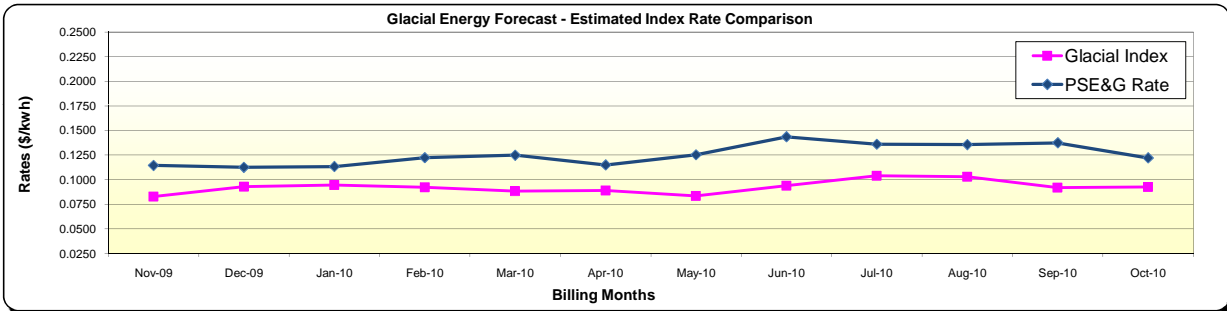
Estimated Rate over the next 12 months

Avg Rate (\$/kwh)*: \$ 0.11559
Annual Utility Charges: \$ 6,759

Glacial Energy Index: \$ 0.08620
Glacial Charges: \$ 5,040

Savings Summary

Estimated Savings vs. Utility \$ 1,718
Savings (Glacial vs. Utility) 25%

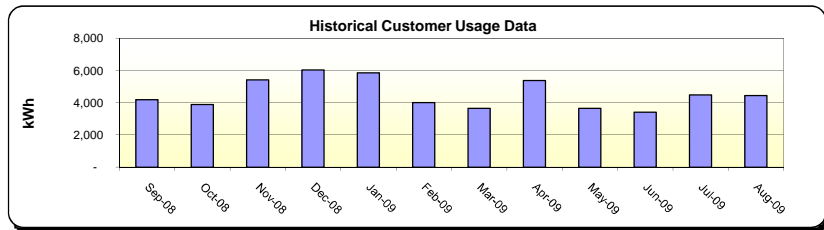


Glacial Index Includes:

- a. Estimated weighted average Wholesale Energy price
- b. Ancillary Services & requirements
- c. Zonal Congestion
- d. Market Scheduling and Forecasting Fees
- e. PJM ISO Fees
- f. Transmission Losses & Charges
- g. Capacity Charges
- h. NJ SUT

Glacial Index Excludes:

- a. Any charges from the LDC companies - Wires
- b. Non NJ SUT Taxes (SUT rates & charges noted above)



LDC Account No:	Physical Address:
1 PE000009659498113797	582 Rahway Ave, Woodbridge, NJ 07095

1. The Glacial Index price is based in large part on forecasted ISO charges and estimated future zonal energy prices.
 2. The forward tariff rates are based on the latest, pending or estimated utility rates (inclusive of NJ SUT), applicable for this rate schedule(s).
 Rate Listed is an average over the next 12 months. Your current average utility rate for November 2009 is \$0.11435/kwh.
 The graph above beyond 9/30/2009, reflect published rate changes and/or rate estimations.

Savings Analysis Proposal - PSE&G

Glacial Energy



This proposal illustrates how you can maximize your energy cost savings by choosing Glacial Energy as your preferred electricity supplier. This proposal is based on your organization's estimated usage (kwh) and demand (kw) over the coming year.

Contract Summary - Historical Utility Charges

Company Name: Woodbridge Township-000009659498113797
Billing Address: 582 Rahway Ave, Woodbridge, NJ 07095

Historical Timeframe (mo.): 6
Start Month: Mar-09
Number of LDC Accounts: 1

6 month Period Summary

Usage (kwh): 25,081
Avg Monthly Usage (kwh): 4,180
Peak Monthly kw: 20
Peak Load Factor: 29%
Capacity PLC: 18
Transmission PLC: 16

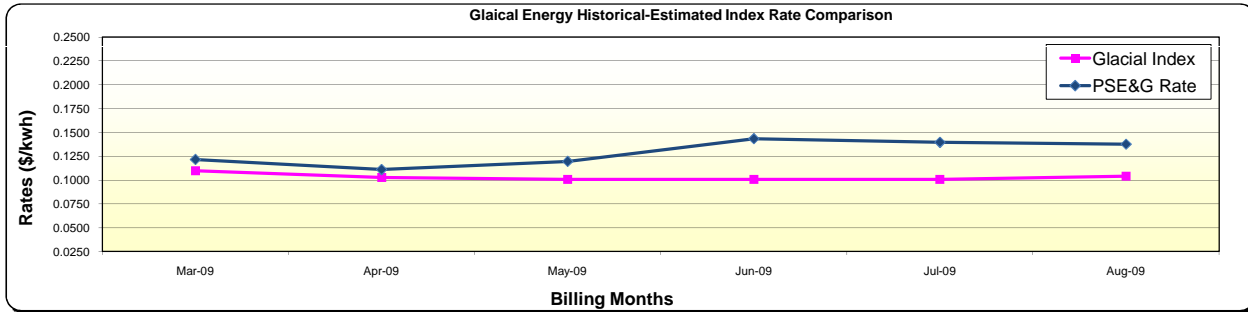
Estimated Historical Utility Charges

Avg Rate (\$/kwh): \$ 0.12799
Annual Utility Charges: \$ 3,210

Historical Glacial Index: \$ 0.10285
Historical Glacial Charges: \$ 2,579

Savings Summary

Historical Savings vs. Utility \$ 631
Historical Savings (Glacial vs. Utility) 20%



Glacial Index Includes:

- a. Estimated Weighted average Wholesale Energy price
- b. Ancillary Services & requirements
- c. Zonal Congestion
- d. Market Scheduling and Forecasting Fees
- e. PJM ISO Fees
- f. Transmission Losses & Charges
- g. Capacity Charges
- h. NJ SUT

Glacial Index Excludes:

- a. Any charges from the LDC companies - Wires
- b. Non NJ SUT Taxes

1. The historic tariff rate comparison is based on historical usage and current, pending or estimated utility rates (inclusive of NJ SUT) for the appropriate rate schedule(s).

Savings Analysis Proposal - PSE&G

Glacial Energy



This proposal illustrates how you can maximize your energy cost savings by choosing Glacial Energy as your preferred electricity supplier. This proposal is based on your organization's estimated usage (kwh) and demand (kw) over the coming year.

Secure your savings today!

Contract Summary - Forecasted Price Comparison

Company Name: Woodbridge Township-000010507717677163
Billing Address: 211 Ford Ave, Fords, NJ 08863

Start Month: Nov-09
Number of LDC Accounts: 1
Retail Margin Adder: N/A

Forecasted Customer Usage Data Summary

Usage (kwh): 164,172
Avg Monthly Usage (kwh): 13,681
Peak Monthly kw: 76
Peak Load Factor: 25%
Capacity PLC: 60
Transmission PLC: 54

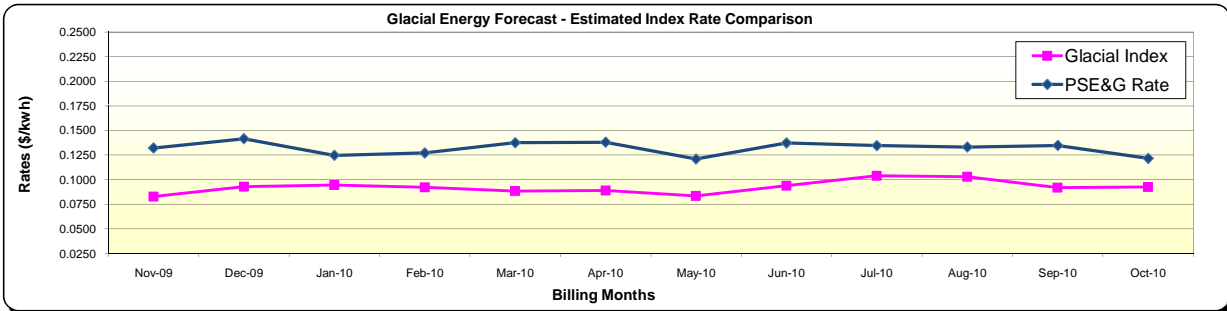
Estimated Rate over the next 12 months

Avg Rate (\$/kwh)*: \$ 0.12085
Annual Utility Charges: \$ 19,841

Glacial Energy Index: \$ 0.08576
Glacial Charges: \$ 14,080

Savings Summary

Estimated Savings vs. Utility	\$ 5,761
Savings (Glacial vs. Utility)	29%

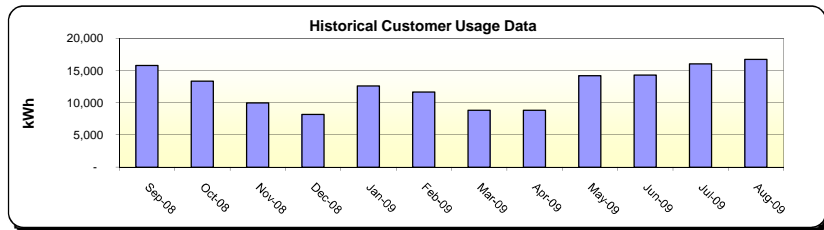


Glacial Index Includes:

- a. Estimated weighted average Wholesale Energy price
- b. Ancillary Services & requirements
- c. Zonal Congestion
- d. Market Scheduling and Forecasting Fees
- e. PJM ISO Fees
- f. Transmission Losses & Charges
- g. Capacity Charges
- h. NJ SUT

Glacial Index Excludes:

- a. Any charges from the LDC companies - Wires
- b. Non NJ SUT Taxes (SUT rates & charges noted above)



LDC Account No:	Physical Address:
1 PE000010507717677163	211 Ford Ave, Fords, NJ 08863

1. The Glacial Index price is based in large part on forecasted ISO charges and estimated future zonal energy prices.
 2. The forward tariff rates are based on the latest, pending or estimated utility rates (inclusive of NJ SUT), applicable for this rate schedule(s).
 Rate Listed is an average over the next 12 months. Your current average utility rate for November 2009 is \$0.13217/kwh.
 The graph above beyond 9/30/2009, reflect published rate changes and/or rate estimations.

Savings Analysis Proposal - PSE&G

Glacial Energy



This proposal illustrates how you can maximize your energy cost savings by choosing Glacial Energy as your preferred electricity supplier. This proposal is based on your organization's estimated usage (kwh) and demand (kw) over the coming year.

Contract Summary - Historical Utility Charges

Company Name: Woodbridge Township-000010507717677163
Billing Address: 211 Ford Ave, Fords, NJ 08863

Historical Timeframe (mo.): 6
Start Month: Mar-09
Number of LDC Accounts: 1

6 month Period Summary

Usage (kwh): 79,090
Avg Monthly Usage (kwh): 13,182
Peak Monthly kw: 76
Peak Load Factor: 24%
Capacity PLC: 60
Transmission PLC: 54

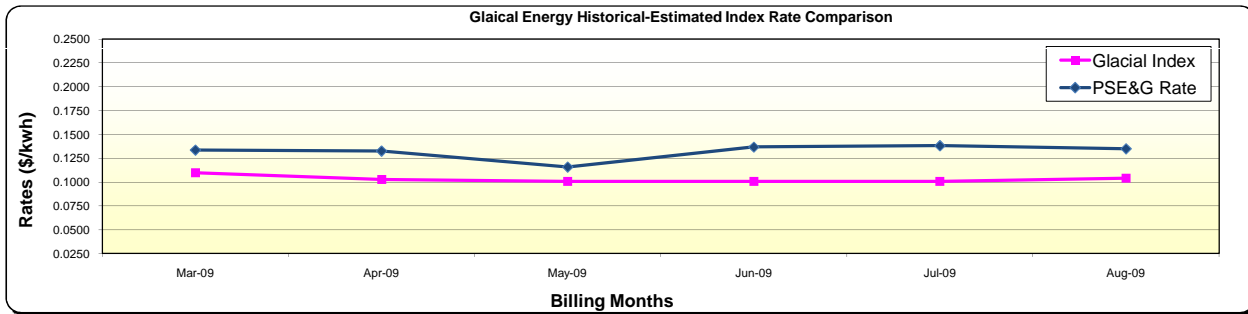
Estimated Historical Utility Charges

Avg Rate (\$/kwh): \$ 0.13199
Annual Utility Charges: \$ 10,439

Historical Glacial Index: \$ 0.10260
Historical Glacial Charges: \$ 8,115

Savings Summary

Historical Savings vs. Utility \$ 2,324
Historical Savings (Glacial vs. Utility) 22%



Glacial Index Includes:

- a. Estimated Weighted average Wholesale Energy price
- b. Ancillary Services & requirements
- c. Zonal Congestion
- d. Market Scheduling and Forecasting Fees
- e. PJM ISO Fees
- f. Transmission Losses & Charges
- g. Capacity Charges
- h. NJ SUT

Glacial Index Excludes:

- a. Any charges from the LDC companies - Wires
- b. Non NJ SUT Taxes

1. The historic tariff rate comparison is based on historical usage and current, pending or estimated utility rates (inclusive of NJ SUT) for the appropriate rate schedule(s).

Savings Analysis Proposal - PSE&G

Glacial Energy



This proposal illustrates how you can maximize your energy cost savings by choosing Glacial Energy as your preferred electricity supplier. This proposal is based on your organization's estimated usage (kwh) and demand (kw) over the coming year.

Secure your savings today!

Contract Summary - Forecasted Price Comparison

Company Name: Woodbridge Township-000010621716913805
Billing Address: 2 George Frederick Plaza, Woodbridge, NJ 07095

Start Month: Nov-09
Number of LDC Accounts: 1
Retail Margin Adder: N/A

Forecasted Customer Usage Data Summary

Usage (kwh): 126,497
Avg Monthly Usage (kwh): 10,541
Peak Monthly kw: 55
Peak Load Factor: 26%
Capacity PLC: 48
Transmission PLC: 43

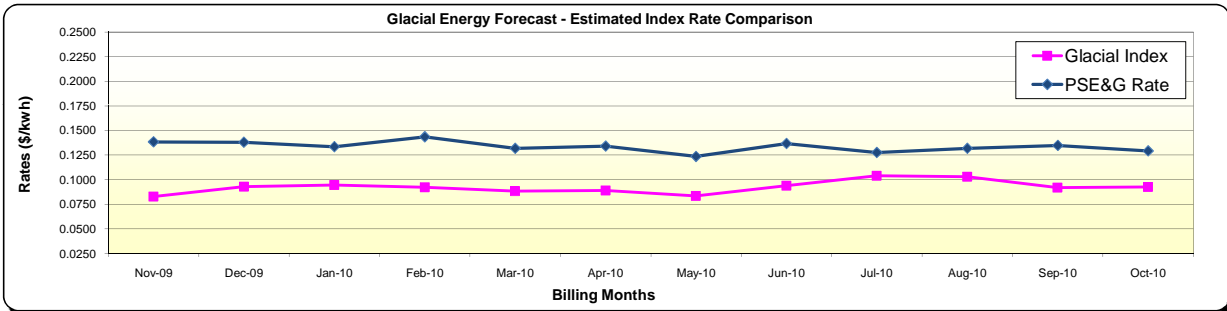
Estimated Rate over the next 12 months

Avg Rate (\$/kwh)*: \$ 0.12412
Annual Utility Charges: \$ 15,701

Glacial Energy Index: \$ 0.08776
Glacial Charges: \$ 11,101

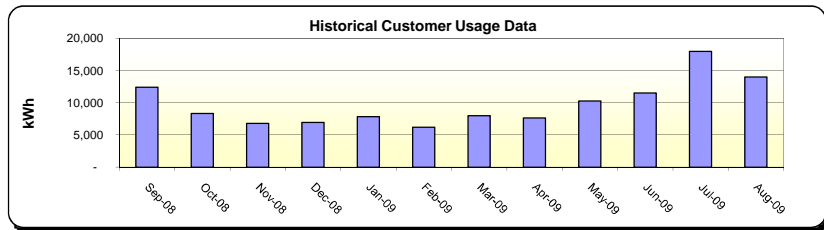
Savings Summary

Estimated Savings vs. Utility	\$ 4,599
Savings (Glacial vs. Utility)	29%



- Glacial Index Includes:**
- a. Estimated weighted average Wholesale Energy price
 - b. Ancillary Services & requirements
 - c. Zonal Congestion
 - d. Market Scheduling and Forecasting Fees
 - e. PJM ISO Fees
 - f. Transmission Losses & Charges
 - g. Capacity Charges
 - h. NJ SUT

- Glacial Index Excludes:**
- a. Any charges from the LDC companies - Wires
 - b. Non NJ SUT Taxes (SUT rates & charges noted above)



LDC Account No:	Physical Address:
1 PE000010621716913805	2 George Frederick Plaza, Woodbridge, NJ 07095

1. The Glacial Index price is based in large part on forecasted ISO charges and estimated future zonal energy prices.
 2. The forward tariff rates are based on the latest, pending or estimated utility rates (inclusive of NJ SUT), applicable for this rate schedule(s).
 Rate Listed is an average over the next 12 months. Your current average utility rate for November 2009 is \$0.13852/kwh.
 The graph above beyond 9/30/2009, reflect published rate changes and/or rate estimations.

Savings Analysis Proposal - PSE&G

Glacial Energy



This proposal illustrates how you can maximize your energy cost savings by choosing Glacial Energy as your preferred electricity supplier. This proposal is based on your organization's estimated usage (kwh) and demand (kw) over the coming year.

Contract Summary - Historical Utility Charges

Company Name: Woodbridge Township-000010621716913805
Billing Address: 2 George Frederick Plaza, Woodbridge, NJ 07095

Historical Timeframe (mo.): 6
Start Month: Mar-09
Number of LDC Accounts: 1

6 month Period Summary

Usage (kwh): 69,505
Avg Monthly Usage (kwh): 11,584
Peak Monthly kw: 55
Peak Load Factor: 29%
Capacity PLC: 48
Transmission PLC: 43

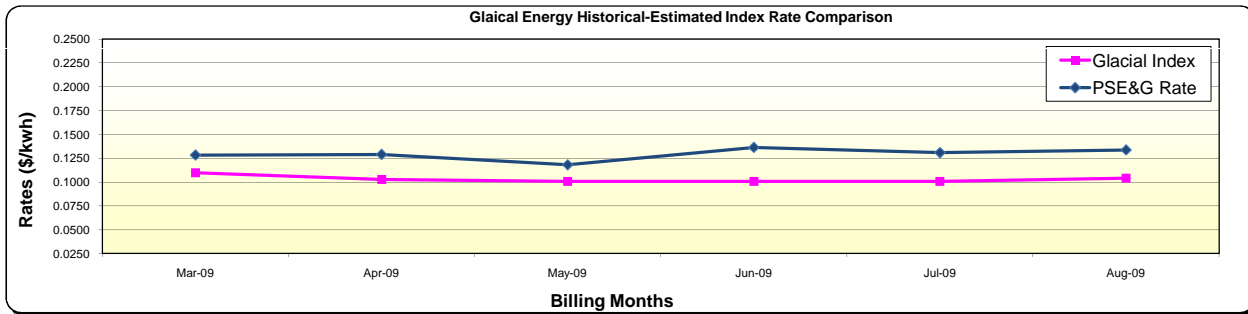
Estimated Historical Utility Charges

Avg Rate (\$/kwh): \$ 0.12990
Annual Utility Charges: \$ 9,029

Historical Glacial Index: \$ 0.10255
Historical Glacial Charges: \$ 7,128

Savings Summary

Historical Savings vs. Utility \$ 1,901
Historical Savings (Glacial vs. Utility) 21%



Glacial Index Includes:

- a. Estimated Weighted average Wholesale Energy price
- b. Ancillary Services & requirements
- c. Zonal Congestion
- d. Market Scheduling and Forecasting Fees
- e. PJM ISO Fees
- f. Transmission Losses & Charges
- g. Capacity Charges
- h. NJ SUT

Glacial Index Excludes:

- a. Any charges from the LDC companies - Wires
- b. Non NJ SUT Taxes

1. The historic tariff rate comparison is based on historical usage and current, pending or estimated utility rates (inclusive of NJ SUT) for the appropriate rate schedule(s).

Savings Analysis Proposal - PSE&G

Glacial Energy



This proposal illustrates how you can maximize your energy cost savings by choosing Glacial Energy as your preferred electricity supplier. This proposal is based on your organization's estimated usage (kwh) and demand (kw) over the coming year.

Secure your savings today!

Contract Summary - Forecasted Price Comparison

Company Name: Woodbridge Township-000010852064492334
Billing Address: 600 Main St, Woodbridge, NJ 07095

Start Month: Nov-09
Number of LDC Accounts: 1
Retail Margin Adder: N/A

Forecasted Customer Usage Data Summary

Usage (kwh): 3,469,179
Avg Monthly Usage (kwh): 289,098
Peak Monthly kw: 764
Peak Load Factor: 52%
Capacity PLC: 642
Transmission PLC: 578

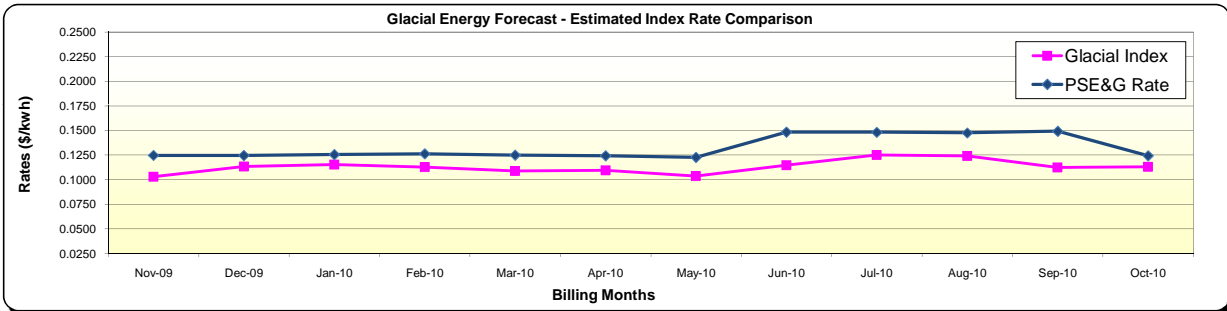
Estimated Rate over the next 12 months

Avg Rate (\$/kwh)*: \$ 0.12354
Annual Utility Charges: \$ 428,570

Glacial Energy Index: \$ 0.10485
Glacial Charges: \$ 363,743

Savings Summary

Estimated Savings vs. Utility	\$ 64,828
Savings (Glacial vs. Utility)	15%

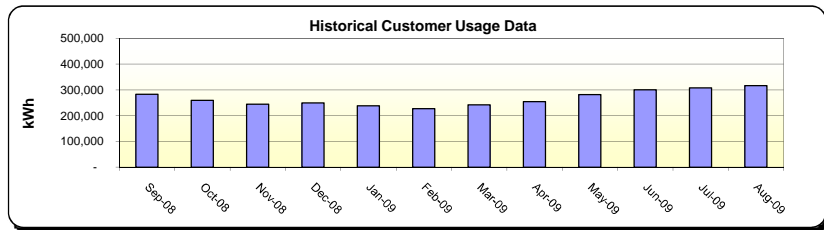


Glacial Index Includes:

- a. Estimated weighted average Wholesale Energy price
- b. Ancillary Services & requirements
- c. Zonal Congestion
- d. Market Scheduling and Forecasting Fees
- e. PJM ISO Fees
- f. Transmission Losses & Charges
- g. Capacity Charges
- h. NJ SUT

Glacial Index Excludes:

- a. Any charges from the LDC companies - Wires
- b. Non NJ SUT Taxes (SUT rates & charges noted above)



LDC Account No:	Physical Address:
1 PE000010852064492334	600 Main St, Woodbridge, NJ 07095

1. The Glacial Index price is based in large part on forecasted ISO charges and estimated future zonal energy prices.
 2. The forward tariff rates are based on the latest, pending or estimated utility rates (inclusive of NJ SUT), applicable for this rate schedule(s).
 Rate Listed is an average over the next 12 months. Your current average utility rate for November 2009 is \$0.12459/kwh.
 The graph above beyond 9/30/2009, reflect published rate changes and/or rate estimations.

Savings Analysis Proposal - PSE&G

Glacial Energy



This proposal illustrates how you can maximize your energy cost savings by choosing Glacial Energy as your preferred electricity supplier. This proposal is based on your organization's estimated usage (kwh) and demand (kw) over the coming year.

Contract Summary - Historical Utility Charges

Company Name: Woodbridge Township-000010852064492334
Billing Address: 600 Main St, Woodbridge, NJ 07095

Historical Timeframe (mo.): 6
Start Month: Mar-09
Number of LDC Accounts: 1

6 month Period Summary

Usage (kwh): 1,704,661
Avg Monthly Usage (kwh): 284,110
Peak Monthly kw: 656
Peak Load Factor: 59%
Capacity PLC: 642
Transmission PLC: 578

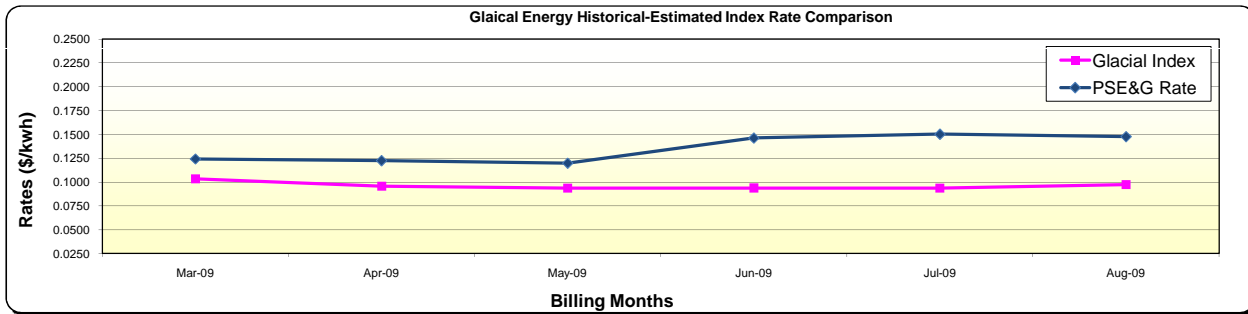
Estimated Historical Utility Charges

Avg Rate (\$/kwh): \$ 0.13615
Annual Utility Charges: \$ 232,093

Historical Glacial Index: \$ 0.09599
Historical Glacial Charges: \$ 163,633

Savings Summary

Historical Savings vs. Utility \$ 68,460
Historical Savings (Glacial vs. Utility) 29%



Glacial Index Includes:

- a. Estimated Weighted average Wholesale Energy price
- b. Ancillary Services & requirements
- c. Zonal Congestion
- d. Market Scheduling and Forecasting Fees
- e. PJM ISO Fees
- f. Transmission Losses & Charges
- g. Capacity Charges
- h. NJ SUT

Glacial Index Excludes:

- a. Any charges from the LDC companies - Wires
- b. Non NJ SUT Taxes

1. The historic tariff rate comparison is based on historical usage and current, pending or estimated utility rates (inclusive of NJ SUT) for the appropriate rate schedule(s).

Savings Analysis Proposal - PSE&G

Glacial Energy



This proposal illustrates how you can maximize your energy cost savings by choosing Glacial Energy as your preferred electricity supplier. This proposal is based on your organization's estimated usage (kwh) and demand (kw) over the coming year.

Secure your savings today!

Contract Summary - Forecasted Price Comparison

Company Name: Woodbridge Township-000011829146715084
Billing Address: 1 Main Street, Woodbridge, NJ 07095

Start Month: Nov-09
Number of LDC Accounts: 1
Retail Margin Adder: N/A

Forecasted Customer Usage Data Summary

Usage (kwh): 3,494,317
Avg Monthly Usage (kwh): 291,193
Peak Monthly kw: 527
Capacity PLC: 538
Transmission PLC: 595

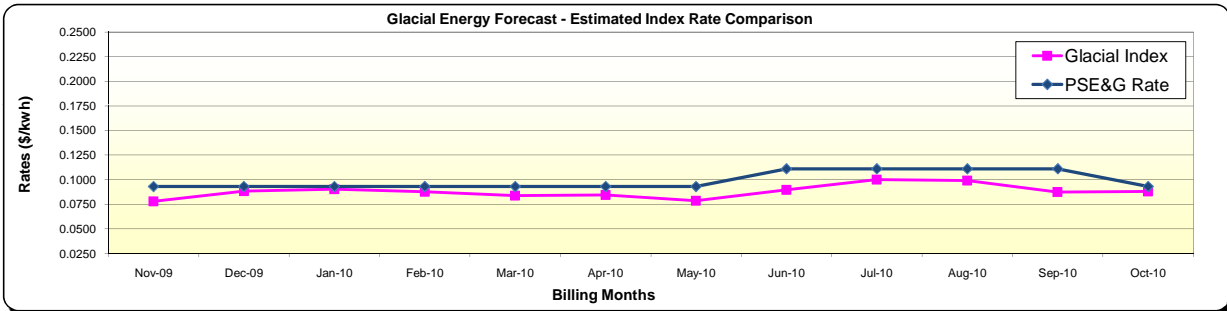
Estimated Rate over the next 12 months

Avg Rate (\$/kwh)*: \$ 0.08318
Annual Utility Charges: \$ 290,640

Glacial Energy Index: \$ 0.07554
Glacial Charges: \$ 263,977

Savings Summary

Estimated Savings vs. Utility \$	26,663
Savings (Glacial vs. Utility)	9%

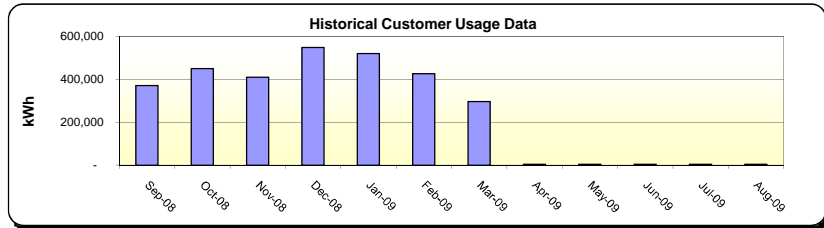


Glacial Index Includes:

- a. Estimated weighted average Wholesale Energy price
- b. Ancillary Services & requirements
- c. Zonal Congestion
- d. Market Scheduling and Forecasting Fees
- e. PJM ISO Fees
- f. Transmission Losses & Charges
- g. Capacity Charges
- h. NJ SUT

Glacial Index Excludes:

- a. Any charges from the LDC companies - Wires
- b. Non NJ SUT Taxes (SUT rates & charges noted above)



LDC Account No:	Physical Address:
1 PE000011829146715084	1 Main Street, Woodbridge, NJ 07095

1. The Glacial Index price is based in large part on forecasted ISO charges and estimated future zonal energy prices.
 2. The forward tariff rates are based on the latest, pending or estimated utility rates (inclusive of NJ SUT), applicable for this rate schedule(s).
 Rate Listed is an average over the next 12 months. Your current average utility rate for November 2009 is \$0.0931/kwh.
 The graph above beyond 9/30/2009, reflect published rate changes and/or rate estimations.

Savings Analysis Proposal - PSE&G

Glacial Energy



This proposal illustrates how you can maximize your energy cost savings by choosing Glacial Energy as your preferred electricity supplier. This proposal is based on your organization's estimated usage (kwh) and demand (kw) over the coming year.

Contract Summary - Historical Utility Charges

Company Name: Woodbridge Township-000011829146715084
Billing Address: 1 Main Street, Woodbridge, NJ 07095

Historical Timeframe (mo.): 6
Start Month: Mar-09
Number of LDC Accounts: 1

6 month Period Summary

Usage (kwh): 319,414
Avg Monthly Usage (kwh): 53,236
Peak Monthly kw: 527
Capacity PLC: 538
Transmission PLC: 595

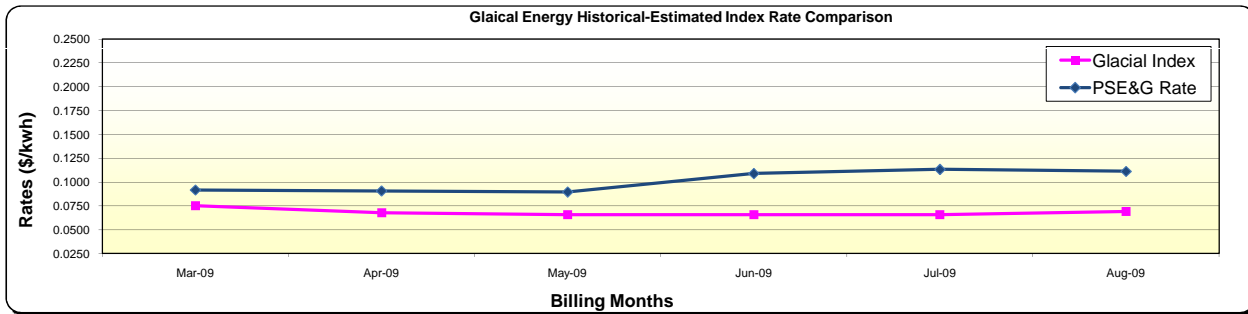
Estimated Historical Utility Charges

Avg Rate (\$/kwh): \$ 0.09237
Annual Utility Charges: \$ 29,506

Historical Glacial Index: \$ 0.07449
Historical Glacial Charges: \$ 23,792

Savings Summary

Historical Savings vs. Utility \$ 5,713
Historical Savings (Glacial vs. Utility) 19%



Glacial Index Includes:

- a. Estimated Weighted average Wholesale Energy price
- b. Ancillary Services & requirements
- c. Zonal Congestion
- d. Market Scheduling and Forecasting Fees
- e. PJM ISO Fees
- f. Transmission Losses & Charges
- g. Capacity Charges
- h. NJ SUT

Glacial Index Excludes:

- a. Any charges from the LDC companies - Wires
- b. Non NJ SUT Taxes

1. The historic tariff rate comparison is based on historical usage and current, pending or estimated utility rates (inclusive of NJ SUT) for the appropriate rate schedule(s).

APPENDIX F
GAS HEATING APPLICATION



2009 Gas Heating Application

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

Payee Information (Must submit W-9 form with application)			Email Address
Company	Contact Name	Incorporated? <input type="checkbox"/> Yes <input type="checkbox"/> No	Federal Tax ID#
Street Address	City	State Zip	Telephone No. ()

Contractor/Vendor Information (if different from Payee)			Email Address
Company	Contact Name	Incorporated? <input type="checkbox"/> Yes <input type="checkbox"/> No	Federal Tax ID#
Street Address	City	State Zip	Telephone No. ()

Gas Heating Equipment Information								
Reason N–New R–Replaced	Type B–Boiler F–Furnace	Manufacturer	Model	A Unit Size (MBH Input)	B Unit Efficiency (AFUE) (%)	C Incentive \$/Unit (Table)	D Quantity	E Total Incentives (Cx D)
(Example) N	F	ACME	GF1011	100,000	90	\$500	2	\$500 x 2 = \$600
R	B	ACME	B1500	1,500 MBH	85	\$1.75	2	1500 x \$1.75 x 2 = \$5,250
Total								

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.

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).

Gas Heating Equipment Efficiency Levels and Incentives*		
Gas Fired Boilers		
Capacity - MBH	Minimum Efficiency	Incentive
<300 MBH	85% AFUE	\$2.00 per MBH but not less than \$300 per unit
≥ 300 MBH - 1500 MBH	85% AFUE for Hot Water boilers 84% AFUE for Steam boilers	\$1.75 per MBH
>1500 - ≤ 4000 MBH	84% AFUE for Hot Water boilers 83% AFUE for Steam boilers	\$1.00 per MBH
> 4000 MBH	See Custom Measure Path	
Gas Furnaces		
Capacity	Minimum Efficiency	Incentive
No size/capacity limitation	90% or greater AFUE or ENERGY STAR	\$300 per furnace
No size/capacity limitation Furnace with Electronic Commutated Motor (ECM) or equivalent	92% or greater AFUE or ENERGY STAR	\$400 per furnace

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



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.

APPENDIX F

Gas Water Heating Application



2009 Gas Water Heating Application

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

Payee Information (Must submit W-9 form with application)				Email Address
Company		Contact Name		Federal Tax ID#
Street Address		City		Telephone No. ()
		State		
		Zip		
		Incorporated? <input type="checkbox"/> Yes <input type="checkbox"/> No		

Contractor/Vendor Information (if different from Payee)				Email Address
Company		Contact Name		Federal Tax ID#
Street Address		City		Telephone No. ()
		State		
		Zip		
		Incorporated? <input type="checkbox"/> Yes <input type="checkbox"/> No		

Gas Water Heating Equipment Information								
Reason N–New R–Replaced	Type B–Booster W–Water	Manufacturer	Model	A Unit Size B–MBH Input W–Size Gallons	B Unit Efficiency (EF or AFUE)	C Incentive (Table)	D Quantity	E Total Incentives B = (AxCxD) ≤50 W = (CxD) >50 W = (AxCxD)
(Example) N	B	ACME	GF1011	100	N/A	\$35	1	\$35 x 100 = \$3,500
R	W	ACME	DHW1500	1,500	85	\$1.75	2	1,500 x \$1.75 x 2 = \$5,250
R	W	ACME	BWH50	50	0.62	\$50	1	\$50 x 1 = \$50
Total								

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.

ACKNOWLEDGEMENT

<p style="text-align: center; border-bottom: 1px solid black; margin-bottom: 5px;">_____</p> <p>CUSTOMER'S SIGNATURE</p> <p>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).</p>
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Gas Water Heating Efficiency Levels and Incentives*

Gas-Fired Water Booster Heaters		Gas Water Heaters ≤ 50 Gallons	
Capacity - MBH	Incentive	Capacity - MBH	Incentive
≤100 MBH	\$35 per MBH	0.62 or higher Energy Factor Size limit: ≤50 gallons	\$50 per water heater
>100 MBH	\$17 per MBH		
Gas Water Heaters > 50 Gallons			
Capacity - MBH	Minimum Efficiency	Incentive	
<300 MBH	85% AFUE	\$2.00 per MBH but not less than \$50/unit	
≥ 300 MBH - 1500 MBH	85% AFUE	\$1.75 per MBH	
>1500 - ≤ 4000 MBH	84% AFUE	\$1.00 per MBH	

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



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.

APPENDIX F

Lighting Controls Application



2009 Lighting Controls Application

Customer Information

Company	Electric Utility Serving Applicant	Electric Account No.	Installation Date
Facility Address	City	State	Zip
Type of Project <input type="checkbox"/> New Construction <input type="checkbox"/> Renovation <input type="checkbox"/> Equipment Replacement <input type="checkbox"/> School	Size of Building		
Company Mailing Address	City	State	Zip
Contact Person (Name/Title)	Telephone No. ()	Fax No. ()	
Incorporated? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Exempt	Federal Tax ID# or SSN	Email Address	
Incentive Payment to <input type="checkbox"/> Customer <input type="checkbox"/> Contractor <input type="checkbox"/> 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? <input type="checkbox"/> Yes <input type="checkbox"/> No	Email Address
Street Address		City	State	Zip	Federal Tax ID#
					Telephone No. ()

Contractor/Vendor Information (if different from Payee)

Company			Contact Name	Incorporated? <input type="checkbox"/> Yes <input type="checkbox"/> No	Email Address
Street Address		City	State	Zip	Federal Tax ID#
					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



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.

APPENDIX F

Lighting Controls Incentive Worksheet



2009 Lighting Controls Incentive Worksheet

Customer Information

Company	Facility Address
<input type="checkbox"/> 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 OHLE, insert total number of ballasts controlled; for OHLH and DDH, insert total number of fixtures controlled.

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, 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.
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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

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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.

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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.

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 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.

APPENDIX F

Prescriptive Lighting Application



2009 Prescriptive Lighting Application

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

Payee Information (Must submit W-9 form with application)				Email Address
Company	Contact Name	Incorporated? <input type="checkbox"/> Yes <input type="checkbox"/> No	Federal Tax ID#	
Street Address	City	State	Zip	Telephone No. ()

Contractor/Vendor Information (if different from Payee)				Email Address
Company	Contact Name	Incorporated? <input type="checkbox"/> Yes <input type="checkbox"/> No	Federal Tax ID#	
Street Address	City	State	Zip	Telephone No. ()

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 $\leq 20\%$.
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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Design Services – Services that may be offered to design professionals under the Program.

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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 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.

APPENDIX F

Prescriptive Lighting 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.
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 $\leq 20\%$.
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



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 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.

APPENDIX F

Variable Frequency Drives Application



2009 Variable Frequency Drives Application

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

Payee Information (Must submit W-9 form with application)			Email Address	
Company	Contact Name	Incorporated? <input type="checkbox"/> Yes <input type="checkbox"/> No	Federal Tax ID#	
Street Address	City	State	Zip	Telephone No. ()

Contractor/Vendor Information (if different from Payee)			Email Address	
Company	Contact Name	Incorporated? <input type="checkbox"/> Yes <input type="checkbox"/> No	Federal Tax ID#	
Street Address	City	State	Zip	Telephone No. ()

Variable Frequency Drive Information										
Reason N–New R–Retrofit	Type of Usage F– HVAC VAV Fan P– HVAC VAV Pump A– Air Compressor	Manufacturer	Model	Drive Efficiency %	Motor Efficiency %	Location (Bldg/Rm)	A HP of Controlled Motors	B Incentive per HP (Table)	C # of Units	Total Incentives (AxBxC)
(Example) N	F	ACME	RR/C1957	97	94.1	Mech. Rm. #4	30	\$65	2	30 x \$65 x 2 = \$3,900
Total										

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 VFDs in HVAC VAV systems, are available only for installing a VFD on existing VAV systems as an add on measure. Replacement of an existing VFD on VAV systems and installations on VAV systems in new construction are not eligible for incentives.
 4. The Variable Frequency Drive (VFD) incentive for pumps is available only for VFDs installed on centrifugal chilled water pump motors for HVAC systems.
 5. The VFDs must be installed in a system (VAV air supply or chilled water pumping systems) that incorporates pressure sensors (or other applicable sensor devices) in the flow stream.
- For Compressed Air Systems:
6. Incentives are available for new air or water cooled, single or double stage, oil lubricated or oil free twin rotor screw air compressors outfitted with VFDs (providing compressed air for typical plant air use).
 7. Replacement of VFD on an existing air compressor that had VFD control is not eligible for incentives.
 8. Incentives for retrofitting an existing qualified air compressor with VFD control may be available through the custom electric equipment program.
 9. VFD controlled compressors with premium efficiency motors may be eligible for a premium motor incentive in addition to this prescriptive VFD incentive.
 10. Only one VFD controlled air compressor will be eligible for an incentive for each compressed air system.
 11. The applicant shall provide sufficient documentation to demonstrate that a VFD controlled air compressor operates, at a minimum, for 2000 hours annually. Documentation may include P&IDs, Control Logic Diagrams, and Plant Operating Schedules.
- For All VFDs:
12. The VFD must have either an input line reactor or isolation transformer.

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).

Variable Frequency Drive Incentives*	
Centrifugal Fan Applications on Variable Air Volume HVAC Systems	
Cumulative Motor HP Controlled by Each VFD	Incentive \$/Cumulative HP Controlled
5 to <10 hp	\$155 per hp
10 to <20 hp	\$120 per hp
20+ hp	\$65 per hp
Chilled Water Pump Motors for HVAC Systems	
20+ hp	\$60 per VFD rated hp
Rotary Screw Air Compressors	
25 to 29 hp	Up to \$5,250
30 to 39 hp	Up to \$6,000
40 to 49 hp	Up to \$7,200
50 to 59 hp	Up to \$8,000
60 to 199 hp	Up to \$9,000
200 to 249 hp	Up to \$10,000
≥ 250 hp	Up to \$12,500

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

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.

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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 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.

APPENDIX G

Engineers Opinion of Probable Construction Costs

Lighting Price Estimates for Woodbridge Township

BUILDING	LIGHTING MATERIAL COST	LIGHTING LABOR COST	TOTAL LIGHTING COST	SENSOR MATERIAL COST	SENSOR LABOR COST	TOTAL SENSOR COST	MATERIAL SUBTOTAL	LABOR SUBTOTAL	TOTAL
Municipal Building	\$ 28,947	\$ 12,406	\$ 41,353	\$ 6,420	\$ 2,751	\$ 9,171	\$ 35,367	\$ 15,157	\$ 50,525
Community Center	\$ 9,399	\$ 4,028	\$ 13,428	\$ 1,480	\$ 634	\$ 2,114	\$ 10,879	\$ 4,663	\$ 15,542
Pump Station	\$ 7,576	\$ 3,247	\$ 10,823	\$ 296	\$ 127	\$ 423	\$ 7,872	\$ 3,374	\$ 11,246
Senior Center	\$ 28,503	\$ 12,216	\$ 40,719	\$ 1,483	\$ 636	\$ 2,119	\$ 29,986	\$ 12,851	\$ 42,838
Arts Center	\$ 1,525	\$ 653	\$ 2,178	\$ -	\$ -	\$ -	\$ 1,525	\$ 653	\$ 2,178
Health Center	\$ 10,971	\$ 4,702	\$ 15,673	\$ 984	\$ 422	\$ 1,406	\$ 11,955	\$ 5,124	\$ 17,078
Main Library	\$ 75,613	\$ 32,406	\$ 108,019	\$ 2,578	\$ 1,105	\$ 3,683	\$ 78,191	\$ 33,510	\$ 111,702
Iselin Library	\$ 676	\$ 290	\$ 965	\$ 1,050	\$ 450	\$ 1,500	\$ 1,726	\$ 740	\$ 2,465
Fords Library	\$ 3,257	\$ 1,396	\$ 4,653	\$ -	\$ -	\$ -	\$ 3,257	\$ 1,396	\$ 4,653
Inman Library	\$ 6,373	\$ 2,731	\$ 9,104	\$ -	\$ -	\$ -	\$ 6,373	\$ 2,731	\$ 9,104
Subtotal							\$ 187,132	\$ 80,199	

SUBTOTAL= \$ 267,331

MARKUP %= 0.43

MARKUP= \$ 114,570

BUDGET COST ESTIMATE \$ 381,902

HVAC Price Estimates for Woodbridge Township

BUILDING	HVAC MATERIAL COST	HVAC LABOR COST	PROJECT SUBTOTAL	TOTAL
Municipal Building	\$ 71,400	\$ 30,600	\$ 102,000	\$ 102,000
Community Center	\$ 105,000	\$ 45,000	\$ 150,000	\$ 150,000
Pump Station	\$ -	\$ -	\$ -	\$ -
Senior Center	\$ 305,900	\$ 131,100	\$ 437,000	\$ 437,000
Arts Center	\$ 21,630	\$ 9,270	\$ 30,900	\$ 30,900
Health Center	\$ 94,500	\$ 40,500	\$ 135,000	\$ 135,000
Main Library	\$ 409,500	\$ 175,500	\$ 585,000	\$ 585,000
Iselin Library	\$ 56,000	\$ 24,000	\$ 80,000	\$ 80,000
Fords Library	\$ 42,000	\$ 18,000	\$ 60,000	\$ 60,000
Inman Library	\$ 31,500	\$ 13,500	\$ 45,000	\$ 45,000
Subtotal			\$ 1,624,900	

SUBTOTAL= \$ 1,624,900
 MARKUP %= 0.43
 MARKUP= \$ 698,707
 BUDGET COST ESTIMATE \$ 2,323,607

Window Price Estimates for Woodbridge Township

BUILDING	MATERIAL COST	LABOR COST	PROJECT SUBTOTAL	TOTAL
Municipal Building	\$ -	\$ -	\$ -	\$ -
Community Center	\$ -	\$ -	\$ -	\$ -
Pump Station	\$ -	\$ -	\$ -	\$ -
Senior Center	\$ -	\$ -	\$ -	\$ -
Arts Center	\$ -	\$ -	\$ -	\$ -
Health Center	\$ 279,360	\$ 69,840	\$ 349,200	\$ 349,200
Main Library	\$ 279,360	\$ 69,840	\$ 349,200	\$ 349,200
Iselin Library	\$ 61,440	\$ 15,360	\$ 76,800	\$ 76,800
Fords Library	\$ 61,440	\$ 15,360	\$ 76,800	\$ 76,800
Inman Library	\$ 55,040	\$ 13,760	\$ 68,800	\$ 68,800
Subtotal			\$ 920,800	

SUBTOTAL= \$ 920,800
 MARKUP %= 0.43
 MARKUP= \$ 395,944
 BUDGET COST ESTIMATE \$ 1,316,744

Water Conservation Price Estimates for Woodbridge Township

BUILDING	MATERIAL COST	LABOR COST	PROJECT SUBTOTAL	TOTAL
Municipal Building	\$ -	\$ -	\$ -	\$ -
Community Center	\$ -	\$ -	\$ -	\$ -
Pump Station	\$ 2,936	\$ 734	\$ 3,670	\$ 3,670
Senior Center	\$ 18,080	\$ 4,520	\$ 22,600	\$ 22,600
Arts Center	\$ 1,200	\$ 300	\$ 1,500	\$ 1,500
Health Center	\$ 8,200	\$ 2,050	\$ 10,250	\$ 10,250
Main Library	\$ -	\$ -	\$ -	\$ -
Iselin Library	\$ 2,992	\$ 748	\$ 3,740	\$ 3,740
Fords Library	\$ 2,992	\$ 748	\$ 3,740	\$ 3,740
Inman Library	\$ 2,992	\$ 748	\$ 3,740	\$ 3,740
Subtotal			\$ 49,240	

SUBTOTAL= \$ 49,240
 MARKUP%= 0.43
 MARKUP= \$ 21,173
 BUDGET COST ESTIMATE \$ 70,413

Solar Price Estimates for Woodbridge Township

BUILDING	SOLAR MATERIAL COST	SOLAR LABOR COST	PROJECT SUBTOTAL	TOTAL
Municipal Building	\$ 504,390	\$ 168,130	\$ 672,520	\$ 672,520
Community Center	\$ 6,701,237	\$ 2,233,746	\$ 8,934,982	\$ 8,934,982
Pump Station	\$ -	\$ -	\$ -	\$ -
Senior Center	\$ 782,460	\$ 260,820	\$ 1,043,280	\$ 1,043,280
Arts Center	\$ -	\$ -	\$ -	\$ -
Health Center	\$ 686,384	\$ 228,795	\$ 915,179	\$ 915,179
Main Library	\$ 833,520	\$ 277,840	\$ 1,111,360	\$ 1,111,360
Iselin Library	\$ 86,940	\$ 28,980	\$ 115,920	\$ 115,920
Fords Library	\$ -	\$ -	\$ -	\$ -
Inman Library	\$ -	\$ -	\$ -	\$ -
Subtotal			\$ 12,793,241	

SUBTOTAL= \$ 12,793,241
 MARKUP %= 0.20
 MARKUP= \$ 2,558,648
BUDGET COST ESTIMATE \$ 15,351,889

APPENDIX H

Facility Data Forms



APPENDIX C - FACILITY DATA FORM

Complete one Facility Data Form for **each** 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 Woodbridge Township Municipal Building			
Street Address 1 Main Street		County Middlesex	
City Woodbridge		State NJ	Zip 07095
Facility's Description 4-story municipal building housing administrative offices and police department			
Total Sq Ft 23,700	Year Built 1997	Hours/Week Occupied 168	Number of Employees 350
Building Type (Check only one of the following):			
<input type="checkbox"/>	Emergency Services	<input type="checkbox"/>	Garage
<input type="checkbox"/>	Center/Meeting Hall/Library	<input checked="" type="checkbox"/>	Offices
<input type="checkbox"/>	Recreation/Entertainment/Parks	<input type="checkbox"/>	Religious
<input type="checkbox"/>	School	<input type="checkbox"/>	School: College
<input type="checkbox"/>	Water Treatment/Pumping	<input type="checkbox"/>	Other: _____

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: 4 / 1 / 08 to 3 / 1 / 09



ELECTRICITY

Electric Utility Name & Account Number(s) PSEG 51-196-973-13	
Annual kWh Use 2,900,434	Annual Electricity Cost \$473,154.70
Max Summer kW 406,477	Max Winter kW 248,313

NATURAL GAS

Natural Gas Utility Name & Account Number(s) Elizabethtown Gas 6726228571	
Annual Use in Therms 79,203	Annual Natural Gas Cost \$122,479.37

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. _____
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APPENDIX C - FACILITY DATA FORM

Complete one Facility Data Form for each 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 Woodbridge Community Center			
Street Address 600 Main Street		County Middlesex	
City Woodbridge		State NJ	Zip 07095
Facility's Description 2-story recreational complex with swimming pool, hockey rink, skating rink, gymnasium, offices			
Total Sq Ft 82,300	Year Built 2003	Hours/Week Occupied 105	Number of Employees 200
Building Type (Check only one of the following):			
<input type="checkbox"/>	Emergency Services	<input type="checkbox"/>	Garage
<input type="checkbox"/>	Center/Meeting Hall/Library	<input type="checkbox"/>	Offices
<input checked="" type="checkbox"/>	Recreation/Entertainment/Parks	<input type="checkbox"/>	Religious
<input type="checkbox"/>	School	<input type="checkbox"/>	School: College
<input type="checkbox"/>	Water Treatment/Pumping	<input type="checkbox"/>	Other: _____

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: 4 / 1 / 08 to 3 / 1 / 09



ELECTRICITY

Electric Utility Name & Account Number(s) PSEG 51-149-963-12	
Annual kWh Use 2,964,906	Annual Electricity Cost \$287,144.24
Max Summer kW 342,400	Max Winter kW 249,835

NATURAL GAS

Natural Gas Utility Name & Account Number(s) Elizabethtown Gas 4633641731	
Annual Use in Therms 71,552	Annual Natural Gas Cost \$78,213.16

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 _____
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APPENDIX C - FACILITY DATA FORM

*Complete one Facility Data Form for **each** 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 Woodbridge Township Pump Station			
Street Address 185 Woodbridge Ave.		County Middlesex	
City Sewaren		State NJ	Zip 07077
Facility's Description 1-story Township pump station			
Total Sq Ft 6,300	Year Built 1975	Hours/Week Occupied 168	Number of Employees 20
Building Type (Check only one of the following):			
<input type="checkbox"/>	Emergency Services	<input type="checkbox"/>	Garage
<input type="checkbox"/>	Center/Meeting Hall/Library	<input type="checkbox"/>	Offices
<input type="checkbox"/>	Recreation/Entertainment/Parks	<input type="checkbox"/>	Religious
<input type="checkbox"/>	School	<input type="checkbox"/>	School/College
<input checked="" type="checkbox"/>	Water Treatment/Pumping	<input type="checkbox"/>	Other: _____

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: 4 / 1 / 08 to 3 / 1 / 09



ELECTRICITY

Electric Utility Name & Account Number(s) PSEG 51-142-977-75	
Annual kWh Use 2,803,718	Annual Electricity Cost \$180,186.31
Max Summer kW 354,663	Max Winter kW 358,308

NATURAL GAS

Natural Gas Utility Name & Account Number(s) Elizabethtown Gas 7843890681	
Annual Use in Therms 5,304	Annual Natural Gas Cost \$10,800.00

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. _____
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APPENDIX C - FACILITY DATA FORM

*Complete one Facility Data Form for **each** 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 Evergreen Senior Center			
Street Address 400 Inman Ave.		County Middlesex	
City Colonia		State NJ	Zip 07067
Facility's Description 1-story former elementary school converted to senior citizen recreation complex with YMCA daycare facility in back section.			
Total Sq Ft 28,250	Year Built 1958	Hours/Week Occupied 60	Number of Employees 5
Building Type (Check only one of the following):			
<input type="checkbox"/>	Emergency Services	<input type="checkbox"/>	Garage
<input type="checkbox"/>	Center/Meeting Hall/Library	<input type="checkbox"/>	Offices
<input checked="" type="checkbox"/>	Recreation/Entertainment/Parks	<input type="checkbox"/>	Religious
<input type="checkbox"/>	School	<input type="checkbox"/>	School: College
<input type="checkbox"/>	Water Treatment/Pumping	<input type="checkbox"/>	Other: _____

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: 4 / 1 / 08 to 3 / 1 / 09



ELECTRICITY

Electric Utility Name & Account Number(s) PSEG 51-882-068-11	
Annual kWh Use 146,580	Annual Electricity Cost \$46,575.29
Max Summer kW 16,200	Max Winter kW 24,060

NATURAL GAS

Natural Gas Utility Name & Account Number(s) Elizabethtown Gas 7660567631	
Annual Use in Therms 25,596	Annual Natural Gas Cost \$27,806.12

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. _____
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APPENDIX C - FACILITY DATA FORM

Complete one Facility Data Form for each 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 Barron Arts Center			
Street Address 582 Rahway Ave.		County Middlesex	
City Woodbridge		State NJ	Zip 07095
Facility's Description 2-story arts center built in 1877 as a public library			
Total Sq Ft 2,270	Year Built 1877	Hours/Week Occupied 60	Number of Employees 6
Building Type (Check only one of the following):			
<input type="checkbox"/>	Emergency Services	<input type="checkbox"/>	Garage
<input type="checkbox"/>	Center/Meeting Hall/Library	<input type="checkbox"/>	Offices
<input checked="" type="checkbox"/>	Recreation/Entertainment/Parks	<input type="checkbox"/>	Religious
<input type="checkbox"/>	School	<input type="checkbox"/>	School: College
<input type="checkbox"/>	Water Treatment/Pumping	<input type="checkbox"/>	Other: _____

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: 4 / 1 / 08 to 3 / 1 / 09



ELECTRICITY

Electric Utility Name & Account Number(s) PSEG 51-266-304-66	
Annual kWh Use 45,576	Annual Electricity Cost \$14,598.12
Max Summer kW 6,766	Max Winter kW 3,747

NATURAL GAS

Natural Gas Utility Name & Account Number(s) Elizabethtown Gas 7251373740	
Annual Use in Therms 2,812	Annual Natural Gas Cost \$3,046.39

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.
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APPENDIX C - FACILITY DATA FORM

*Complete one Facility Data Form for **each** 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 Woodbridge Township Health Center			
Street Address 2 George Frederick Plaza		County Middlesex	
City Woodbridge		State NJ	Zip 07095
Facility's Description 1-story former elementary school currently housing offices of Woodbridge Township Health Dept.			
Total Sq Ft 10,000	Year Built 1958	Hours/Week Occupied 60	Number of Employees 22
Building Type (Check only one of the following):			
<input type="checkbox"/> Emergency Services	<input type="checkbox"/> Garage		
<input type="checkbox"/> Center/Meeting Hall/Library	<input checked="" type="checkbox"/> Offices		
<input type="checkbox"/> Recreation/Entertainment/Parks	<input type="checkbox"/> Religious		
<input type="checkbox"/> School	<input type="checkbox"/> School: College		
<input type="checkbox"/> Water Treatment/Pumping	<input type="checkbox"/> Other: _____		

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: 4 / 1 / 08 to 3 / 1 / 09



ELECTRICITY

Electric Utility Name & Account Number(s) PSEG 51-228-094-61	
Annual kWh Use 132,090	Annual Electricity Cost \$21,214.08
Max Summer kW 17,970	Max Winter kW 8,370

NATURAL GAS

Natural Gas Utility Name & Account Number(s) Elizabethtown Gas 1201542780	
Annual Use in Therms 7,662	Annual Natural Gas Cost \$3,726.18

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 _____
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APPENDIX C - FACILITY DATA FORM

Complete one Facility Data Form for **each** 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 Woodbridge Township Main Library			
Street Address 1 George Frederick Plaza		County Middlesex	
City Woodbridge		State NJ	Zip 07095
Facility's Description 4-story public library building			
Total Sq Ft 52,000	Year Built 1974	Hours/Week Occupied 80	Number of Employees 50
Building Type (Check only one of the following):			
<input type="checkbox"/> Emergency Services			<input type="checkbox"/> Garage
<input checked="" type="checkbox"/> Center/Meeting Hall/Library			<input type="checkbox"/> Offices
<input type="checkbox"/> Recreation/Entertainment/Parks			<input type="checkbox"/> Religious
<input type="checkbox"/> School			<input type="checkbox"/> School: College
<input type="checkbox"/> Water Treatment/Pumping			<input type="checkbox"/> Other: _____

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: 4 / 1 / 08 to 3 / 1 / 09



ELECTRICITY

Electric Utility Name & Account Number(s) PSEG 51-209-3501-12			
Annual kWh Use	206,490	Annual Electricity Cost	\$50,882.97
Max Summer kW	46,720	Max Winter kW	4,800

NATURAL GAS

Natural Gas Utility Name & Account Number(s) Elizabethtown Gas 5916828571			
Annual Use in Therms	21,776	Annual Natural Gas Cost	\$33,952.79

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.
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APPENDIX C - FACILITY DATA FORM

*Complete one Facility Data Form for **each** 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 Iselin Branch Public Library			
Street Address 1081 Green St.		County Middlesex	
City Iselin		State NJ	Zip 08830
Facility's Description 2-story public library building			
Total Sq Ft 8,700	Year Built 1969	Hours/Week Occupied 70	Number of Employees 10
Building Type (Check only one of the following):			
<input type="checkbox"/> Emergency Services	<input type="checkbox"/> Garage		
<input checked="" type="checkbox"/> Center/Meeting Hall/Library	<input type="checkbox"/> Offices		
<input type="checkbox"/> Recreation/Entertainment/Parks	<input type="checkbox"/> Religious		
<input type="checkbox"/> School	<input type="checkbox"/> School: College		
<input type="checkbox"/> Water Treatment/Pumping	<input type="checkbox"/> Other: _____		

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: 4 / 1 / 08 to 3 / 1 / 09



ELECTRICITY

Electric Utility Name & Account Number(s) PSEG 51-759-293-05	
Annual kWh Use 133,600	Annual Electricity Cost \$27,632.41
Max Summer kW 25,200	Max Winter kW 8,800

NATURAL GAS

Natural Gas Utility Name & Account Number(s) Elizabethtown Gas 3554588530	
Annual Use in Therms 6,909	Annual Natural Gas Cost \$83,399.74

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.
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APPENDIX C - FACILITY DATA FORM

*Complete one Facility Data Form for **each** 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 Fords Branch Public Library			
Street Address 211 Ford Ave,		County Middlesex	
City Fords		State NJ	Zip 08863
Facility's Description 2-story public library building			
Total Sq Ft 16,000	Year Built 1971	Hours/Week Occupied 70	Number of Employees 10
Building Type (Check only one of the following):			
<input type="checkbox"/> Emergency Services	<input type="checkbox"/> Garage		
<input checked="" type="checkbox"/> Center/Meeting Hall/Library	<input type="checkbox"/> Offices		
<input type="checkbox"/> Recreation/Entertainment/Parks	<input type="checkbox"/> Religious		
<input type="checkbox"/> School	<input type="checkbox"/> School: College		
<input type="checkbox"/> Water Treatment/Pumping	<input type="checkbox"/> Other: _____		

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: <u> 4 </u> / <u> 1 </u> / <u> 08 </u> to <u> 3 </u> / <u> 1 </u> / <u> 09 </u>



ELECTRICITY

Electric Utility Name & Account Number(s) PSEG 51-74037907	
Annual kWh Use 188,010	Annual Electricity Cost \$33,470.94
Max Summer kW 39.840	Max Winter kW 12,090

NATURAL GAS

Natural Gas Utility Name & Account Number(s) Elizabethtown Gas 7752059481	
Annual Use in Therms 5,151	Annual Natural Gas Cost \$8,274.38

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





APPENDIX C - FACILITY DATA FORM

*Complete one Facility Data Form for **each** 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 Inman Branch Public Library			
Street Address 607 Inman Ave.		County Middlesex	
City Colonia	State NJ	Zip 07067	
Facility's Description 1-story public library building			
Total Sq Ft 4,400	Year Built 1966	Hours/Week Occupied 70	Number of Employees 10
Building Type (Check only one of the following):			
<input type="checkbox"/> Emergency Services	<input type="checkbox"/> Garage		
<input checked="" type="checkbox"/> Center/Meeting Hall/Library	<input type="checkbox"/> Offices		
<input type="checkbox"/> Recreation/Entertainment/Parks	<input type="checkbox"/> Religious		
<input type="checkbox"/> School	<input type="checkbox"/> School: College		
<input type="checkbox"/> Water Treatment/Pumping	<input type="checkbox"/> Other: _____		

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: 4 / 1 / 08 to 3 / 1 / 09



ELECTRICITY

Electric Utility Name & Account Number(s) PSEG 51-882-10916	
Annual kWh Use 92,080	Annual Electricity Cost \$16,160.93
Max Summer kW 11,160	Max Winter kW 11,360

NATURAL GAS

Natural Gas Utility Name & Account Number(s) Elizabethtown Gas 6400061570	
Annual Use in Therms 4506	Annual Natural Gas Cost \$5,648.81

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.
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