Local Government Energy Audit: Energy Audit Report

Town Hall

Secaucus, Town of

1203 Paterson Plank Road

Secaucus, New Jersey 07094

November 26, 2018

Final Report by:

TRC Energy Services

Disclaimer

The intent of this energy analysis report is to identify energy savings opportunities and recommend upgrades to the facility's energy using equipment and systems. Approximate savings are included in this report to help make decisions about reducing energy use at the facility. This report, however, is not intended to serve as a detailed engineering design document. Further design and analysis may be necessary in order to implement some of the measures recommended in this report.

The energy conservation measures and estimates of energy savings have been reviewed for technical accuracy. However, estimates of final energy savings are not guaranteed, because final savings may depend on behavioral factors and other uncontrollable variables. TRC Energy Services (TRC) and New Jersey Board of Public Utilities (NJBPU) shall in no event be liable should the actual energy savings vary.

Estimated installation costs are based on TRC's experience at similar facilities, pricing from local contractors and vendors, and/or cost estimates from *RS Means*. The owner of the facility is encouraged to independently confirm these cost estimates and to obtain multiple estimates when considering measure installations. Since actual installed costs can vary widely for certain measures and conditions, TRC and NJBPU do not guarantee installed cost estimates and shall in no event be held liable should actual installed costs vary from estimates.

New Jersey's Clean Energy Program (NJCEP) incentive values provided in this report are estimates based on program information available at the time of the report. Incentive levels are not guaranteed. The NJBPU reserves the right to extend, modify, or terminate programs without prior notice. The owner of the facility should review available program incentives and eligibility requirements prior to selecting and installing any energy conservation measures.

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1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for the Town Hall.

The goal of an LGEA report is to provide you with information on how your facility uses energy, identify energy conservation measures (ECMs) that can reduce your energy use, and provide information and assistance to help facilities implement ECMs. The LGEA report also contains valuable information on financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing ECMs.

This study was conducted by TRC Energy Services (TRC), as part of a comprehensive effort to assist New Jersey local governments in controlling energy costs and protecting our environment by offering a wide range of energy management options and advice.

1.1 Facility Summary

Secaucus Town Hall building is a 59,513 square foot facility constructed in 1979. It is comprised of various space types. The building is four floors (including the basement) and includes the police department, clerk's office, municipal court, town administration offices, garage, and mechanical spaces.

The building has a flat roof covered with a white membrane. Exterior walls are finished concrete block. The windows are double pane glazed with aluminum frames. Interior lighting at Town Hall consists of a combination of LED fixtures and linear fluorescent lamps which are controlled by manual wall switches. Heating is provided by two hot water non-condensing gas-fired boilers and electric resistance heaters. Cooling is provided by one air-cooled chiller, plus ductless split and rooftop unit air conditioners.

A thorough description of the facility and our observations are located in Section 2.

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC evaluated 13 measures. Eleven measures were recommended for implementation which represent an opportunity for Town Hall to reduce annual energy costs by roughly $14,473 and annual greenhouse gas emissions by 124,185 lbs CO_2e. We estimate that if all measures were implemented as recommended, the project would pay for itself in roughly 3.3 years. The breakdown of existing and potential utility costs after project implementation are illustrated in Figure 1 and Figure 2, respectively. Together these measures represent an opportunity to reduce the Town Hall's annual energy use by 10%.

Figure 1 – Previous 12 Month Utility Costs

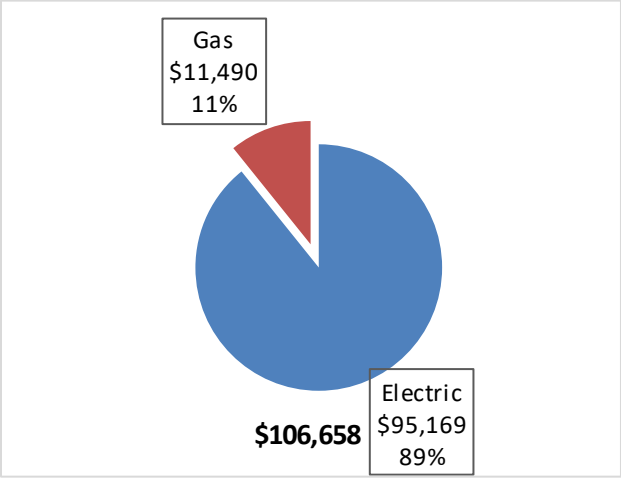
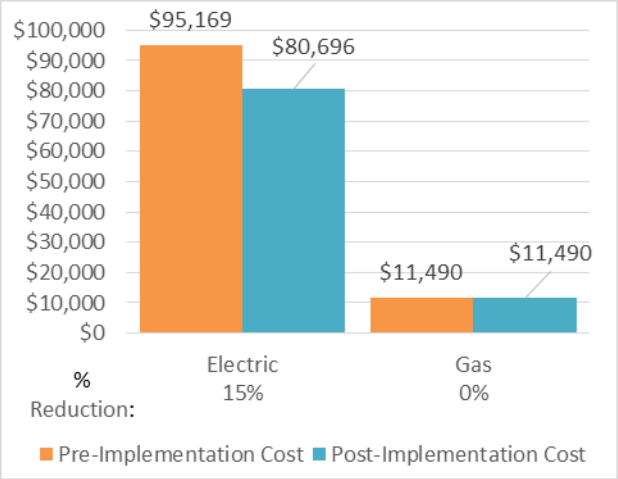


Figure 2 – Potential Post-Implementation Costs



A detailed description of the Town Hall's existing energy use can be found in Section 3.

Estimates of the total cost, energy savings, and financial incentives for the proposed energy efficient upgrades are summarized below in Figure 3. A brief description of each category can be found below and a description of savings opportunities can be found in Section 4.

Figure 3 – Summary of Energy Reduction Opportunities

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**49,694**	**6.2**	**0.0**	**$5,832.08**	**$25,732.04**	**$2,200.00**	**$23,532.04**	**4.0**	**50,042**
ECM 1	Install LED Fixtures	Yes	12,873	2.0	0.0	$1,510.76	$12,541.58	$1,075.00	$11,466.58	7.6	12,963
ECM 2	Retrofit Fixtures with LED Lamps	Yes	35,530	4.1	0.0	$4,169.76	$10,931.81	$1,125.00	$9,806.81	2.4	35,778
ECM 3	Install LED Exit Signs	Yes	1,291	0.1	0.0	$151.56	$2,258.66	$0.00	$2,258.66	14.9	1,300
Lighting Control Measures			**18,947**	**2.5**	**0.0**	**$2,223.61**	**$5,866.00**	**$1,105.00**	**$4,761.00**	**2.1**	**19,080**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	15,582	2.2	0.0	$1,828.66	$3,866.00	$555.00	$3,311.00	1.8	15,691
ECM 5	Install High/Low Lighitng Controls	Yes	3,365	0.3	0.0	$394.95	$2,000.00	$550.00	$1,450.00	3.7	3,389
Motor Upgrades			**10,573**	**2.3**	**0.0**	**$1,240.86**	**$5,941.06**	**$0.00**	**$5,941.06**	**4.8**	**10,647**
ECM 6	Premium Efficiency Motors	Yes	10,573	2.3	0.0	$1,240.86	$5,941.06	$0.00	$5,941.06	4.8	10,647
Variable Frequency Drive (VFD) Measures			**36,460**	**5.4**	**0.0**	**$4,278.93**	**$19,118.73**	**$1,600.00**	**$17,518.73**	**4.1**	**36,715**
ECM 7	Install VFDs on Constant Volume (CV) HVAC	Yes	9,792	2.6	0.0	$1,149.22	$6,334.30	$1,600.00	$4,734.30	4.1	9,861
ECM 8	Install VFDs on Chilled Water Pumps	Yes	24,000	2.5	0.0	$2,816.65	$7,615.90	$0.00	$7,615.90	2.7	24,168
	Install VFDs on Hot Water Pumps	No	2,668	0.3	0.0	$313.06	$5,168.53	$0.00	$5,168.53	16.5	2,686
Electric Unitary HVAC Measures			**4,400**	**1.6**	**0.0**	**$516.38**	**$11,344.80**	**$460.00**	**$10,884.80**	**21.1**	**4,431**
	Install High Efficiency Electric AC	No	4,400	1.6	0.0	$516.38	$11,344.80	$460.00	$10,884.80	21.1	4,431
HVAC System Improvements			**1,634**	**0.4**	**0.0**	**$191.80**	**$500.00**	**$250.00**	**$250.00**	**1.3**	**1,646**
ECM 9	Install Dual Enthalpy Outside Economizer Control	Yes	1,634	0.4	0.0	$191.80	$500.00	$250.00	$250.00	1.3	1,646
Domestic Water Heating Upgrade			**7,070**	**0.0**	**0.0**	**$829.71**	**$100.38**	**$0.00**	**$100.38**	**0.1**	**7,119**
ECM 10	Install Low-Flow Domestic Hot Water Devices	Yes	7,070	0.0	0.0	$829.71	$100.38	$0.00	$100.38	0.1	7,119
Plug Load Equipment Control - Vending Machine			**1,612**	**0.0**	**0.0**	**$189.16**	**$460.00**	**$0.00**	**$460.00**	**2.4**	**1,623**
ECM 11	Vending Machine Control	Yes	1,612	0.0	0.0	$189.16	$460.00	$0.00	$460.00	2.4	1,623
TOTALS FOR RECOMMENDED MEASURES			**123,323**	**16.5**	**0**	**14,473.09**	**52,549.68**	**5,155.00**	**47,394.68**	**3.3**	**124,185.52**
TOTALS FOR ALL EVALUATED MEASURES			**130,391**	**18.4**	**0.0**	**$15,302.53**	**$69,063.01**	**$5,615.00**	**$63,448.01**	**4.1**	**131,303**

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

Lighting Upgrades generally involve the replacement of existing lighting components such as lamps and ballasts (or the entire fixture) with higher efficiency lighting components. These measures save energy by reducing the power used by the lighting components due to improved electrical efficiency.

Lighting Controls measures generally involve the installation of automated controls to turn off lights or reduce light output when not needed. Automated control reduces reliance on occupant behavior for adjusting lights. These measures save energy by reducing the amount of time lights are on.

Motor Upgrades generally involve replacing older standard efficiency motors with high efficiency standard (NEMA Premium®). Motors replacements generally assume the same size motors, just higher efficiency. Although occasionally additional savings can be achieved by downsizing motors to better meet current load requirements. This measure saves energy by reducing the power used by the motors, due to improved electrical efficiency.

Variable Frequency Drives (VFDs) are motor control devices. These measures control the speed of a motor so that the motor spins at peak efficiency during partial load conditions. Sensors adapt the speed to flow, temperature, or pressure settings which is much more efficient that usage a valve or damper to control flow rates or running the motor at full speed when only partial power is needed. These measures save energy by controlling motor usage more efficiently.

Electric Unitary HVAC measures generally involve replacing older inefficient air conditioning systems with modern energy efficient systems. New air conditioning systems can provide equivalent cooling to older air condition systems at a reduced energy cost. These measures save energy by reducing the power used by the air conditioning systems, due to improved electrical efficiency.

HVAC System Improvements generally involve the installation of automated controls to reduce heating and cooling demand during periods of reduced demand. These measures could encompass changing temperature setpoints, using outside air for free cooling, or limiting excessive outside air during extreme outdoor air temperature conditions. These measures save energy by reducing the demand on HVAC systems and the amount of time systems operate.

Domestic Hot Water upgrade measures generally involve replacing older inefficient domestic water heating systems with modern energy efficient systems. New domestic hot water heating systems can provide equivalent, or greater, water heating capacity compared to older systems at a reduced energy cost. These measures save energy by reducing the fuel used for domestic hot water heating due to improved heating efficiency or reducing standby losses.

Plug Load Equipment control measures generally involve installing automated devices that limit the power usage or operation of equipment that is plugged into electric outlets when not in use.

Energy Efficient Practices

TRC also identified 11 low cost or no cost energy efficient practices. A facility's energy performance can be significantly improved by employing certain behavioral or operational adjustments and by performing better routine maintenance on building systems. These practices can extend equipment lifetime, improve occupant comfort, provide better health and safety, as well as reduce annual energy and O&M costs. Potential opportunities identified at the Town Hall include:

- Ensure Lighting Controls Are Operating Properly
- Turn Off Unneeded Motors
- Perform Routine Motor Maintenance
- Use Fans to Reduce Cooling Load
- Practice Proper Use of Thermostat Schedules and Temperature Resets
- Assess Chillers & Request Tune-Ups
- Clean Evaporator/Condenser Coils on AC Systems
- Clean and/or Replace HVAC Filters
- Perform Proper Boiler Maintenance
- Perform Proper Water Heater Maintenance
- Water Conservation

For details on these energy efficient practices, please refer to Section 5.

On-Site Generation Measures

TRC evaluated the potential for installing on-site generation for the Town Hall. Based on the configuration of the site and its loads there is a low potential for installing any PV and combined heat and power self-generation measures.

For details on our evaluation and on-site generation potential, please refer to Section 6.

1.3 Implementation Planning

To realize the energy savings from the ECMs listed in this report, a project implementation plan must be developed. Available capital must be considered, and decisions need to be made whether it is best to pursue individual ECMs separately, groups of ECMs, or a comprehensive approach where all ECMs are implemented together, possibly in conjunction with other facility upgrades or improvements.

Rebates, incentives, and financing are available from NJCEP, as well as other sources, to help reduce the costs associated with the implementation of energy efficiency projects. Prior to implementing any measure, please review the relevant incentive program guidelines before proceeding. This is important because in most cases you will need to submit applications for the incentives prior to purchasing materials or commencing with installation.

The ECMs outlined in this report may qualify under the following program(s):

- SmartStart
- Direct Install
- Energy Savings Improvement Program (ESIP)

For facilities wanting to pursue only selected individual measures (or planning to phase implementation of selected measures over multiple years), incentives are available through the SmartStart program. To participate in this program you may utilize internal resources, or an outside firm or contractor, to do the final design of the ECM(s) and do the installation. Program pre-approval is required for some SmartStart incentives, so only after receiving pre-approval should you proceed with ECM installation. The incentive estimates listed above in Figure 3 are based on the SmartStart program. More details on this program and others are available in Section 8.

This facility may also qualify for the Direct Install program which can provide turnkey installation of multiple measures, through an authorized network of participating contractors. This program can provide substantially higher incentives that SmartStart, up to 70% of the cost of selected measures, although measure eligibility will have to be assessed and be verified by the designated Direct Install contractor and, in most cases, they will perform the installation work.

For larger facilities with limited capital availability to implement ECMs, project financing may be available through the Energy Savings Improvement Program (ESIP). Supported directly by the NJBPU, ESIP provides government agencies with project development, design, and implementation support services, as well as, attractive financing for implementing ECMs. An LGEA report (or other approved energy audit) is required for participation in ESIP. Please refer to Section 8.3 for additional information on the ESIP Program.

Additional information on relevant incentive programs is located in Section 8. You may also check the following website for more details: www.njcleanenergy.com/ci.

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 4 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Amanda Nesheiwat	Environmental Director	anesheiwat@secaucus.net	201-864-7336
Designated Representative			
Phil Taglieri	Maintenance Personnel	ptaglieri@secaucus.net	201-864-7336
TRC Energy Services			
Moussa Traore	Auditor	mtraore@trcsolutions.com	(732) 855-0033

2.2 General Site Information

On December 18, 2017, TRC performed an energy audit at Town Hall located in Secaucus, New Jersey. TRC met with Phil Taglieri to review the facility operations and help focus our investigation on specific energy-using systems.

Secaucus Town Hall building is a 59,513 square foot building constructed in 1979. It is comprised of various space types. The building is four floors (including the basement) and includes the police department, clerk's office, municipal court, town administration offices, garage, and mechanical spaces.

The building has a flat roof covered with a white membrane. The exterior walls are finished concrete block. The windows are double-pane glazed with aluminum frames. Interior lighting at Town Hall consists of a combination of LED fixtures and linear fluorescent lamps, which are controlled by manual wall switches. Heating is provided by two hot water non-condensing gas-fired boilers and electric resistance heaters. Cooling is provided by one air-cooled chiller, plus ductless split and rooftop unit air conditioners.

2.3 Building Occupancy

The section of the building occupied by the Town Police Department is open continuously. The remaining sections, occupied by the Town municipal court and administrative offices, are open Monday to Friday. Typically, 200 to 250 people occupy the facility during normal operating hours. The typical schedule is presented in the table below.

Figure 5 - Building Schedule

Building Occupancy Schedule		
Building Name	**Weekday/Weekend**	**Operating Schedule**
Town Hall Police Department	Weekday	12:00 AM - 12:00 AM
Town Hall Police Department	Weekend	12:00 AM - 12:00 AM
Town Hall Administration Offices	Weekday	6:00 AM - 7:30 PM
Town Hall Administration Offices	Weekend	Closed

2.4 Building Envelope

The foundation systems include reinforced concrete. Exterior walls are constructed of concrete block. The building has a flat roof covered with a white membrane that is in good condition. The windows are double paned with aluminum frames, original to the building. The building has skylight windows, which are not insulated and appear in fair condition. The main entrance door is fully glazed with aluminum frames, and the exit doors are constructed of metal and are in good condition. Overall, the building's base was found to be in good condition.

Image 1: Building facade

2.5 On-Site Generation

Town Hall has a solar photovoltaic (PV) array of approximately 153 kW capacity for electrical production. The PV arrays are installed on top of a metallic structure built in the parking lot. On-site solar production meets approximately 23% of the building's annual electricity requirements.

2.6 Energy-Using Systems

Please see Appendix A: Equipment Inventory & Recommendations for an inventory of the facility's equipment.

Lighting System

Lighting at the facility is provided by a combination of LED, linear, and compact fluorescent fixtures. The court house is illuminated with 32-Watt U-shape fluorescent lamps and LED recessed lamps, while courthouse offices are illuminated with 17-Watt LED tubes. The mechanical spaces, restrooms, PD locker rooms, and garage are primarily lit with linear fluorescent fixtures. Compact fluorescent lamps are found in spaces such as the 911 call room, mayor's office, town attorney's office, and the conference room. Many building spaces lighting such as lobbies, administration offices, the PD record room, the captain and detective offices, and the town clerk office have been retrofitted to 40-Watt ambient LED fixtures. Building lighting systems are controlled by manual wall switches. Exit signs throughout the building use fluorescent lamps. Exterior building and site illumination is provided by high pressure sodium lamps of approximately 100-Watt to 150-Watt located in recessed and surface-mounted light fixtures. The solar panel support structure is illuminated with 32-Watt linear fluorescent lamps. Exterior lighting is controlled with timers.

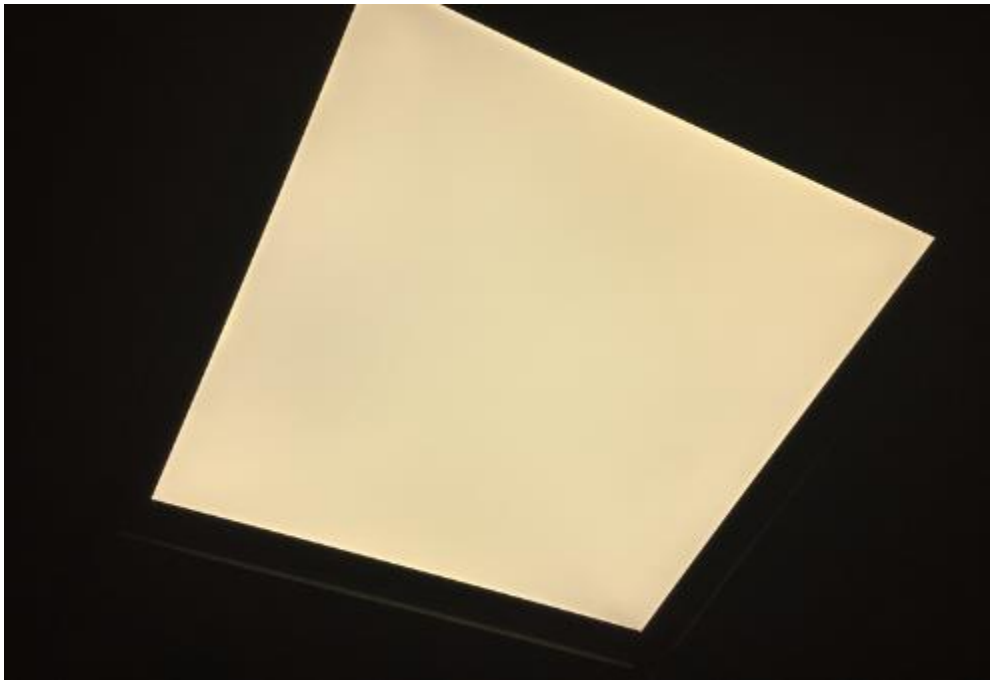


Image 2: LED Fixture

Hot Water Heating System

Heating hot water for the building is provided by two Weil McLain hot water boilers. Each boiler has an output capacity of 1,084 MBh, a nominal combustion efficiency of 80% and a 0.5 hp combustion air fan. One 1.5 hp, one 1 hp, and two 0.8 hp constant speed pumps distribute the heating hot water to the distribution devices located respectively at the south wing, north wing, garage, and the basement. These include hydronic baseboards, hot water unit heaters and the main lobby unit ventilators. Heating hot water temperature is controlled based on the outside air temperatures. Local thermostats are used to control the temperature in spaces by a pneumatic control system. The town should consider upgrading the control system to direct digital controls. The boilers are 13 years old and are well maintained.

The court house has one manually controlled 10 kW electric heater located above the ceiling. The court house heating system layout should be investigated as occupants reported that part of the room does not receive sufficient heating.

Image 3: Hot Water Boilers

Chilled Water and Air Distribution Systems

Image 4: York Air-Cooled Chiller

The Town Hall is served by a single 138-ton York air-cooled chiller located outside near the parking lot. The chiller serves coils located in a built-up air handler unit (AHU) that distributes conditioned air to building spaces. The chilled water for the facility is circulated via two 10 hp constant speed pumps located in the air handler room. The chiller is 11 years old and appears in good condition.

There is one variable air volume (VAV) air handling unit that serves the building. The AHU distributes air through Trane VAV terminal boxes concealed above the ceiling. These Trane terminal boxes are original to the building, have no reheat capability, and were noted to be in poor condition by the site contact. The AHU has one 20 hp supply fan and one 7.5 hp return fan. The fans run at constant speed. The Town should also consider upgrading the air distribution system along with the HVAC control system.

Image 5: Old Air Handler Unit

Direct Expansion Air Conditioning System (DX)


Image 6: Direct Expansion System

The DX system consists of one packaged and three split system air conditioners all located on the roof and serving various spaces. The one 5-ton York packaged unit serves the police department chief and detective offices. The unit is 15 years old a has reached its useful service life. The administration office, PD server room, and the Town main server room are served respectively by a 1-ton, 2.5-ton, and 2-ton split system ACs. The units are new and appear in good condition. They are controlled with programmable thermostats.

Domestic Water Heating System

The domestic water heating system for the facility consists of one Bradford White electric water heater with an input rating of 4.5 kW. It is located in the boiler room and has 80-gallon storage tank. The water heater is nine years old and is in good condition.

Building Plug Load

There are approximately 155 computer work stations throughout the facility and they are mostly desktop units with LCD monitors. There is no centralized PC power management software installed. There are 18 copy machines, eight printers, five water coolers, microwaves, and small freezers.

There are two server rooms in the facility. The Town main server Room and the PD server room with cooling provided respectively by one 2-ton and one 2.5-ton split system ACs.

The facility has two vending machines located in the main lobby.

2.7 Water-Using Systems

There are several restrooms at the Town Hall. A sampling of some restrooms found that the faucets are rated for 2.2 gallons per minute (gpm) or higher, the toilets are rated at 2.5 gallons per flush (gpf) and the urinals are rated at 2 gpf.

3 SITE ENERGY USE AND COSTS

Utility data for electricity and natural gas was analyzed to identify opportunities for savings. In addition, data for electricity and natural gas was evaluated to determine the annual energy performance metrics for the building in energy cost per square foot and energy usage per square foot. These metrics are an estimate of the relative energy efficiency of this building. There are a number of factors that could cause the energy use of this building to vary from the "typical" energy usage profile for facilities with similar characteristics. Local weather conditions, building age and insulation levels, equipment efficiency, daily occupancy hours, changes in occupancy throughout the year, equipment operating hours, and energy efficient behavior of occupants all contribute to benchmarking scores. Please refer to the Benchmarking section within Section 3.4 for additional information.

3.1 Total Cost of Energy

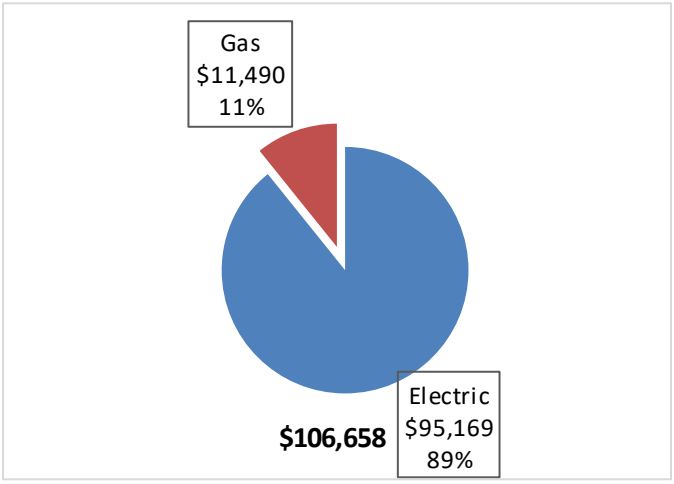
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 6 - Utility Summary

Utility Summary for Town Hall		
Fuel	**Usage**	**Cost**
Electricity	810,919 kWh	$95,169
Natural Gas	13,261 Therms	$11,490
Total		**$106,658**

The current annual energy cost for this facility is $106,658 as shown in the chart below.

Figure 7 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by PSE&G and by on-site solar collection, administered through a Power Purchase Agreement (PPA) with Sunlight General Solar Fund II, LLC. The average combined electric cost over the past 12 months was $0.117/kWh, which is the blended rate that includes energy supply, distribution, and other charges. This rate is used throughout the analyses in this report to assess energy costs and savings. The monthly electricity consumption and peak demand are shown in the chart below.

Figure 8 - Electric Usage & Demand

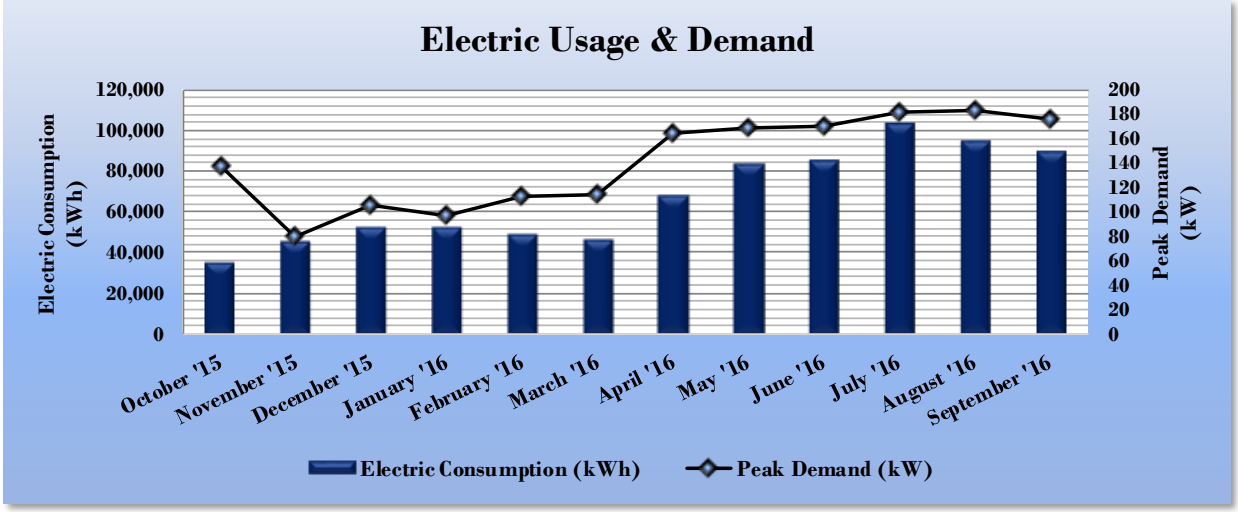


Figure 9 - Electric Usage & Demand

Electric Billing Data for Town Hall				
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Total Electric Cost
11/1/15	30	35,693	137	$4,686
12/2/15	31	45,776	80	$5,525
1/4/16	31	52,901	105	$6,110
2/2/16	30	53,160	97	$6,036
3/3/16	31	49,511	113	$5,932
4/4/16	30	47,150	114	$5,821
5/3/16	31	68,061	165	$7,799
6/2/16	30	84,160	169	$8,833
7/1/16	31	85,702	171	$10,870
8/2/16	30	103,871	181	$12,142
8/31/16	30	95,176	184	$10,861
9/30/16	30	89,758	176	$10,555
Totals	**365**	**810,919**	**183.7**	**$95,169**
Annual	**365**	**810,919**	**183.7**	**$95,169**

3.3 Natural Gas Usage

Natural gas is provided by PSE&G. The average gas cost for the past 12 months is $0.866/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is shown in the chart below.

Figure 10 - Natural Gas Usage

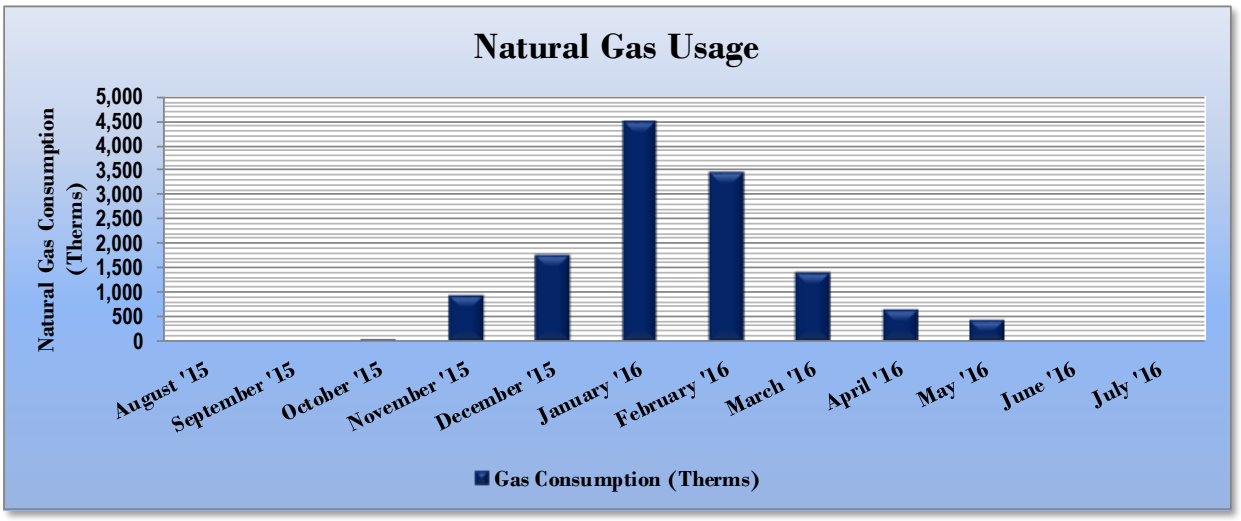


Figure 11 - Natural Gas Usage

Gas Billing Data for Town Hall			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
8/31/15	31	0	$103
9/30/15	30	0	$107
10/30/15	30	58	$134
11/30/15	30	943	$1,276
12/31/15	31	1,769	$1,707
2/2/16	30	4,509	$3,202
3/3/16	31	3,464	$2,583
4/4/16	30	1,413	$1,374
5/3/16	30	653	$457
6/2/16	31	452	$332
7/1/16	30	0	$107
8/2/16	31	0	$107
Totals	**365**	**13,261**	**$11,490**
Annual	**365**	**13,261**	**$11,490**

3.4 Benchmarking

This facility was benchmarked using Portfolio Manager®, an online tool created and managed by the United States Environmental Protection Agency (EPA) through the ENERGY STAR® program. Portfolio Manager® analyzes your building's consumption data, cost information, and operational use details and then compares its performance against a national median for similar buildings of its type. Metrics provided by this analysis are Energy Use Intensity (EUI) and an ENERGY STAR® score for select building types.

The EUI is a measure of a facility's energy consumption per square foot, and it is the standard metric for comparing buildings' energy performance. Comparing the EUI of a building with the national median EUI for that building type illustrates whether that building uses more or less energy than similar buildings of its type on a square foot basis. EUI is presented in terms of "site energy" and "source energy." Site energy is the amount of fuel and electricity consumed by a building as reflected in utility bills. Source energy includes fuel consumed to generate electricity consumed at the site, factoring in electric production and distribution losses for the region.

Figure 12 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Town Hall	National Median Building Type: Municipal
Source Energy Use Intensity (kBtu/ft^2)	171.5	85.5
Site Energy Use Intensity (kBtu/ft^2)	69.5	211.1

Implementation of all recommended measures in this report would improve the building's estimated EUI significantly, as shown in the table below:

Figure 13 - Energy Use Intensity Comparison – Following Installation of Recommended Measures

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	Town Hall	National Median Building Type: Municipal
Source Energy Use Intensity (kBtu/ft^2)	147.2	85.5
Site Energy Use Intensity (kBtu/ft^2)	61.7	211.1

Many types of commercial buildings are also eligible to receive an ENERGY STAR® score. This score is a percentile ranking from 1 to 100. It compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide and may be eligible for ENERGY STAR® certification. This facility has a current score of 68.

A Portfolio Manager® Statement of Energy Performance (SEP) was generated for this facility, see Appendix B: ENERGY STAR® Statement of Energy Performance.

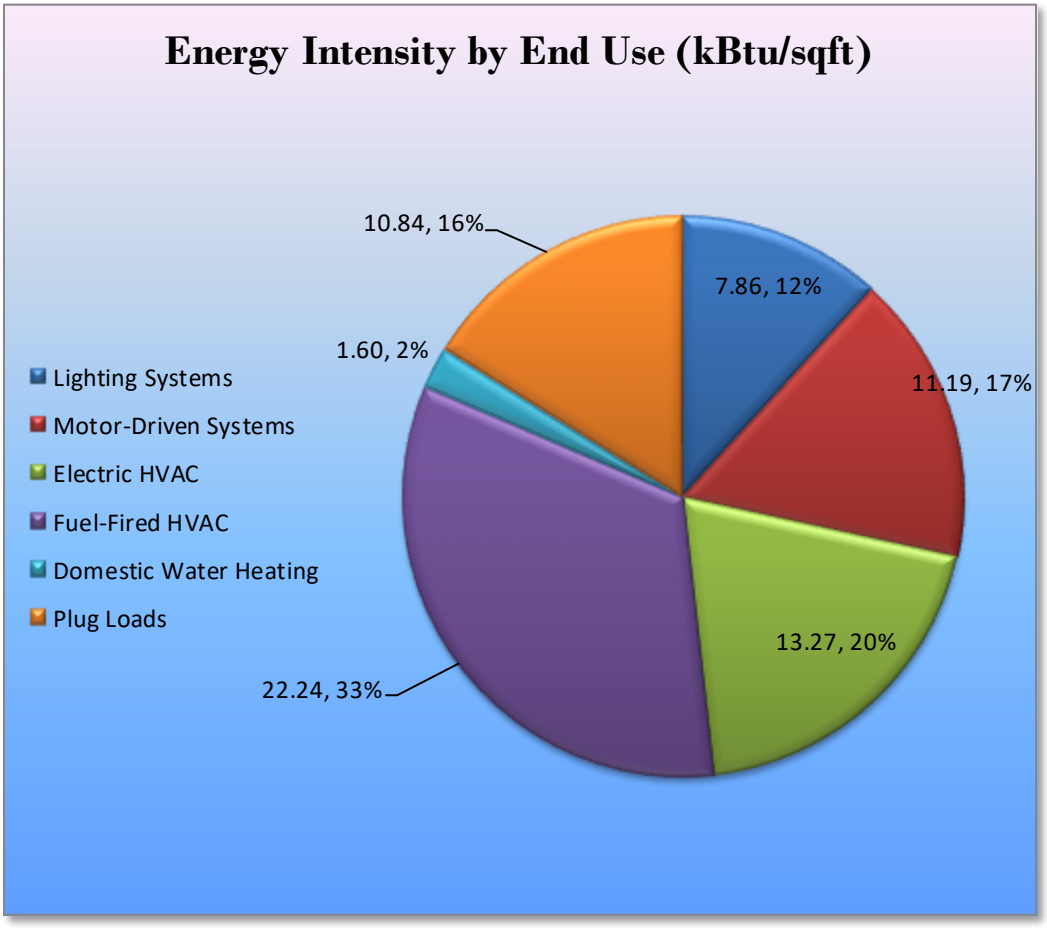
For more information on ENERGY STAR®® certification go to: https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

A Portfolio Manager® account has been created online for your facility and you will be provided with the login information for the account. We encourage you to update your utility information in Portfolio Manager® regularly, so that you can keep track of your building's performance. Free online training is available to help you use ENERGY STAR® Portfolio Manager® to track your building's performance at: https://www.energystar.gov/buildings/training.

3.5 Energy End-Use Breakdown

In order to provide a complete overview of energy consumption across building systems, an energy balance was performed. An energy balance utilizes standard practice engineering methods to evaluate all components of the various electric and fuel-fired systems found in a building to determine their proportional contribution to overall building energy usage. This chart of energy end uses highlights the relative contribution of each equipment category to total energy usage. This can help determine where the greatest benefits might be found from energy efficiency measures.

Figure 14 - Energy Balance (% and kBtu/SF)



4 ENERGY CONSERVATION MEASURES

Level of Analysis

The goal of this audit report is to identify potential energy efficiency opportunities, help prioritize specific measures for implementation, and provide information to the Town Hall regarding financial incentives for which they may qualify to implement the recommended measures. For this audit report, most measures have received only a preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is usually considered sufficient to demonstrate project cost-effectiveness and help prioritize energy measures. Savings are based on the New Jersey Clean Energy Program Protocols to Measure Resource Savings dated June 29, 2016, approved by the New Jersey Board of Public Utilities. Further analysis or investigation may be required to calculate more precise savings based on specific circumstances. A higher level of investigation may be necessary to support any custom SmartStart or Pay for Performance, or Direct Install incentive applications. Financial incentives for the ECMs identified in this report have been calculated based the NJCEP prescriptive SmartStart program. Some measures and proposed upgrade projects may be eligible for higher incentives than those shown below through other NJCEP programs as described in Section 8.

The following sections describe the evaluated measures.

4.1 Recommended ECMs

The measures below have been evaluated by the auditor and are recommended for implementation at the facility.

Figure 15 – Summary of Recommended ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**49,694**	**6.2**	**0.0**	**$5,832.08**	**$25,732.04**	**$2,200.00**	**$23,532.04**	**4.0**	**50,042**
ECM 1	Install LED Fixtures	12,873	2.0	0.0	$1,510.76	$12,541.58	$1,075.00	$11,466.58	7.6	12,963
ECM 2	Retrofit Fixtures with LED Lamps	35,530	4.1	0.0	$4,169.76	$10,931.81	$1,125.00	$9,806.81	2.4	35,778
ECM 3	Install LED Exit Signs	1,291	0.1	0.0	$151.56	$2,258.66	$0.00	$2,258.66	14.9	1,300
Lighting Control Measures		**18,947**	**2.5**	**0.0**	**$2,223.61**	**$5,866.00**	**$1,105.00**	**$4,761.00**	**2.1**	**19,080**
ECM 4	Install Occupancy Sensor Lighting Controls	15,582	2.2	0.0	$1,828.66	$3,866.00	$555.00	$3,311.00	1.8	15,691
ECM 5	Install High/Low Lighitng Controls	3,365	0.3	0.0	$394.95	$2,000.00	$550.00	$1,450.00	3.7	3,389
Motor Upgrades		**10,573**	**2.3**	**0.0**	**$1,240.86**	**$5,941.06**	**$0.00**	**$5,941.06**	**4.8**	**10,647**
ECM 6	Premium Efficiency Motors	10,573	2.3	0.0	$1,240.86	$5,941.06	$0.00	$5,941.06	4.8	10,647
Variable Frequency Drive (VFD) Measures		**33,793**	**5.1**	**0.0**	**$3,965.87**	**$13,950.20**	**$1,600.00**	**$12,350.20**	**3.1**	**34,029**
ECM 7	Install VFDs on Constant Volume (CV) HVAC	9,792	2.6	0.0	$1,149.22	$6,334.30	$1,600.00	$4,734.30	4.1	9,861
ECM 8	Install VFDs on Chilled Water Pumps	24,000	2.5	0.0	$2,816.65	$7,615.90	$0.00	$7,615.90	2.7	24,168
HVAC System Improvements		**1,634**	**0.4**	**0.0**	**$191.80**	**$500.00**	**$250.00**	**$250.00**	**1.3**	**1,646**
ECM 9	Install Dual Enthalpy Outside Economizer Control	1,634	0.4	0.0	$191.80	$500.00	$250.00	$250.00	1.3	1,646
Domestic Water Heating Upgrade		**7,070**	**0.0**	**0.0**	**$829.71**	**$100.38**	**$0.00**	**$100.38**	**0.1**	**7,119**
ECM 10	Install Low-Flow Domestic Hot Water Devices	7,070	0.0	0.0	$829.71	$100.38	$0.00	$100.38	0.1	7,119
Plug Load Equipment Control - Vending Machine		**1,612**	**0.0**	**0.0**	**$189.16**	**$460.00**	**$0.00**	**$460.00**	**2.4**	**1,623**
ECM 11	Vending Machine Control	1,612	0.0	0.0	$189.16	$460.00	$0.00	$460.00	2.4	1,623
TOTALS		**123,323**	**16.5**	**0.0**	**$14,473.09**	**$52,549.68**	**$5,155.00**	**$47,394.68**	**3.3**	**124,186**

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

4.2 Lighting Upgrades

Our recommendations for upgrades to existing lighting fixtures are summarized in Figure 16 below.

Figure 16 – Summary of Lighting Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**49,694**	**6.2**	**0.0**	**$5,832.08**	**$25,732.04**	**$2,200.00**	**$23,532.04**	**4.0**	**50,042**
ECM 1	Install LED Fixtures	12,873	2.0	0.0	$1,510.76	$12,541.58	$1,075.00	$11,466.58	7.6	12,963
ECM 2	Retrofit Fixtures with LED Lamps	35,530	4.1	0.0	$4,169.76	$10,931.81	$1,125.00	$9,806.81	2.4	35,778
ECM 3	Install LED Exit Signs	1,291	0.1	0.0	$151.56	$2,258.66	$0.00	$2,258.66	14.9	1,300

During lighting upgrade planning and design, we recommend a comprehensive approach that considers both the efficiency of the lighting fixtures and how they are controlled.

ECM 1: Install LED Fixtures

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0
Exterior	12,873	2.0	0.0	$1,510.76	$12,541.58	$1,075.00	$11,466.58	7.6	12,963

Measure Description

We recommend replacing existing exterior fixtures containing 100-Watt and 150-Watt high pressure sodium and halogen incandescent lamps with new high-performance LED light fixtures. This measure saves energy by installing LEDs which use less power than other technologies with a comparable light output.

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of a high-pressure sodium sources and more than 10 times longer than many incandescent lamps.

ECM 2: Retrofit Fixtures with LED Lamps

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	31,400	3.5	0.0	$3,685.02	$9,509.43	$895.00	$8,614.43	2.3	31,619
Exterior	4,130	0.6	0.0	$484.74	$1,422.38	$230.00	$1,192.38	2.5	4,159

Measure Description

We recommend retrofitting existing linear fluorescent, incandescent, and compact fluorescent lamps with LED lamps. Many LED tube lamps are direct replacements for existing fluorescent lamps and can be installed while leaving the fluorescent fixture ballast in place. LED bulbs can be used in existing fixtures as a direct replacement for most other lighting technologies. This measure saves energy by installing LEDs which use less power than other lighting technologies yet provide equivalent lighting output for the space.

Additional savings from lighting maintenance can be anticipated since LEDs have lifetimes which are more than twice that of fluorescent tubes and more than 10 times longer than many incandescent lamps.

ECM 3: Install LED Exit Signs

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	1,291	0.1	0.0	$151.56	$2,258.66	$0.00	$2,258.66	14.9	1,300
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.0	0

Measure Description

We recommend replacing all compact fluorescent exit signs with LED exit signs. LED exit signs require virtually no maintenance and have a life expectancy of at least 20 years. This measure saves energy by installing LED fixtures, which use less power than other technologies with an equivalent lighting output.

4.3 Lighting Control Measures

Our recommendations for lighting control measures are summarized in Figure 17 below.

Figure 17 – Summary of Lighting Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**18,947**	**2.5**	**0.0**	**$2,223.61**	**$5,866.00**	**$1,105.00**	**$4,761.00**	**2.1**	**19,080**
ECM 4	Install Occupancy Sensor Lighting Controls	15,582	2.2	0.0	$1,828.66	$3,866.00	$555.00	$3,311.00	1.8	15,691
ECM 5	Install High/Low Lighitng Controls	3,365	0.3	0.0	$394.95	$2,000.00	$550.00	$1,450.00	3.7	3,389

During lighting upgrade planning and design, we recommend a comprehensive approach that considers both the efficiency of the lighting fixtures and how they are controlled.

ECM 4: Install Occupancy Sensor Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
15,582	2.2	0.0	$1,828.66	$3,866.00	$555.00	$3,311.00	1.8	15,691

Measure Description

We recommend installing occupancy sensors to control lighting fixtures that are currently controlled by manual switches in many offices, restrooms, conference room, and locker rooms. Lighting sensors detect occupancy using ultrasonic and/or infrared sensors. For most spaces, we recommend lighting controls use dual technology sensors, which can eliminate the possibility of any lights turning off unexpectedly. Lighting systems are enabled when an occupant is detected. Fixtures are automatically turned off after an area has been vacant for a preset period. Some controls also provide dimming options and all modern occupancy controls can be easily over-ridden by room occupants to allow them to manually turn fixtures on or off, as desired. Energy savings results from only operating lighting systems when they are required.

Occupancy sensors may be mounted on the wall at existing switch locations, mounted on the ceiling, or in remote locations. In general, wall switch replacement sensors are recommended for single occupant offices and other small rooms. Ceiling-mounted or remote mounted sensors are used in locations without local switching or where wall switches are not in the line-of-sight of the main work area and in large spaces. We recommend a comprehensive approach to lighting design that upgrades both the lighting fixtures and the controls together for maximum energy savings and improved lighting for occupants.

ECM 5: Install High/Low Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
3,365	0.3	0.0	$394.95	$2,000.00	$550.00	$1,450.00	3.7	3,389

Measure Description

We recommend installing occupancy sensors to provide dual level lighting control for lighting fixtures in spaces that are infrequently occupied but may require some level of continuous lighting for safety or security reasons. Typical areas for such lighting control are stairwells and interior corridors.

Lighting fixtures with these controls operate at default low levels when the area is not occupied to provide minimal lighting to meet security or safety requirements. Sensors detect occupancy using ultrasonic and/or infrared sensors. The lighting systems are switched to full lighting levels whenever an occupant is detected. Fixtures are automatically switched back to low level after an area has been vacant for a preset period of time. Energy savings results from only providing full lighting levels when it is required.

For this type of measure the occupancy sensors will generally be ceiling or fixture mounted. Sufficient sensor coverage needs to be provided to ensure that lights turn on in each area as an occupant approaches.

Additional savings from reduced lighting maintenance may also result from this measure, due to reduced lamp operation.

4.4 Motor Upgrades

Our recommendations for motor upgrades are summarized in Figure 18 below.

Figure 18-Summary of Motor Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Motor Upgrades		**10,573**	**2.3**	**0.0**	**$1,240.86**	**$5,941.06**	**$0.00**	**$5,941.06**	**4.8**	**10,647**
ECM 6	Premium Efficiency Motors	10,573	2.3	0.0	$1,240.86	$5,941.06	$0.00	$5,941.06	4.8	10,647

ECM 6: Premium Efficiency Motors

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
10,573	2.3	0.0	$1,240.86	$5,941.06	$0.00	$5,941.06	4.8	10,647

Measure Description

We recommend replacing the 20 hp air handler supply fan, 2 hp waste pump, and the two 10 hp chilled water supply pump standard efficiency motors with NEMA Premium® efficiency motors. Our evaluation assumes that existing motors will be replaced with motors of equivalent size and type. Although occasionally additional savings can be achieved by downsizing motors to better meet the motor's current load requirements. The base case motor efficiencies are estimated from nameplate information and our best estimates of motor run hours. Efficiencies of proposed motor upgrades are obtained from the *New Jersey's Clean Energy Program Protocols to Measure Resource Savings (2016)*. Savings are based on the difference between baseline and proposed efficiencies and the assumed annual operating hours.

4.5 Variable Frequency Drive Measures

Our recommendations for variable frequency drive (VFD) measures are summarized in Figure 19 below.

Figure 19 – Summary of Variable Frequency Drive ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**33,793**	**5.1**	**0.0**	**$3,965.87**	**$13,950.20**	**$1,600.00**	**$12,350.20**	**3.1**	**34,029**
ECM 7	Install VFDs on Constant Volume (CV) HVAC	9,792	2.6	0.0	$1,149.22	$6,334.30	$1,600.00	$4,734.30	4.1	9,861
ECM 8	Install VFDs on Chilled Water Pumps	24,000	2.5	0.0	$2,816.65	$7,615.90	$0.00	$7,615.90	2.7	24,168

ECM 7: Install VFDs on Constant Volume (CV) HVAC

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
9,792	2.6	0.0	$1,149.22	$6,334.30	$1,600.00	$4,734.30	4.1	9,861

Measure Description

We recommend installing a variable frequency drive (VFD) to control the 20 hp air handler supply fan motor speed to facilitate conversion of the constant-volume air handling system into a variable-air-volume (VAV) system. A separate VFD is usually required to control the return fan motor or dedicated exhaust fan motor if the air handler has one. Zone thermostats will cause the VFD to modulate fan speed to maintain the appropriate temperature in the zone, while maintaining a constant supply air temperature. Energy savings results from reducing fan speed (and power) when there is a reduced load required for the zone. The magnitude of energy savings is based on the estimated amount of time that fan motors operate at partial load.

VAV systems should not be controlled such that the supply air temperature is raised at the expense of the fan power. A common mistake is to reset the supply air temperature to achieve chiller energy savings, which can lead to additional air flow requirements. Supply air temperature should be kept low, e.g. 55°F, until the minimum fan speed (typically about 50%) is met. At this point, it is efficient to raise the supply air temperature as the load decreases, but not such that additional air flow and thus fan energy is required.

ECM 8: Install VFDs on Chilled Water Pumps

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
24,000	2.5	0.0	$2,816.65	$7,615.90	$0.00	$7,615.90	2.7	24,168

Measure Description

We recommend installing variable frequency drives (VFD) to control the two 10 hp chilled water pumps. This measure requires that chilled water coils be served by 2-way valves and that a differential pressure sensor be installed in the chilled water loop. As the chilled water valves close, the differential pressure increases. The VFD modulates pump speed to maintain a differential pressure setpoint. Energy savings results from reducing pump motor speed (and power) as chilled water valves close. The magnitude of energy savings is based on the estimated amount of time that the system operates at reduced loads.

For systems with variable chilled water flow through the chiller, the minimum flow to prevent the chiller from tripping off will have to be determined during the final project design. The control system should be programmed to maintain the minimum flow through the chiller and to prevent pump cavitation.

4.6 HVAC System Upgrades

Our recommendation for HVAC system improvement are summarized in Figure 20 below.

Figure 20 - Summary of HVAC System Improvement ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
HVAC System Improvements		**1,634**	**0.4**	**0.0**	**$191.80**	**$500.00**	**$250.00**	**$250.00**	**1.3**	**1,646**
ECM 9	Install Dual Enthalpy Outside Economizer Control	1,634	0.4	0.0	$191.80	$500.00	$250.00	$250.00	1.3	1,646

ECM 9: Install Dual-Enthalpy Economizers

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
1,634	0.4	0.0	$191.80	$500.00	$250.00	$250.00	1.3	1,646

Measure Description

We recommend dual enthalpy economizer for the rooftop packaged unit serving the PD chief and detective offices when it is replaced with a new unit. Dual enthalpy economizers are used to control a ventilation system's outside air intake in order to reduce a facility's total cooling load. A dual-enthalpy economizer monitors the air temperature and humidity of both the outside and return air. The control supplies the lowest energy (temperature and humidity) air to the air handling system. When outside air conditions allow, outside air can be used for cooling instead of running the air handling system's compressor. This reduces the demand on the cooling system, lowering its usage hours and saving energy.

Savings result from using outside air instead of mechanical cooling when outside air conditions permit.

4.7 Domestic Hot Water Heating System Upgrades

Our recommendations for domestic water heating system improvements are summarized in Figure 21 below.

Figure 21 - Summary of Domestic Water Heating ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Domestic Water Heating Upgrade		**7,070**	**0.0**	**0.0**	**$829.71**	**$100.38**	**$0.00**	**$100.38**	**0.1**	**7,119**
ECM 10	Install Low-Flow Domestic Hot Water Devices	7,070	0.0	0.0	$829.71	$100.38	$0.00	$100.38	0.1	7,119

ECM 10: Install Low-Flow DHW Devices

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
7,070	0.0	0.0	$829.71	$100.38	$0.00	$100.38	0.1	7,119

Measure Description

We recommend installing low-flow domestic hot water devices to reduce overall hot water demand. Energy demand from domestic hot water heating systems can be reduced by reducing water usage in general. Faucet aerators can reduce hot water usage, relative to standard aerators, which saves energy.

Low-flow devices reduce the overall water flow from the fixture, while still adequate pressure for washing. This reduces the amount of water used per day resulting in energy and water savings.

4.8 Plug Load Equipment Control - Vending Machines

Our recommendations for plug load equipment controls are summarized in Figure 22 below.

Figure 22-Summary of Plug Load Equipment Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Plug Load Equipment Control - Vending Machine		**1,612**	**0.0**	**0.0**	**$189.16**	**$460.00**	**$0.00**	**$460.00**	**2.4**	**1,623**
ECM 11	Vending Machine Control	1,612	0.0	0.0	$189.16	$460.00	$0.00	$460.00	2.4	1,623

ECM 11: Vending Machine Control

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
1,612	0.0	0.0	$189.16	$460.00	$0.00	$460.00	2.4	1,623

Measure Description

Vending machines operate continuously, even during non-business hours. It is recommended to install occupancy sensor controls to reduce the energy use. These controls power down vending machines when the vending machine area has been vacant for some time, then power up at regular intervals, as needed, to turn machine lights on or keep the product cool. Energy savings are a dependent on vending machine and activity level in the area surrounding the machines.

4.9 ECMs Evaluated but Not Recommended

The measures below have been evaluated by the auditor but are not recommended for implementation at the facility. Reasons for exclusion can be found in each measure description section.

Figure 23 – Summary of Measures Evaluated, but Not Recommended

Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures	**2,668**	**0.3**	**0.0**	**$313.06**	**$5,168.53**	**$0.00**	**$5,168.53**	**16.5**	**2,686**
Install VFDs on Hot Water Pumps	2,668	0.3	0.0	$313.06	$5,168.53	$0.00	$5,168.53	16.5	2,686
Electric Unitary HVAC Measures	**4,400**	**1.6**	**0.0**	**$516.38**	**$11,344.80**	**$460.00**	**$10,884.80**	**21.1**	**4,431**
Install High Efficiency Electric AC	4,400	1.6	0.0	$516.38	$11,344.80	$460.00	$10,884.80	21.1	4,431
TOTALS	**7,068**	**1.9**	**0.0**	**$829.44**	**$16,513.33**	**$460.00**	**$16,053.33**	**19.4**	**7,117**

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

Install VFDs on Hot Water Pumps

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
2,668	0.3	0.0	$313.06	$5,168.53	$0.00	$5,168.53	16.5	2,686

Measure Description

We evaluated installing variable frequency drives (VFD) to control a hot water pumps. This measure requires that a majority of the hot water coils be served by 2-way valves and that a differential pressure sensor is installed in the hot water loop. As the hot water valves close, the differential pressure increases. The VFD modulates pump speed to maintain a differential pressure setpoint. Energy savings results from reducing pump motor speed (and power) as hot water valves close. The magnitude of energy savings is based on the estimated amount of time that the system will operate at reduced load.

Reasons for not Recommending

The simple payback of this measure exceeds the expected useful life of the equipment and is therefore not recommended on the basis of energy savings alone. However, when upgrading the HVAC system, it is recommended to install VFD to control the hot water pumps.

Install High Efficiency Air Conditioning Units

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
4,400	1.6	0.0	$516.38	$11,344.80	$460.00	$10,884.80	21.1	4,431

Measure Description

We evaluated replacing the standard efficiency packaged air conditioning unit serving the police station office areas with a high efficiency packaged air conditioning unit. There have been significant improvements in both compressor and fan motor efficiencies over the past several years. Therefore, electricity savings can be achieved by replacing older units with new high efficiency units. A higher EER or SEER rating indicates a more efficient cooling system. The magnitude of energy savings for this measure depends on the relative efficiency of the older unit versus the new high efficiency unit, the average cooling load, and the estimated annual operating hours.

Reasons for not Recommending

The simple payback of this measure exceeds the expected useful life of the equipment and is therefore not recommended on the basis of energy savings alone. However, as the unit has reached it useful service life, it is recommended to replace it with a new efficient unit prior to a catastrophic failure.

5 ENERGY EFFICIENT PRACTICES

In addition to the quantifiable savings estimated in Section 4, a facility's energy performance can also be improved through application of many low cost or no-cost energy efficiency strategies. By employing certain behavioral and operational changes and performing routine maintenance on building systems, equipment lifetime can be extended; occupant comfort, health and safety can be improved; and energy and O&M costs can be reduced. The recommendations below are provided as a framework for developing a whole building maintenance plan that is customized to your facility. Consult with qualified equipment specialists for details on proper maintenance and system operation.

Ensure Lighting Controls Are Operating Properly

Lighting controls are very cost-effective energy efficient devices, when installed and operating correctly. As part of a lighting maintenance schedule, lighting controls should be tested annually to ensure proper functioning. For occupancy sensors, this requires triggering the sensor and verifying that the sensor's timer settings are correct. For daylight sensors, maintenance involves cleaning of sensor lenses and confirming setpoints and sensitivity are appropriately configured.

Turn Off Unneeded Motors

Electric motors often run unnecessarily, and this is an overlooked opportunity to save energy. These motors should be identified and turned off when appropriate. For example, exhaust fans often run unnecessarily when ventilation requirements are already met. Reducing run hours for these motors can result in significant energy savings. Whenever possible, use automatic devices such as twist timers or occupancy sensors to ensure that motors are turned off when not needed.

Perform Routine Motor Maintenance

Motors consist of many moving parts whose collective degradation can contribute to a significant loss of motor efficiency. In order to prevent damage to motor components, routine maintenance should be performed. This maintenance consists of cleaning surfaces and ventilation openings on motors to prevent overheating, lubricating moving parts to reduce friction, inspecting belts and pulleys for wear and to ensure they are at proper alignment and tension, and cleaning and lubricating bearings. Consult a licensed technician to assess these and other motor maintenance strategies.

Use Fans to Reduce Cooling Load

Utilizing ceiling fans to supplement cooling is a low-cost strategy to reduce cooling load considerably. Thermostat settings can be increased by 4°F with no change in overall occupant comfort when the wind chill effect of moving air is employed for cooling.

Practice Proper Use of Thermostat Schedules and Temperature Resets

Ensure thermostats are correctly set back. By employing proper set back temperatures and schedules, facility heating and cooling costs can be reduced dramatically during periods of low or no occupancy. As such, thermostats should be programmed for a setback of 5-10°F during low occupancy hours (reduce heating setpoints and increase cooling setpoints). Cooling load can be reduced further by increasing the facility's occupied setpoint temperature. In general, during the cooling season, thermostats should be set as high as possible without sacrificing occupant comfort.

Assess Chillers & Request Tune-Ups

Chillers are responsible for a substantial portion of a commercial building's overall energy usage. When components of a chiller are not optimized, this can quickly result in a noticeable increase in energy bills. Chiller diagnostics can produce a 5% to 10% cost avoidance potential from discovery and implementation of low/no cost optimization strategies.

Clean Evaporator/Condenser Coils on AC Systems

Dirty evaporators and condensers coils cause a restriction to air flow and restrict heat transfer. This results in increased evaporator and condenser fan load and a decrease in cooling system performance. Keeping the coils clean allows the fans and cooling system to operate more efficiently.

Clean and/or Replace HVAC Filters

Air filters work to reduce the amount of indoor air pollution and increase occupant comfort. Over time, filters become less and less effective as particulate buildup increases. In addition to health concerns related to clogged filters, filters that have reached saturation also restrict air flow through the facility's air conditioning or heat pump system, increasing the load on the distribution fans and decreasing occupant comfort levels. Filters should be checked monthly and cleaned or replaced when appropriate.

Perform Proper Boiler Maintenance

Many boiler problems develop slowly over time, so regular inspection and maintenance is essential to retain proper functionality and efficiency of the heating system. Fuel burning equipment should undergo yearly tune-ups to ensure they are operating as safely and efficiently as possible from a combustion standpoint. A tune-up should include a combustion analysis to analyze the exhaust from the boilers and to ensure the boiler is operating safely. Buildup of dirt, dust, or deposits on the internal surfaces of a boiler can greatly affect its heat transfer efficiency. These deposits can accumulate on the water side or fire side of the boiler. Boilers should be cleaned regularly according to the manufacturer's instructions to remove this build up in order to sustain efficiency and equipment life.

Perform Proper Water Heater Maintenance

At least once a year, drain a few gallons out of the water heater using the drain valve. If there is a lot of sediment or debris, then a full flush is recommended. Turn the temperature down and then completely drain the tank. Once a year check for any leaks or heavy corrosion on the pipes and valves. For gas water heaters, check the draft hood and make sure it is placed properly, with a few inches of air space between the tank and where it connects to the vent. Look for any corrosion or wear on the gas line and on the piping. If you noticed any black residue, soot, or charred metal, this is a sign you may be having combustion issues and you should have the unit serviced by a professional. For electric water heaters, look for any signs of leaking such as rust streaks or residue around the upper and lower panels covering the electrical components on the tank. For water heaters over three to four years old have a technician inspect the sacrificial anode annually.

Water Conservation

Installing low-flow faucets or faucet aerators, low-flow showerheads, and kitchen sink pre-rinse spray valves saves both energy and water. These devices save energy by reducing the overall amount of hot water used hence reducing the energy used to heat the water. The flow ratings for EPA WaterSense™ (http://www3.epa.gov/watersense/products) labeled devices are 1.5 gpm for bathroom faucets, 2.0 gpm for showerheads, and 1.28 gpm for pre-rinse spray valves.

Installing dual flush or low-flow toilets and low-flow or waterless urinals are additional ways to reduce the sites water use, however, these devices do not provide energy savings at the site level. Any reduction in water use does however ultimately reduce grid level electricity use since a significant amount of electricity is used to deliver water from reservoirs to end users. The EPA WaterSense™ ratings for urinals is 0.5 gpf and toilets that use as little as 1.28 gpf (this is lower than the current 1.6 gpf federal standard).

Refer to Section 4.7 for any low-flow ECM recommendations.

6 On-Site Generation Measures

On-site generation measure options include both renewable (e.g., solar, wind) and non-renewable (e.g., fuel cells) on-site technologies that generate power to meet all or a portion of the electric energy needs of a facility, often repurposing any waste heat where applicable. Also referred to as distributed generation, these systems contribute to Greenhouse Gas (GHG) emission reductions, demand reductions and reduced customer electricity purchases, resulting in the electric system reliability through improved transmission and distribution system utilization.

The State of New Jersey's Energy Master Plan (EMP) encourages new distributed generation of all forms and specifically focuses on expanding use of combined heat and power (CHP) by reducing financial, regulatory, and technical barriers and identifying opportunities for new entries. The EMP also outlines a goal of 70% of the State's electrical needs to be met by renewable sources by 2050.

Preliminary screenings were performed to determine the potential that a generation project could provide a cost-effective solution for your facility. Before making a decision to implement, a feasibility study should be conducted that would take a detailed look at existing energy profiles, siting, interconnection, and the costs associated with the generation project including interconnection costs, departing load charges, and any additional special facilities charges.

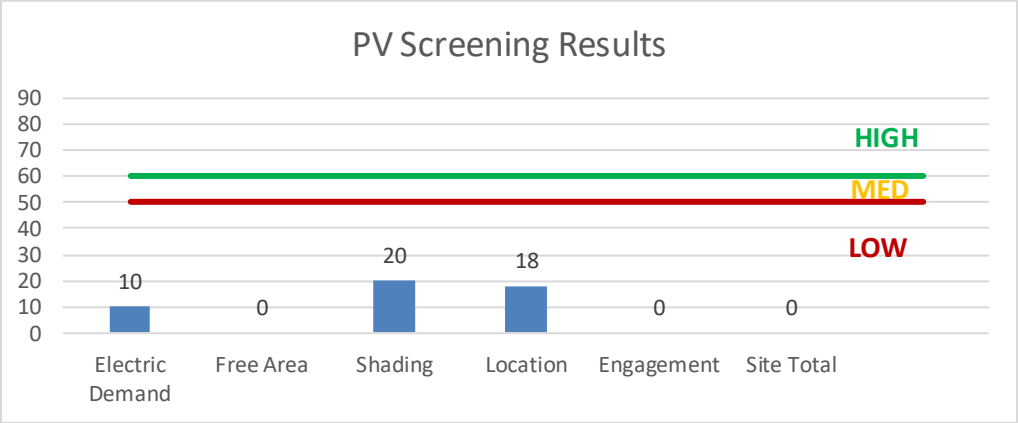
6.1 Photovoltaic

Sunlight can be converted into electricity using photovoltaics (PV) modules. Modules are racked together into an array that produces direct current (DC) electricity. The DC current is converted to alternating current (AC) through an inverter. The inverter is interconnected to the facility's electrical distribution system. The amount of unobstructed area available determines how large of a solar array can be installed. The size of the array combined with the orientation, tilt, and shading elements determines the energy produced.

A preliminary screening based on the facility's electric demand, size and location of free area, and shading elements shows that the facility has a **Low** potential for installing additional PV arrays.

In order to be cost-effective, a solar PV array needs certain minimum criteria, such as flat or south-facing rooftop or other unshaded space on which to place the PV panels. In our opinion, the facility does appear not meet these minimum criteria for cost-effective PV installation.

Figure 24 - Photovoltaic Screening



For more information on solar PV technology and commercial solar markets in New Jersey, or to find a qualified solar installer, who can provide a more detailed assessment of the specific costs and benefits of solar develop of the site, please visit the following links below:

- **Basic Info on Solar PV in NJ**: http://www.njcleanenergy.com/whysolar
- **NJ Solar Market FAQs**: http://www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-transition/solar-market-faqs
- **Approved Solar Installers in the NJ Market**: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/?id=60&start=1

6.2 Combined Heat and Power

Combined heat and power (CHP) is the on-site generation of electricity along with the recovery of heat energy, which is put to beneficial use. Common technologies for CHP include reciprocating engines, microturbines, fuel cells, backpressure steam turbines, and (at large facilities) gas turbines. Electric generation from a CHP system is typically interconnected to local power distribution systems. Heat is recovered from exhaust and ancillary cooling systems and interconnected to the existing hot water (or steam) distribution systems.

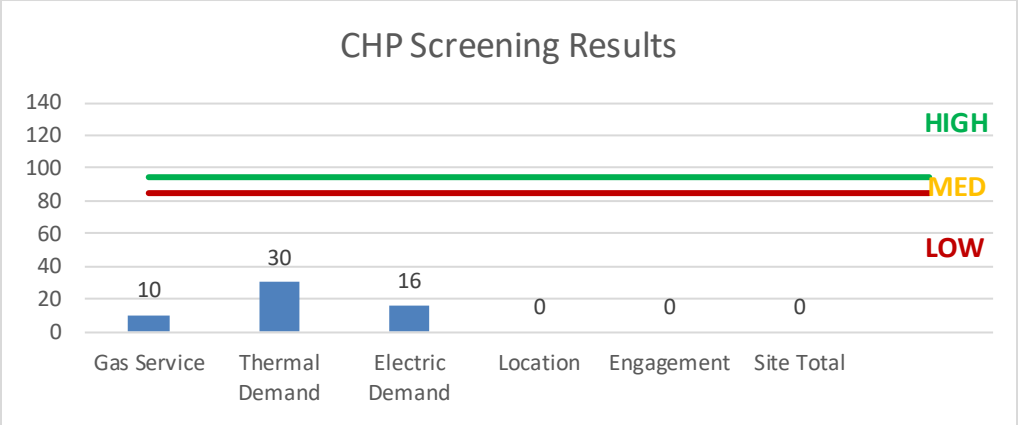
CHP systems are typically used to produce a portion of the electric power used onsite by a facility, with the balance of electric power needs supplied by grid purchases. The heat is used to supplement (or supplant) existing boilers for the purpose of space heating and/or domestic hot water heating. Waste heat can also be routed through absorption chillers for the purpose of space cooling. The key criteria used for screening, however, is the amount of time the system operates at full load and the facility's ability to use the recovered heat. Facilities with continuous use for large quantities of waste heat are the best candidates for CHP.

A preliminary screening based on heating and electrical demand, siting, and interconnection shows that the facility has a **Low** potential for installing a cost-effective CHP system.

Low or infrequent thermal load, and lack of space near the existing boilers are the most significant factors contributing to the low potential for CHP at the site. In our opinion, the facility does not appear to meet the minimum requirements for a cost-effective CHP installation.

For a list of qualified firms in New Jersey specializing in commercial CHP cost assessment and installation, go to: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/.

Figure 25 - Combined Heat and Power Screening



7 DEMAND RESPONSE

Demand Response (DR) is a program designed to reduce the electric load of commercial facilities when electric wholesale prices are high or when the reliability of the electric grid is threatened due to peak demand. Demand Response service providers (a.k.a. Curtailment Service Providers) are registered with PJM, the independent system operator (ISO) for mid-Atlantic state region that is charged with maintaining electric grid reliability.

By enabling grid operators to call upon Curtailment Service Providers and commercial facilities to reduce electric usage during times of peak demand, the grid is made more reliable and overall transmission costs are reduced for all ratepayers. Curtailment Service Providers provide regular payments to medium and large consumers of electric power for their participation in DR programs. Program participation is voluntary, and participants receive payments whether or not their facility is called upon to curtail their electric usage.

Typically, an electric customer needs to be capable of reducing their electric demand, within minutes, by at least 100 kW or more in order to participate in a DR program. Customers with a greater capability to quickly curtail their demand during peak hours will receive higher payments. Customers with back-up generators onsite may also receive additional DR payments for their generating capacity if they agree to run the generators for grid support when called upon. Eligible customers who have chosen to participate in a DR programs often find it to be a valuable source of revenue for their facility because the payments can significantly offset annual electric costs.

Participating customers can often quickly reduce their peak load through simple measures, such as temporarily raising temperature set points on thermostats, so that air conditioning units run less frequently, or agreeing to dim or shut off less critical lighting. This usually requires some level of building automation and controls capability to ensure rapid load reduction during a DR curtailment event. DR program participants may need to install smart meters or may need to also sub-meter larger energy-using equipment, such as chillers, in order to demonstrate compliance with DR program requirements.

DR does not include the reduction of electricity consumption based on normal operating practice or behavior. For example, if a company's normal schedule is to close for a holiday, the reduction of electricity due to this closure or scaled-back operation is not considered a demand response activity in most situations.

The first step toward participation in a DR program is to contact a Curtailment Service Provider. A list of these providers is available on PJM's website and it includes contact information for each company, as well as the states where they have active business (http://www.pjm.com/markets-and-operations/demand-response/csps.aspx). PJM also posts training materials that are developed for program members interested in specific rules and requirements regarding DR activity (http://www.pjm.com/training/training%20material.aspx), along with a variety of other DR program information.

Curtailment Service Providers typically offer free assessments to determine a facility's eligibility to participate in a DR program. They will provide details regarding program rules and requirements for metering and controls, assess a facility's ability to temporarily reduce electric load, and provide details on payments to be expected for participation in the program. Providers usually offer multiple options for DR to larger facilities and may also install controls or remote monitoring equipment of their own to help ensure compliance with all terms and conditions of a DR contract.

In our opinion, the facility is not a good candidate for DR curtailment.

8 PROJECT FUNDING / INCENTIVES

The NJCEP is able to provide the incentive programs described below, and other benefits to ratepayers, because of the Societal Benefits Charge (SBC) Fund. The SBC was created by the State of New Jersey's Electricity Restructuring Law (1999), which requires all customers of investor-owned electric and gas utilities to pay a surcharge on their monthly energy bills. As a customer of a state-regulated electric or gas utility and therefore a contributor to the fund your organization is eligible to participate in the LGEA program and also eligible to receive incentive payment for qualifying energy efficiency measures. Also available through the NJBPU are some alternative financing programs described later in this section. Please refer to Figure 26 for a list of the eligible programs identified for each recommended ECM.

Figure 26 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	SmartStart Custom	Direct Install	Pay For Performance Existing Buildings	Large Energy Users Program	Combined Heat & Power and Fuel Cell
ECM 1	Install LED Fixtures	X		X			
ECM 2	Retrofit Fixtures with LED Lamps	X		X			
ECM 3	Install LED Exit Signs			X			
ECM 4	Install Occupancy Sensor Lighting Controls	X		X			
ECM 5	Install High/Low Lighitng Controls	X		X			
ECM 6	Premium Efficiency Motors			X			
ECM 7	Install VFDs on Constant Volume (CV) HVAC	X		X			
ECM 8	Install VFDs on Chilled Water Pumps			X			
ECM 9	Install Dual Enthalpy Outside Economizer Control	X		X			
ECM 10	Install Low-Flow Domestic Hot Water Devices			X			
ECM 11	Vending Machine Control			X			

SmartStart is generally well-suited for implementation of individual measures or small group of measures. It provides flexibility to install measures at your own pace using in-house staff or a preferred contractor. Direct Install caters to small to mid-size facilities that can bundle multiple ECMs together. This can greatly simplify participation and may lead to higher incentive amounts but requires the use of pre-approved contractors. The Pay for Performance (P4P) program is a "whole-building" energy improvement program designed for larger facilities. It requires implementation of multiple measures meeting minimum savings thresholds, as well as use of pre-approved consultants. The Large Energy Users Program (LEUP) is available to New Jersey's largest energy users giving them flexibility to install as little or as many measures, in a single facility or several facilities, with incentives capped based on the entity's annual energy consumption. LEUP applicants can use in-house staff or a preferred contractor.

Generally, the incentive values provided throughout the report assume the SmartStart program is utilized because it provides a consistent basis for comparison of available incentives for various measures, though in many cases incentive amounts may be higher through participation in other programs.

Brief descriptions of all relevant financing and incentive programs are located in the sections below. Further information, including most current program availability, requirements, and incentive levels can be found at: www.njcleanenergy.com/ci.

8.1 SmartStart

Overview

The SmartStart program offers incentives for installing prescriptive and custom energy efficiency measures at your facility. Routinely the program adds, removes, or modifies incentives from year to year for various energy efficiency equipment based on market trends and new technologies.

Equipment with Prescriptive Incentives Currently Available:

Electric Chillers
Electric Unitary HVAC
Gas Cooling
Gas Heating
Gas Water Heating
Ground Source Heat Pumps
Lighting
Lighting Controls
Refrigeration Doors
Refrigeration Controls
Refrigerator/Freezer Motors
Food Service Equipment
Variable Frequency Drives

Most equipment sizes and types are served by this program. This program provides an effective mechanism for securing incentives for energy efficiency measures installed individually or as part of a package of energy upgrades.

Incentives

The SmartStart prescriptive incentive program provides fixed incentives for specific energy efficiency measures, whereas the custom SmartStart program provides incentives for more unique or specialized technologies or systems that are not addressed through prescriptive incentive offerings for specific devices.

Since your facility is an existing building, only the retrofit incentives have been applied in this report. Custom measure incentives are calculated at $0.16/kWh and $1.60/therm based on estimated annual savings, capped at 50% of the total installed incremental project cost, or a project cost buy down to a one-year payback (whichever is less). Program incentives are capped at $500,000 per electric account and $500,000 per natural gas account, per fiscal year.

How to Participate

To participate in the SmartStart program you will need to submit an application for the specific equipment to be installed. Many applications are designed as rebates, although others require application approval prior to installation. Applicants may work with a contractor of their choosing and can also utilize internal personnel, which provides added flexibility to the program. Using internal personnel also helps improve the economics of the ECM by reducing the labor cost that is included in the tables in this report.

Detailed program descriptions, instructions for applying and applications can be found at: www.njcleanenergy.com/SSB.

8.2 Direct Install

Overview

Direct Install is a turnkey program available to existing small to medium-sized facilities with a peak electric demand that does not exceed 200 kW for any recent 12-month period. You will work directly with a pre-approved contractor who will perform a free energy assessment at your facility, identify specific eligible measures, and provide a clear scope of work for installation of selected measures. Energy efficiency measures may include lighting and lighting controls, refrigeration, HVAC, motors, variable speed drives and controls.

Incentives

The program pays up to **70%** of the total installed cost of eligible measures, up to $125,000 per project. Direct Install participants will also be held to a fiscal year cap of $250,000 per entity.

How to Participate

To participate in the Direct Install program you will need to contact the participating contractor who the region of the state where your facility is located. A complete list of Direct Install program partners is provided on the Direct Install website linked below. The contractor will be paid the measure incentives directly by the program which will pass on to you in the form of reduced material and implementation costs. This means up to 70% of eligible costs are covered by the program, subject to program caps and eligibility, while the remaining 30% of the cost is paid to the contractor by the customer.

Since Direct Install offers a free assessment of eligible measures, Direct Install is also available to small businesses and other commercial facilities too that may not be eligible for the more detailed facility audits provided by LGEA.

Detailed program descriptions and applications can be found at: www.njcleanenergy.com/DI.

8.3 Energy Savings Improvement Program

The Energy Savings Improvement Program (ESIP) is an alternate method for New Jersey's government agencies to finance the implementation of energy conservation measures. An ESIP is a type of "performance contract," whereby school districts, counties, municipalities, housing authorities and other public and state entities enter in to contracts to help finance building energy upgrades. This is done in a manner that ensures that annual payments are lower than the savings projected from the ECMs, ensuring that ESIP projects are cash flow positive in year one, and every year thereafter. ESIP provides government agencies in New Jersey with a flexible tool to improve and reduce energy usage with minimal expenditure of new financial resources. NJCEP incentive programs can be leveraged to help further reduce the total project cost of eligible measures.

This LGEA report is the first step to participating in ESIP. Next, you will need to select an approach for implementing the desired ECMs:

(1) Use an Energy Services Company or "ESCO."
(2) Use independent engineers and other specialists, or your own qualified staff, to provide and manage the requirements of the program through bonds or lease obligations.
(3) Use a hybrid approach of the two options described above where the ESCO is utilized for some services and independent engineers, or other specialists or qualified staff, are used to deliver other requirements of the program.

After adopting a resolution with a chosen implementation approach, the development of the Energy Savings Plan (ESP) can begin. The ESP demonstrates that the total project costs of the ECMs are offset by the energy savings over the financing term, not to exceed 15 years. The verified savings will then be used to pay for the financing.

The ESIP approach may not be appropriate for all energy conservation and energy efficiency improvements. Entities should carefully consider all alternatives to develop an approach that best meets their needs. A detailed program descriptions and application can be found at: www.njcleanenergy.com/ESIP.

Please note that ESIP is a program delivered directly by the NJBPU and is not an NJCEP incentive program. As mentioned above, you may utilize NJCEP incentive programs to help further reduce costs when developing the ESP. You should refer to the ESIP guidelines at the link above for further information and guidance on next steps.

9 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

9.1 Retail Electric Supply Options

In 1999, New Jersey State Legislature passed the Electric Discount & Energy Competition Act (EDECA) to restructure the electric power industry in New Jersey. This law deregulated the retail electric markets, allowing all consumers to shop for service from competitive electric suppliers. The intent was to create a more competitive market for electric power supply in New Jersey. As a result, utilities were allowed to charge Cost of Service and customers were given the ability to choose a third-party (i.e. non-utility) energy supplier.

Energy deregulation in New Jersey has increased energy buyers' options by separating the function of electricity distribution from that of electricity supply. So, though you may choose a different company from which to buy your electric power, responsibility for your facility's interconnection to the grid and repair to local power distribution will still reside with the traditional utility company serving your region.

If your facility is not purchasing electricity from a third-party supplier, consider shopping for a reduced rate from third-party electric suppliers. If your facility is purchasing electricity from a third-party supplier, review and compare prices at the end of the current contract or every couple years.

A list of third-party electric suppliers, who are licensed by the state to provide service in New Jersey, can be found online at: www.state.nj.us/bpu/commercial/shopping.html.

9.2 Retail Natural Gas Supply Options

The natural gas market in New Jersey has also been deregulated. Most customers that remain with the utility for natural gas service pay rates that are market-based and that fluctuate on a monthly basis. The utility provides basic gas supply service (BGSS) to customers who choose not to buy from a third-party supplier for natural gas commodity.

A customer's decision about whether to buy natural gas from a retail supplier is typically dependent upon whether a customer seeks budget certainty and/or longer-term rate stability. Customers can secure longer-term fixed prices by signing up for service through a third-party retail natural gas supplier. Many larger natural gas customers may seek the assistance of a professional consultant to assist in their procurement process.

If your facility is not purchasing natural gas from a third-party supplier, consider shopping for a reduced rate from third-party natural gas suppliers. If your facility is purchasing natural gas from a third-party supplier, review and compare prices at the end of the current contract or every couple years.

A list of third-party natural gas suppliers, who are licensed by the state to provide service in New Jersey, can be found online at: www.state.nj.us/bpu/commercial/shopping.html.

APPENDIX A: EQUIPMENT INVENTORY & RECOMMENDATIONS

Lighting Inventory & Recommendations

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	6,734	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	6,734	0.18	1,820	0.0	$213.59	$409.50	$70.00	1.59
Boiler Room	1	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.00	61	0.0	$7.22	$107.56	$0.00	14.90
Air Handler Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	6,734	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	6,734	0.08	780	0.0	$91.54	$175.50	$30.00	1.59
Basement	4	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	60	6,734	None	Yes	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	60	4,714	0.06	567	0.0	$66.57	$116.00	$20.00	1.44
Basement	1	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.00	61	0.0	$7.22	$107.56	$0.00	14.90
Stairwell 1	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	8,736	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	6,115	0.33	4,262	0.0	$500.21	$1,185.00	$100.00	2.17
Stairwell 1	3	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	3	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	184	0.0	$21.65	$322.67	$0.00	14.90
Stairwell 2	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	8,736	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	6,115	0.23	2,984	0.0	$350.15	$1,009.50	$70.00	2.68
Stairwell 2	1	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.00	61	0.0	$7.22	$107.56	$0.00	14.90
Main Lobby	13	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	8,736	None	No	13	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	8,736	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Main Lobby	3	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	3	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	184	0.0	$21.65	$322.67	$0.00	14.90
Main Lobby	3	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	10	8,736	None	No	3	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	10	8,736	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Men Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	6,734	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	6,734	0.03	260	0.0	$30.51	$58.50	$10.00	1.59
Men Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	32	6,734	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	6,734	0.01	138	0.0	$16.18	$35.90	$5.00	1.91
Men Restroom	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	6,734	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	6,734	0.03	252	0.0	$29.59	$96.40	$20.00	2.58
Women Restroom	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	6,734	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	6,734	0.03	252	0.0	$29.59	$96.40	$20.00	2.58
Women Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	6,734	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	6,734	0.03	260	0.0	$30.51	$58.50	$10.00	1.59
Stairwell - Lobby	1	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	10	6,734	None	No	1	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	10	6,734	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Court Office	24	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	None	Yes	24	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,621	0.10	536	0.0	$62.92	$232.00	$40.00	3.05
Court House	41	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	3,744	Relamp	No	41	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	3,744	0.95	5,208	0.0	$611.25	$2,591.20	$0.00	4.24
Court House	7	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	10	3,744	None	No	7	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	10	3,744	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Court House	2	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	123	0.0	$14.43	$215.11	$0.00	14.90
PD Interview Room	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	8,736	None	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	8,736	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
PD Garage	8	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	114	8,736	Relamp	No	8	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	8,736	0.36	4,579	0.0	$537.39	$761.07	$160.00	1.12
PD Corridor	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	8,736	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	6,115	0.10	1,279	0.0	$150.06	$375.50	$30.00	2.30

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
PD Corridor	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	8,736	None	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	8,736	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Squad Room	12	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	8,736	None	Yes	12	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	6,115	0.05	626	0.0	$73.41	$116.00	$20.00	1.31
Squad Room	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	62	8,736	Relamp	No	2	LED - Linear Tubes: (2) U-Lamp	Wall Switch	33	8,736	0.05	593	0.0	$69.57	$126.40	$0.00	1.82
PD Male Locker Room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	8,736	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	6,115	0.20	2,557	0.0	$300.12	$467.00	$80.00	1.29
PD Male Locker Room	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	8,736	None	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	8,736	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
PD Male Locker Room	2	Incandescent: Screw in	Wall Switch	60	8,736	Relamp	No	2	LED Screw-In Lamps: LED A Lamp	Wall Switch	9	8,736	0.08	1,043	0.0	$122.35	$107.51	$10.00	0.80
Female Locker Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	8,736	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	6,115	0.10	1,279	0.0	$150.06	$291.50	$50.00	1.61
Administration Office	6	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	8,736	None	Yes	6	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	40	6,115	0.06	736	0.0	$86.37	$116.00	$20.00	1.11
PD Main Lobby	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	8,736	None	No	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	8,736	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
PD Main Lobby	2	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	123	0.0	$14.43	$215.11	$0.00	14.90
Record Room	6	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	8,736	None	Yes	6	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	40	6,115	0.06	736	0.0	$86.37	$116.00	$20.00	1.11
PD Corridor	6	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	8,736	None	Yes	6	LED - Fixtures: Ambient 2x2 Fixture	High/Low Control	40	6,115	0.06	736	0.0	$86.37	$200.00	$210.00	-0.12
PD Corridor	1	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.00	61	0.0	$7.22	$107.56	$0.00	14.90
Captain Office	5	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	8,736	None	No	5	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	8,736	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Prisoner Entrance	5	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	8,736	None	No	5	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	8,736	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
911 Call Room	12	Compact Fluorescent: Screw in	Wall Switch	26	8,736	Relamp	No	12	LED Screw-In Lamps: LED A Lamp	Wall Switch	11	8,736	0.14	1,840	0.0	$215.92	$645.04	$0.00	2.99
Detective Office	10	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	8,736	None	Yes	10	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	40	6,115	0.10	1,227	0.0	$143.94	$116.00	$20.00	0.67
Processing Room	5	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	8,736	None	No	5	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	8,736	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Lavatory	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	8,736	None	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	8,736	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Police Chief Office	9	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	8,736	None	Yes	9	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	40	6,115	0.09	1,104	0.0	$129.55	$116.00	$20.00	0.74
Backside Stairwell	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	6,734	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	6,734	0.08	780	0.0	$91.54	$175.50	$30.00	1.59
Backside Stairwell	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	6,734	None	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	6,734	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Backside Stairwell	10	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	36	6,734	None	Yes	10	LED - Fixtures: Downlight Solid State Retrofit	High/Low Control	36	4,714	0.09	851	0.0	$99.86	$400.00	$350.00	0.50
Backside Stairwell	2	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	123	0.0	$14.43	$215.11	$0.00	14.90
2nd Floor Lobby	10	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	None	No	10	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
2nd Floor Lobby	3	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	10	3,744	None	No	3	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	10	3,744	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
2nd Floor Lobby	5	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	15	3,744	None	No	5	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	15	3,744	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Chamber 2	12	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	None	Yes	12	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,621	0.05	268	0.0	$31.46	$116.00	$20.00	3.05
Chamber 2	1	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.00	61	0.0	$7.22	$107.56	$0.00	14.90
Fire Prevention	12	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	None	Yes	12	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,621	0.05	268	0.0	$31.46	$116.00	$20.00	3.05
Alarm Division	6	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	None	Yes	6	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,621	0.02	134	0.0	$15.73	$116.00	$0.00	7.37
Town Clerk	14	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	3,744	None	Yes	14	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	40	2,621	0.13	736	0.0	$86.37	$116.00	$20.00	1.11
Closet	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,744	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	0.03	140	0.0	$16.45	$96.40	$20.00	4.64
Mayor Office	10	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	3,744	None	Yes	10	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	40	2,621	0.10	526	0.0	$61.69	$116.00	$20.00	1.56
Mayor Office	6	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	None	No	6	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Mayor Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,744	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,744	0.03	145	0.0	$16.96	$58.50	$10.00	2.86
Mayor Office	6	Compact Fluorescent: Screw in	Wall Switch	26	3,744	Relamp	No	6	LED Screw-In Lamps: LED A Lamp	Wall Switch	11	3,744	0.07	394	0.0	$46.27	$322.52	$0.00	6.97
Town Administration Office	6	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	None	Yes	6	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,621	0.02	134	0.0	$15.73	$116.00	$0.00	7.37
Town Attorney	11	Compact Fluorescent: Screw in	Wall Switch	26	3,744	Relamp	Yes	11	LED Screw-In Lamps: LED A Lamp	Occupancy Sensor	11	2,621	0.16	882	0.0	$103.49	$707.28	$20.00	6.64
Executif Assistant	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	None	No	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Conference Room	6	Compact Fluorescent: Screw in	Wall Switch	26	3,744	Relamp	Yes	6	LED Screw-In Lamps: LED A Lamp	Occupancy Sensor	11	2,621	0.09	481	0.0	$56.45	$438.52	$0.00	7.77
Conference Room	6	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	None	No	6	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Men Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,744	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,744	0.03	145	0.0	$16.96	$58.50	$10.00	2.86
Men Restroom	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,744	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	0.03	140	0.0	$16.45	$96.40	$20.00	4.64
Women Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,744	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,744	0.03	145	0.0	$16.96	$58.50	$10.00	2.86
Women Restroom	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,744	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	0.03	140	0.0	$16.45	$96.40	$20.00	4.64
Elevator	9	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	9	3,744	None	No	9	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	9	3,744	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
3rd Floor Lobby	10	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	None	No	10	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
3rd Floor Lobby	3	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	10	3,744	None	No	3	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	10	3,744	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
3rd Floor Lobby	1	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.00	61	0.0	$7.22	$107.56	$0.00	14.90

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
3rd Floor Lobby	4	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	15	3,744	None	No	4	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	15	3,744	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Men Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,744	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,744	0.03	145	0.0	$16.96	$58.50	$10.00	2.86
Men Restroom	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,744	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	0.03	140	0.0	$16.45	$96.40	$20.00	4.64
Women Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,744	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,744	0.03	145	0.0	$16.96	$58.50	$10.00	2.86
Women Restroom	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,744	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	0.03	140	0.0	$16.45	$96.40	$20.00	4.64
Tax Room	10	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	3,744	None	Yes	10	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	40	2,621	0.10	526	0.0	$61.69	$116.00	$20.00	1.56
Chief Finance Office	9	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	3,744	None	Yes	9	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	40	2,621	0.09	473	0.0	$55.52	$116.00	$20.00	1.73
IT Department	6	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	3,744	None	Yes	6	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	40	2,621	0.06	315	0.0	$37.01	$116.00	$20.00	2.59
Purchassing Room	9	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	3,744	None	Yes	9	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	40	2,621	0.09	473	0.0	$55.52	$116.00	$20.00	1.73
Tax Collector Room	20	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	3,744	None	Yes	20	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	40	2,621	0.19	1,051	0.0	$123.38	$270.00	$35.00	1.90
PD Server Room	6	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	None	No	6	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
PD Server Room	1	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.00	61	0.0	$7.22	$107.56	$0.00	14.90
Infor Technology Room	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	None	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Finance Department	12	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	3,744	None	Yes	12	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	40	2,621	0.11	631	0.0	$74.03	$116.00	$20.00	1.30
4th Floor Lobby	7	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	None	No	7	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
4th Floor Lobby	2	Exit Signs: Fluorescent	None	12	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	123	0.0	$14.43	$215.11	$0.00	14.90
4th Floor Lobby	2	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	10	3,744	None	No	2	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	10	3,744	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Payroll	6	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	3,744	None	Yes	6	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	40	2,621	0.06	315	0.0	$37.01	$116.00	$20.00	2.59
Grants Office	4	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	3,744	None	Yes	4	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	40	2,621	0.04	210	0.0	$24.68	$116.00	$0.00	4.70
Human Ressource	4	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	3,744	None	Yes	4	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	40	2,621	0.04	210	0.0	$24.68	$116.00	$0.00	4.70
Health Department	6	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	3,744	None	Yes	6	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	40	2,621	0.06	315	0.0	$37.01	$116.00	$20.00	2.59
Men Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,744	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,744	0.03	145	0.0	$16.96	$58.50	$10.00	2.86
Men Restroom	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,744	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	0.03	140	0.0	$16.45	$96.40	$20.00	4.64
Women Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	3,744	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,744	0.03	145	0.0	$16.96	$58.50	$10.00	2.86
Women Restroom	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,744	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	0.03	140	0.0	$16.45	$96.40	$20.00	4.64

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Closet	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	3,744	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,744	0.03	140	0.0	$16.45	$96.40	$20.00	4.64
Engineeering Department	16	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	3,744	None	Yes	16	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	40	2,621	0.15	841	0.0	$98.70	$116.00	$20.00	0.97
Building Department	30	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	40	3,744	None	Yes	30	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	40	2,621	0.29	1,577	0.0	$185.07	$348.00	$60.00	1.56
Exterior Recessed Fixtures	9	High-Pressure Sodium: (1) 100W Lamp	Daylight Dimming	138	4,380	Fixture Replacement	No	9	LED - Fixtures: Downlight Recessed	Daylight Dimming	25	4,380	0.81	5,212	0.0	$611.64	$2,440.05	$45.00	3.92
Exterior Recessed Fixtures	1	Compact Fluorescent: CFL 4 PIN	Daylight Dimming	32	4,380	Relamp	No	1	LED - Fixtures: Downlight Solid State Retrofit	Daylight Dimming	15	4,380	0.01	87	0.0	$10.22	$63.58	$0.00	6.22
Exterior Recessed Fixtures	1	Halogen Incandescent: Screw in Flood Light	Daylight Dimming	90	4,380	Fixture Replacement	No	1	LED - Fixtures: Track or Mono-Point Directional Lighting Fixtures	Daylight Dimming	25	4,380	0.05	333	0.0	$39.09	$601.52	$30.00	14.62
Walkway Light	10	High-Pressure Sodium: (1) 150W Lamp	Daylight Dimming	188	4,380	Fixture Replacement	No	10	LED - Fixtures: Outdoor Pole/Arm-Mounted Area/Roadway Fixture	Daylight Dimming	45	4,380	1.14	7,328	0.0	$860.03	$9,500.00	$1,000.00	9.88
Bus Stop	2	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Daylight Dimming	46	4,380	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	Daylight Dimming	15	4,380	0.05	323	0.0	$37.89	$71.80	$10.00	1.63
Wall Washer Fixtures	3	LED - Fixtures: Architectural Flood/Spot Luminaire	Daylight Dimming	65	4,380	None	No	3	LED - Fixtures: Architectural Flood/Spot Luminaire	Daylight Dimming	65	4,380	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Exterior Recessed Fixtures	2	LED - Fixtures: Downlight Recessed	Daylight Dimming	25	4,380	None	No	2	LED - Fixtures: Downlight Recessed	Daylight Dimming	25	4,380	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Solar Panel Suport Metallic Structure	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Daylight Dimming	62	4,380	Relamp	No	22	LED - Linear Tubes: (2) 4' Lamps	Daylight Dimming	29	4,380	0.58	3,720	0.0	$436.63	$1,287.00	$220.00	2.44
Elevator Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	62	4,368	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.03	169	0.0	$19.79	$58.50	$10.00	2.45

Motor Inventory & Recommendations

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	Boilers	2	Combustion Air Fan	0.5	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Air Compressor	1	Air Compressor	1.0	81.0%	No	780	Yes	85.5%	No		0.03	28	0.0	$3.33	$474.06	$0.00	142.45
Boiler Room	Air Compressor	1	Air Compressor	1.0	85.5%	No	780	No	85.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Waste Pumps	1	Other	2.0	86.5%	No	2,745	No	86.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Waste Pumps	1	Other	2.0	82.5%	No	2,745	Yes	86.5%	No		0.05	172	0.0	$20.21	$532.17	$0.00	26.34
Boiler Room	Heating System - South Wing	1	Heating Hot Water Pump	1.5	84.5%	No	2,745	No	84.5%	Yes	1	0.20	1,581	0.0	$185.58	$2,632.46	$0.00	14.19
Boiler Room	Heating System - North Wing	1	Heating Hot Water Pump	1.0	82.0%	No	2,745	No	82.0%	Yes	1	0.14	1,086	0.0	$127.49	$2,536.07	$0.00	19.89
Boiler Room	Heating System - Garage	1	Heating Hot Water Pump	0.8	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Heating System - Basement	1	Heating Hot Water Pump	0.8	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Boiler Room	Unit Heaters	2	Supply Fan	0.3	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Air Handler Room	Air Handler	1	Supply Fan	20.0	80.0%	No	3,391	Yes	93.0%	Yes	1	3.90	15,760	0.0	$1,849.52	$8,582.03	$1,600.00	3.78
Air Handler Room	Air Handler	1	Return Fan	7.5	91.7%	No	3,391	No	91.7%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Air Handler Room	Chilled Water System	2	Chilled Water Pump	10.0	82.0%	No	3,391	Yes	91.7%	Yes	2	3.41	28,406	0.0	$3,333.67	$10,303.00	$0.00	3.09
Rooftop	PD Restrooms	1	Exhaust Fan	0.3	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Men's & Women's Restrooms	2	Exhaust Fan	0.3	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Rooftop	Locker Room	1	Exhaust Fan	0.3	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
PD Garage	PD Garage - Hot Water Unit Heater	2	Supply Fan	0.1	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
PD Garage	PD Garage	1	Other	0.3	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Town Hall - Main Lobby	Town Hall - Main Lobby	2	Supply Fan	0.3	78.0%	No	2,745	No	78.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Elevator Room	Elevator	1	Other	40.0	78.5%	No	2,184	No	78.5%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric HVAC Inventory & Recommendations

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Install Dual Enthalpy Economizer?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Rooftop	Detective & PD Chief Offices	1	Packaged AC	5.00		Yes	1	Packaged AC	5.00		14.00		Yes	1.96	6,034	0.0	$708.18	$11,844.80	$710.00	15.72
Rooftop	PD Server Room	1	Split-System AC	2.50		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Administration Office	Administration Office	1	Split-System AC	1.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
IT Department	IT Department	1	Split-System AC	2.00		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Court House	Court House	1	Electric Resistance Heat		34.20	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Male Locker Room	Male Locker Room	1	Electric Resistance Heat		17.10	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Chamber 2	Chamber 2	2	Electric Resistance Heat		7.00	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Record Room	Record Room	1	Electric Resistance Heat		0.50	No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric Chiller Inventory & Recommendations

		Existing Conditions			Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Chiller Quantity	System Type	Cooling Capacity per Unit (Tons)	Install High Efficiency Chillers?	Chiller Quantity	System Type	Constant/ Variable Speed	Cooling Capacity (Tons)	Full Load Efficiency (kW/Ton)	IPLV Efficiency (kW/Ton)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Ground Floor	Town Hall	1	Air-Cooled Screw Chiller	138.00	No							0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Fuel Heating Inventory & Recommendations

		Existing Conditions			Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler	Town Hall	2	Non-Condensing Hot Water Boiler	1,084.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

DHW Inventory & Recommendations

		Existing Conditions		Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Replace?	System Quantity	System Type	Fuel Type	System Efficiency	Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	Town Hall	1	Storage Tank Water Heater (> 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Low-Flow Device Recommendations

	Recommedation Inputs				Energy Impact & Financial Analysis						
Location	Device Quantity	Device Type	Existing Flow Rate (gpm)	Proposed Flow Rate (gpm)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Town Hall	14	Faucet Aerator (Lavatory)	2.20	1.00	0.00	7,070	0.0	$829.71	$100.38	$0.00	0.12

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Town Hall	155	Desktop with LCD Monitor	191.0	Yes
Town Hall	7	Coffee Machine	850.0	No
Town Hall	18	Copy Machine	800.0	Yes
Town Hall	5	Water Cooler	272.0	Yes
Town Hall	7	Wall TV	124.0	Yes
Town Hall	5	Microwave	1,000.0	No
Town Hall	4	Small Freezer	127.0	Yes
Town Hall	5	Toaster	800.0	No
Town Hall	8	Printer	46.0	Yes
IT Room	1	Town Main Server	8,840.0	No
Police Depart Server Room	1	PD Server	5,470.0	No

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	Install Controls?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Main Lobby	1	Refrigerated	Yes	0.00	1,612	0.0	$189.16	$230.00	$0.00	1.22
Main Lobby	1	Non-Refrigerated	No	0.00	0	0.0	$0.00	$230.00	$0.00	0.00

APPENDIX B: ENERGY STAR® STATEMENT OF ENERGY PERFORMANCE

ENERGY STAR® Statement of Energy Performance

LEARN MORE AT energystar.gov

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ENERGY STAR® Score[1]

Town of Secaucus - Municipal Building (Town Hall)

Primary Property Type: Office
Gross Floor Area (ft²): 59,513
Built: 1979

For Year Ending: July 31, 2016
Date Generated: February 12, 2018

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address	Property Owner	Primary Contact
Town of Secaucus - Municipal Building (Town Hall) 1203 Paterson Plank Road Secaucus, New Jersey 07094	Town of Secaucus 1203 Paterson Plank Rd Secaucus, NJ 07094 201-864-7336	Amanda Nesheiwat 1203 Paterson Plank Rd Secaucus, NJ 07094 201-864-7336 anesheiwat@secaucus.net

Property ID: 6204382

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
69.5 kBtu/ft²

Source EUI
171.5 kBtu/ft²

Annual Energy by Fuel

Natural Gas (kBtu)	1,326,146 (32%)
Electric - Grid (kBtu)	2,278,395 (55%)
Electric - Solar (kBtu)	529,328 (13%)

National Median Comparison

National Median Site EUI (kBtu/ft²)	85.5
National Median Source EUI (kBtu/ft²)	211.1
% Diff from National Median Source EUI	-19%

Annual Emissions

Greenhouse Gas Emissions (Metric Tons CO2e/year)	382

Signature & Stamp of Verifying Professional

I _____ (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: _____ Date: _____

Licensed Professional

____ _____
,
(___)___-_____
_____

Professional Engineer Stamp (if applicable)