Local Government Energy Audit Report

Municipal Complex

November 19, 2020

Prepared for:

Toms River Township
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Disclaimer

The goal of this audit report is to identify potential energy efficiency opportunities, help prioritize specific measures for implementation, and provide information about financial incentives that may be available. Most energy conservation measures have received preliminary analysis of feasibility that identifies expected ranges of savings and costs. This level of analysis is usually considered sufficient to establish a basis for further discussion and to help prioritize energy measures.

TRC reviewed the energy conservation measures and estimates of energy savings for technical accuracy. Actual, achieved energy savings depend on behavioral factors and other uncontrollable variables and, therefore, estimates of final energy savings are not guaranteed. TRC and the New Jersey Board of Public Utilities (NJBPU) shall in no event be liable should the actual energy savings vary.

TRC bases estimated installation costs on our experience at similar facilities, pricing from local contractors and vendors, and/or cost estimates from RS Means. Cost estimates include material and labor pricing associated with installation of primary recommended equipment only. Cost estimates do not include demolition or removal of hazardous waste. We encourage the owner of the facility to independently confirm these cost estimates and to obtain multiple estimates when considering measure installations. Actual installation costs can vary widely based on individual 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. Please review all available program incentives and eligibility requirements prior to selecting and installing any energy conservation measures.

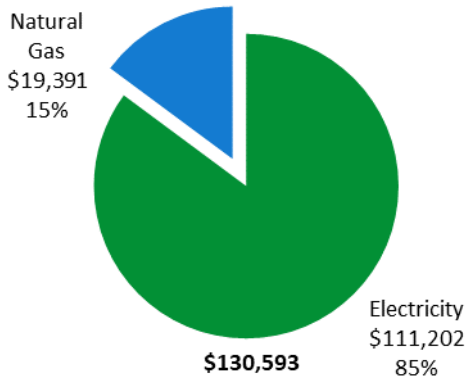
The customer and their respective contractor(s) are responsible to implement energy conservation measures in complete conformance with all applicable local, state and federal requirements.

Table of Contents

1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Municipal Complex. This report provides you with information about your facility's energy use, identifies energy conservation measures (ECMs) that can reduce your energy use, and provides information and assistance to help make changes in your facility. TRC conducted this study as part of a comprehensive effort to assist New Jersey school districts and local governments in controlling their energy costs and to help protect our environment by reducing statewide energy consumption.

BUILDING PERFORMANCE REPORT

Annual Utilities	Costs: $130,593 Electricity: 828,859 kWh Natural Gas: 17,076 Therms	
ENERGY STAR® Benchmarking Score	N/A *(1-100 scale)*	A standard energy use benchmark is not available for this facility type. This report contains suggestions about how to improve building performance and reduce energy costs.

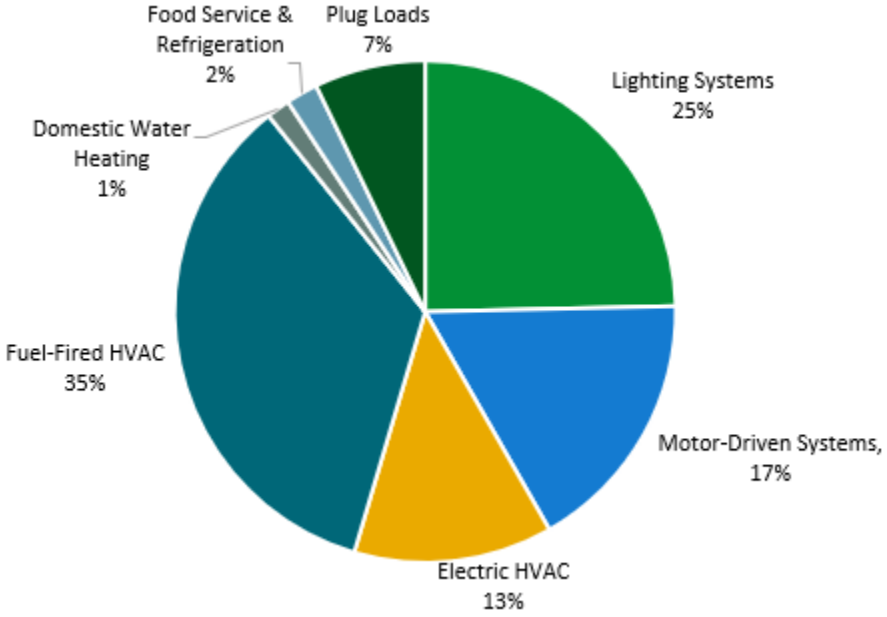


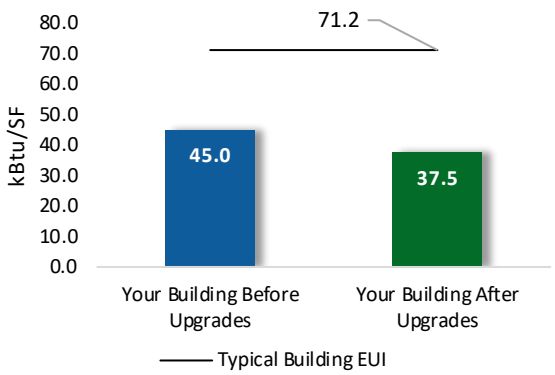
Figure 1 - Energy Use by System

POTENTIAL IMPROVEMENTS

This energy audit considered a range of potential energy improvements in your building. Costs and savings will vary between improvements. Presented below are two potential scopes of work for your consideration.

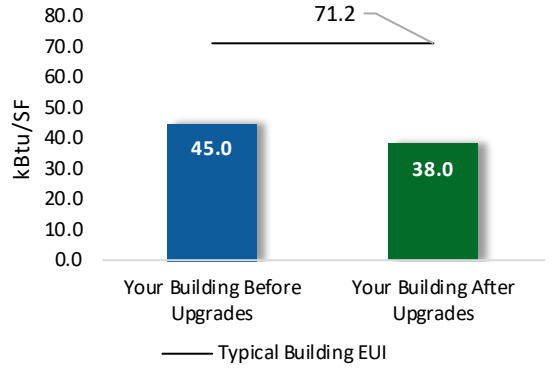
Scenario 1: Full Package (all evaluated measures)

Installation Cost	$105,767
Potential Rebates & Incentives[1]	$36,222
Annual Cost Savings	$30,826
Annual Energy Savings	Electricity: 233,219 kWh
Greenhouse Gas Emission Savings	115 Tons
Simple Payback	2.3 Years
Site Energy Savings (all utilities)	17%



Scenario 2: Cost Effective Package[2]

Installation Cost	$76,607
Potential Rebates & Incentives	$30,202
Annual Cost Savings	$28,723
Annual Energy Savings	Electricity: 217,255 kWh
Greenhouse Gas Emission Savings	107 Tons
Simple Payback	1.6 Years
Site Energy Savings (all utilities)	16%



On-site Generation Potential

Photovoltaic	None
Combined Heat and Power	None

[1] Incentives are based on current SmartStart Prescriptive incentives. Other Program incentives may apply.

[2] A cost-effective measure is defined as one where the simple payback does not exceed two-thirds of the expected proposed equipment useful life. Simple payback is based on the net measure cost after potential incentives.

#	Energy Conservation Measure	Cost Effective?	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			**199,640**	**44.4**	**-42**	**$26,303**	**$57,239**	**$16,408**	**$40,831**	**1.6**	**196,074**
ECM 1	Install LED Fixtures	Yes	117,122	21.8	-25	$15,431	$22,653	$1,660	$20,993	1.4	115,030
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	2,335	0.7	0	$308	$954	$280	$674	2.2	2,293
ECM 3	Retrofit Fixtures with LED Lamps	Yes	79,644	21.8	-17	$10,493	$33,415	$14,468	$18,947	1.8	78,220
ECM 4	Install LED Exit Signs	Yes	539	0.1	0	$71	$217	$0	$217	3.1	530
Lighting Control Measures			**21,269**	**5.0**	**-5**	**$2,802**	**$39,060**	**$15,720**	**$23,340**	**8.3**	**20,887**
ECM 5	Install Occupancy Sensor Lighting Controls	No	15,964	3.8	-3	$2,103	$29,160	$6,020	$23,140	11.0	15,678
ECM 6	Install High/Low Lighting Controls	Yes	5,304	1.2	-1	$699	$9,900	$9,700	$200	0.3	5,209
Variable Frequency Drive (VFD) Measures			**9,833**	**1.3**	**0**	**$1,319**	**$8,814**	**$3,800**	**$5,014**	**3.8**	**9,901**
ECM 7	Install VFDs on Heating Water Pumps	Yes	9,833	1.3	0	$1,319	$8,814	$3,800	$5,014	3.8	9,901
Domestic Water Heating Upgrade			**523**	**0.0**	**6**	**$140**	**$194**	**$194**	**$0**	**0.0**	**1,246**
ECM 8	Install Low-Flow DHW Devices	Yes	523	0.0	6	$140	$194	$194	$0	0.0	1,246
Food Service & Refrigeration Measures			**1,954**	**0.2**	**0**	**$262**	**$460**	**$100**	**$360**	**1.4**	**1,968**
ECM 9	Vending Machine Control	Yes	1,954	0.2	0	$262	$460	$100	$360	1.4	1,968
TOTALS (COST EFFECTIVE MEASURES)			**217,255**	**47.1**	**-37**	**$28,723**	**$76,607**	**$30,202**	**$46,405**	**1.6**	**214,398**
TOTALS (ALL MEASURES)			**233,219**	**50.9**	**-41**	**$30,826**	**$105,767**	**$36,222**	**$69,545**	**2.3**	**230,076**

* - All incentives presented in this table are based on NJ SmartStart 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).

Figure 2 – Evaluated Energy Improvements

For more detail on each evaluated energy improvement and a break out of cost-effective improvements, see **Section 4: Energy Conservation Measures**.

1.1 Planning Your Project

Careful planning makes for a successful energy project. When considering this scope of work, you will have some decisions to make, such as:

- How will the project be funded and/or financed?
- Is it best to pursue individual ECMs, groups of ECMs, or use a comprehensive approach where all ECMs are installed together?
- Are there other facility improvements that should happen at the same time?

Pick Your Installation Approach

New Jersey's Clean Energy Programs give you the flexibility to do a little or a lot. Rebates, incentives, and financing are available to help reduce both your installation costs and your energy bills. If you are planning to take advantage of these programs, make sure to review incentive program guidelines before proceeding. This is important because in most cases you will need to submit applications for the incentives before purchasing materials or starting installation.

The potential ECMs identified for this building likely qualify for multiple incentive and funding programs. Based on current program rules and requirements, your measures are likely to qualify for the following programs:

Energy Conservation Measure		SmartStart	Direct Install	Pay For Performance
ECM 1	Install LED Fixtures	X	X	
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	X	X	
ECM 3	Retrofit Fixtures with LED Lamps	X	X	
ECM 4	Install LED Exit Signs		X	
ECM 5	Install Occupancy Sensor Lighting Controls	X	X	
ECM 6	Install High/Low Lighting Controls	X	X	
ECM 7	Install VFDs on Heating Water Pumps	X	X	
ECM 8	Install Low-Flow DHW Devices	X	X	
ECM 9	Vending Machine Control	X	X	

Figure 3 – Funding Options

New Jersey's Clean Energy Programs At-A-Glance

	SmartStart Flexibility to install at your own pace	**Direct Install** Turnkey installation	**Pay for Performance** Whole building upgrades
Who should use it?	Buildings installing individual measures or small group of measures.	Small to mid-size facilities that can bundle multiple measures together. Average peak demand should be below 200 kW. Not suitable for significant building shell issues.	Mid to large size facilities looking to implement as many measures as possible at one time. Peak demand should be over 200 kW.
How does it work?	Use in-house staff or your preferred contractor.	Pre-approved contractors pass savings along to you via reduced material and labor costs.	Whole-building approach to energy upgrades designed to reduce energy use by at least 15%. The more you save, the higher the incentives.
What are the Incentives?	Fixed incentives for specific energy efficiency measures.	Incentives pay up to 70% of eligible costs, up to $125,000 per project. You pay the remaining 30% directly to the contractor.	Up to 25% of installation cost, calculated based on level of energy savings per square foot.
How do I participate?	Submit an application for the specific equipment to be installed.	Contact a participating contractor in your region.	Contact a pre-qualified Partner to develop your Energy Reduction Plan and set your energy savings targets.

Take the next step by visiting **www.njcleanenergy.com** for program details, applications, and to contact a qualified contractor.

Individual Measures with SmartStart

For facilities wishing 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, you can use internal resources or an outside firm or contractor to perform the final design of the ECM(s) and install the equipment. Program pre-approval is required for some SmartStart incentives, so only after receiving pre-approval should you proceed with ECM installation.

Turnkey Installation with Direct Install

The Direct Install program provides turnkey installation of multiple measures through an authorized network of participating contractors. This program can provide substantially higher incentives than SmartStart, up to 70% of the cost of selected measures. Direct Install contractors will assess and verify individual measure eligibility, and, in most cases, they perform the installation work. The Direct Install program is available to sites with an average peak demand of less than 200 kW.

Whole Building Approach with Pay for Performance

Pay for Performance can be a good option for medium to large sized facilities to achieve deep energy savings. Pay for Performance allows you to install as many measures as possible under a single project as well as address measures that may not qualify for other programs. Many facilities pursuing an Energy Savings Improvement Program (ESIP) loan also use this program. Pay for Performance works for larger customers with a peak demand over 200 kW. The minimum installed scope of work must include at least two unique measures resulting in at least 15% energy savings, where lighting cannot make up the majority of the savings.

More Options from Around the State

Financing and Planning Support with the Energy Savings Improvement Program (ESIP)

For larger facilities with limited capital availability to implement ECMs, project financing may be available through the 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. You have already taken the first step as an LGEA customer, because this report is required to participate in ESIP.

Resiliency with Return on Investment through Combined Heat & Power (CHP)

The CHP program provides incentives for combined heat and power (aka cogeneration) and waste heat to power projects. Combined heat and power systems generate power on-site and recover heat from the generation system to meet on-site thermal loads. Waste heat to power systems use waste heat to generate power. You will work with a qualified developer who will design a system that meets your building's heating and cooling needs.

Ongoing Electric Savings with Demand Response

The Demand Response Energy Aggregator program reduces electric loads at commercial facilities when wholesale electricity prices are high or when the reliability of the electric grid is threatened due to peak power demand. By enabling commercial facilities to reduce electric demand 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 demand response (DR) programs. Program participation is voluntary, and facilities receive payments regardless of whether they are called upon to curtail their load during times of peak demand.

2 EXISTING CONDITIONS

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for Municipal Complex. This report provides information on how your facility uses energy, identifies energy conservation measures (ECMs) that can reduce your energy use, and provides information and assistance to help you implement the ECMs. This report also contains valuable information on financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing ECMs.

TRC conducted this study as part of a comprehensive effort to assist New Jersey educational and local government facilities in controlling energy costs and protecting our environment by offering a wide range of energy management options and advice.

2.1 Site Overview

On June 27, 2020, TRC performed an energy audit at Municipal Complex located in Toms River, New Jersey. TRC met with Craig Ambrosio to review the facility operations and help focus our investigation on specific energy-using systems.

Municipal complex is a multi-story, 100,722 square foot building built in 1974 and houses the townhall building, a garage, and a maintenance building. Spaces include offices, townhall, restrooms, storage rooms, employee lounge, IT closets, boiler room, stairs, corridors, lobby, and locker rooms.

Recent improvements include: Over the last eight years the facility has replaced its HVAC, boiler system, some of the windows, roof, and lighting systems under grants received from the state.

Facility concerns include: low thermal efficiency, old windows and insulation

2.2 Building Occupancy

The facility is occupied year-round on following schedule. Facility is occupied by 200 staff on a normal workday. Maintenance activities are running on weekends.

Building Name	Weekday/Weekend	Operating Schedule
Municipal Complex	Weekday	5:00 AM - 5:00 PM
	Weekend	Saturday - 5:00 AM - 1:00 PM; Sunday - Closed

Figure 4 - Building Occupancy Schedule

2.3 Building Envelope

Municipal Building

The walls are made of concrete masonry units (CMUs) and wood over structural steel with brick veneer and gypsum drywall interior finish.

The flat roof is supported with steel trusses and a reinforced concrete deck and finished with an insulated layer and a covering of EPDM. Steel trusses in the old part of the roof support a pitched roof with a wood deck covered with asphalt shingles and standing seam metal roofing system. Roof encloses semi conditioned space (e.g., a space that is not intentionally heated but escaping heat from HVAC equipment caused the space to be conditioned). The thermal barrier is between this space and the conditioned space below.

Most of the windows are clear double glazed with low-e glass and have aluminum frames with a thermal break. Three atrium windows are comprised of reflective panels with metal frames. The glass-to-frame seals are in good condition. The operable window weather seals are in good condition, showing no evidence of excessive wear. Exterior doors have aluminum frames with glass and are in good condition with undamaged door seals. Degraded window and door seals increase drafts and outside air infiltration.

Maintenance Building & Garage

Maintenance building walls are brick over structural steel. The roof is pitched with a metal deck and a standing seam metal roof. Windows are clear double glazed with low-e glass and have aluminum frames with a thermal break. The glass-to-frame seals are in good condition. The operable window weather seals are in good condition, showing no evidence of excessive wear. Exterior doors have metal frames and are in fair condition with poor door seals. Degraded window and door seals increase drafts and outside air infiltration.

Garage walls are brick over structural steel. The roof is pitched with a metal deck and standing seam metal roofing. The garage is an open space.

Municipal Building

Walls & Windows

Maintenance Building

Garage

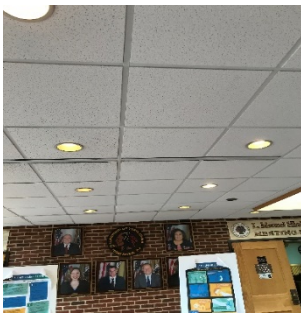
2.4 Lighting Systems

The primary interior lighting system uses 32-Watt linear fluorescent T8 lamps. There are also several 40-Watt T12 fixtures. Additionally, there are some compact fluorescent lamps (CFL), incandescent, and LED general purpose lamps. Typically, T8 fluorescent lamps use electronic ballasts and T12 fluorescent lamps use magnetic ballasts.

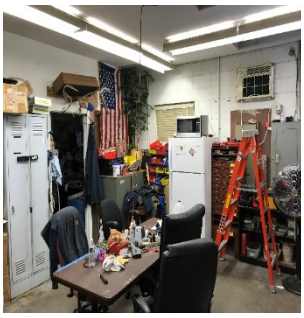
Fixture types include 1-lamp, 2-lamp, 3-lamp, and 4-lamp, 2-foot, 4-foot, and 8-foot long troffer, recessed, surface mounted fixtures, and 2-foot fixtures with U-bend tube lamps. Most fixtures are in good condition. Garage fixtures have 400-Watt metal halide lamps and are photocell controlled. Most exit signs are LED, however, there are a few CFL units. Interior lighting levels were generally sufficient.

Conference Room Lighting

Townhall Lighting



Lobby Lighting



Maintenance Building Lighting

Most lighting fixtures are controlled manually and the remainder by occupancy sensors.

Exterior fixtures include wall packs, flood lights, wall sconces, canopy lights with metal halide and LED lamps, and LED PAR38 flood lamps. The pole mounted flood fixtures have 150-Watt LED lamps.

Exterior light fixtures are controlled by a time clock or photocell, depending on the fixture.

LED Pole Fixture

Garage Metal Halide Fixture

Bollard LED Fixture

LED Uplight Fixture

2.5 Air Handling Systems

Electric Heating

There are four 2-kW electric baseboards providing heating for the main lobby of municipal building.

Maintenance building heating is provided by two ceiling hung Dayton/Dimplex electric unit heaters. These vary in capacity between 4 kW and 5.5 kW. The units are in good condition. There is a 1 kW electric baseboard that provides heating in the maintenance building restroom.

Packaged Units

Municipal Building is served by three 50-ton, cooling-only Trane packaged roof top units (RTUs) equipped with VAV boxes, a supply fan, and two exhaust fans each controlled by EMS. Supply fan motors range in size between 15 hp to 20 hp. There are also two 1.5 hp exhaust fans per unit. These units are equipped with economizers that are in good condition.

There are also three Trane air handling units with cooling and heating coils controlled by EMS. Supply fan motors are ranging in size between 3 hp to 10 hp. Condensing units are located on the roof. These 9.70 EER units have cooling capacities ranging in size between 10 tons and 15 tons.

Refer to Appendix A for detailed information about each unit.

Air Conditioners

Municipal building IT room uses two ductless mini-split system air conditioning (AC) units. The units are in good condition. These 11 EER units have 3-ton cooling capacity.

Maintenance building is cooled by one 1.5-ton window air conditioning (AC) unit with a cooling efficiency of 10.70 EER. The unit is in good condition and is ENERGY STAR® labeled.

Rooftop Packaged Unit

Condensing Unit

Mini-split Unit

Air Handling Unit

2.6 Heating Hot Water Systems

Four Hydrotherm 400 MBh condensing hot water boilers serve the building heating load needs. The burners are fully modulating at a nominal efficiency of 92.7%. The boilers are configured in lead-lag control scheme. Multiple boilers are required under high load conditions. Installed in 2012, they are in good condition. There is a service contract in place.

The boilers are configured in a constant flow primary distribution with one 7.5 hp and one 5 hp constant speed hot water pump operating in a lead-lag control scheme. The boilers provide hot water to air handling units and fin-tube radiators throughout the building.

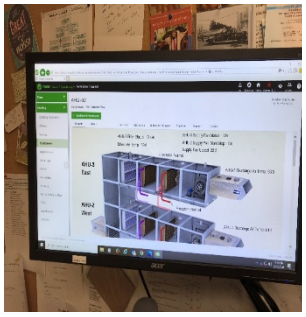
Hot water is supplied at 76.2°F when the outside air temperature is above 50°F, and the setpoint is adjusted linearly to 140°F when the outside air is below 35°F. The hot water return temperature is typically 76.8°F.

Hot Water Boilers

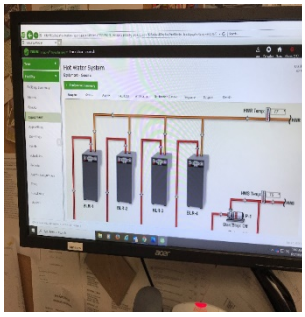
Hot Water Pumps

2.7 Building Energy Management Systems (EMS)

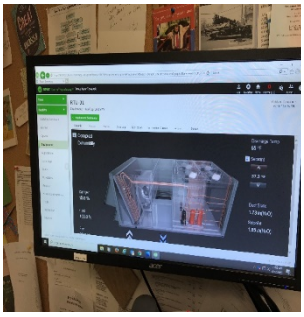
A Trane Tracer SC EMS controls the HVAC equipment, the boiler, the air handlers, and the rooftop package units. The EMS provides equipment scheduling control and monitors and controls space temperatures, supply air temperatures, humidity, and heating water loop temperatures.



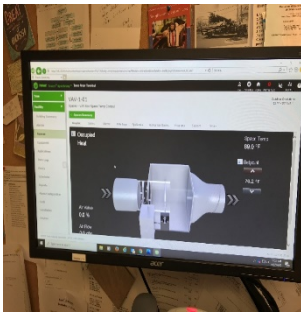
Air Handling Unit EMS



Hot Water System EMS



RTU EMS



VAV Box EMS

2.8 Domestic Hot Water

Hot water for the lower level and upper level of the municipal building is produced by two 60-gallon A.O. Smith 120 MBh gas-fired storage water heaters, each with a 94% rated thermal efficiency. Hot water for the basement of the municipal building is produced by a 6-gallon A.O. Smith 1.65 kW electric storage water heater with a 0.97 Energy Factor (EF) rating.

Hot water for the maintenance building is produced by a 30-gallon Whirlpool 3.5 kW electric storage water heater. At the time of the site visit, the domestic water heaters were set at 120°F. One 1/12 hp circulation pump distributes water to end uses for the restrooms of the municipal building. The circulation pump operates continuously. The domestic hot water pipes are insulated, and the insulation is in good condition.

Municipal Building DHW Gas Heater

Municipal Building DHW Electric Heater

Maintenance Building DHW Heater

Municipal Building DHW Circulation

2.9 Food Service Equipment

The kitchen has all gas equipment that is used to serve meals for staff. Two Frigidaire gas stoves with ovens located in different pantry areas. Equipment is high efficiency and is in good condition.

Visit https://www.energystar.gov/products/commercial_food_service_equipment for the latest information on high efficiency food service equipment.

Gas Stove with Oven

2.10 Plug Load & Vending Machines

You may wish to consider paying particular attention to minimizing your plug load usage. This report makes suggestions for ECMs in this area as well as Energy Efficient Best Practices.

There are 153 computer workstations throughout the facility. Plug loads throughout the building include general pantry and office equipment. There are office typical loads such as printers, copy machines, and fans.

There are several residential-style refrigerators throughout the building that are used to store cold beverages and staff lunches. These vary in condition and efficiency.

There is one refrigerated beverage vending machines and one non-refrigerated vending machines. Vending machines are not equipped with occupancy-based controls.

Vending Machines

Office Desk

Pantry

Copy Machine

2.11 Water-Using Systems

There are nine restrooms with toilets, urinals, and sinks. Faucet flow rates are at 1.5 gallons per minute (gpm) or higher. Toilets are rated at 1.6 gallons per flush (gpf) and urinals are rated at 1 gpf.

2.12 On-Site Generation

Municipal complex has a 230-kW photovoltaic (PV) array with approximately 765 panels that was installed in 2018. This system provides approximately 59% of the electricity used at this facility.

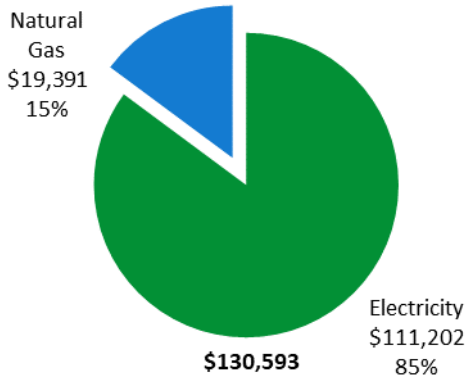
Municipal complex also has a 500-kW diesel emergency generator that, in the event of a power outage, serves critical services (lighting, elevator, heating - boiler and pumps) and is only used for emergency needs.

Solar PV Panels

3 Energy Use and Costs

Twelve months of utility billing data are used to develop annual energy consumption and cost data. This information creates a profile of the annual energy consumption and energy costs.

Utility Summary		
Fuel	**Usage**	**Cost**
Electricity	828,859 kWh	$111,202
Natural Gas	17,076 Therms	$19,391
Total		**$130,593**



An energy balance identifies and quantifies energy use in your various building systems. This can highlight areas with the most potential for improvement. This energy balance was developed using calculated energy use for each of the end uses noted in the figure.

The energy auditor collects information regarding equipment operating hours, capacity, efficiency, and other operational parameters from facility staff, drawings, and on-site observations. This information is used as the inputs to calculate the existing conditions energy use for the site. The calculated energy use is then compared to the historical energy use and the initial inputs are revised, as necessary, to balance the calculated energy use to the historical energy use.

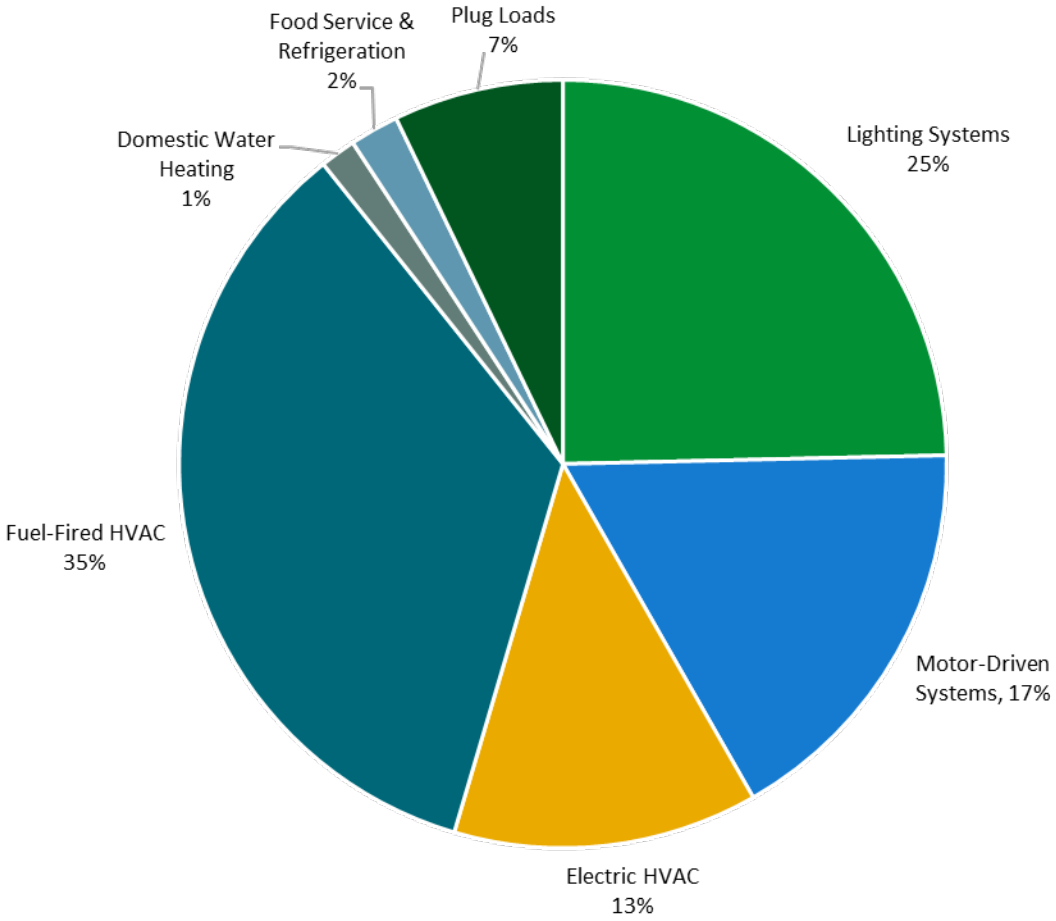
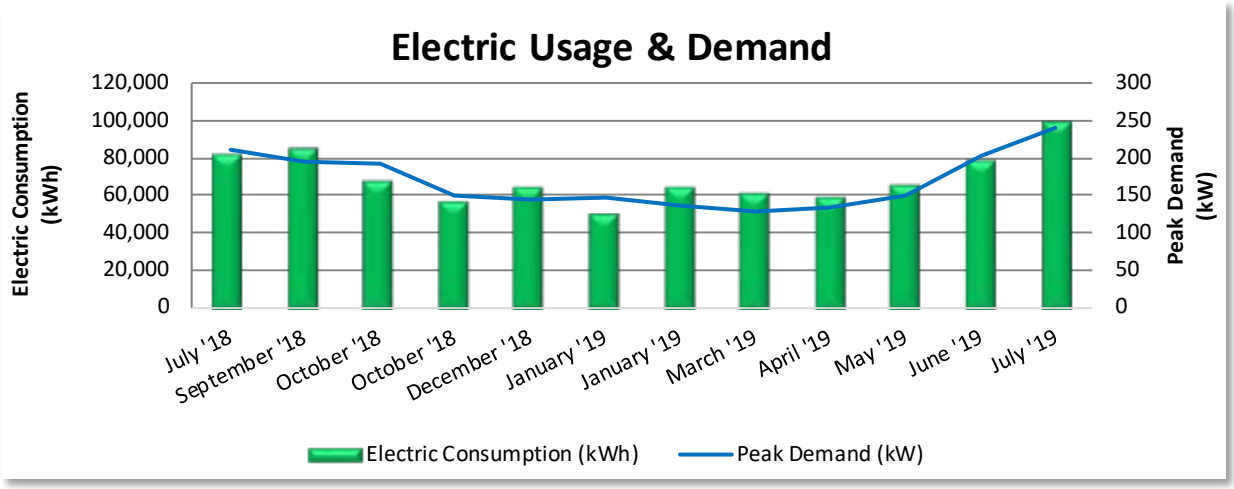


Figure 5 - Energy Balance

3.1 Electricity

JCP&L delivers electricity under rate class General Services Secondary, with electric production provided by South Jersey Energy, a third-party supplier.



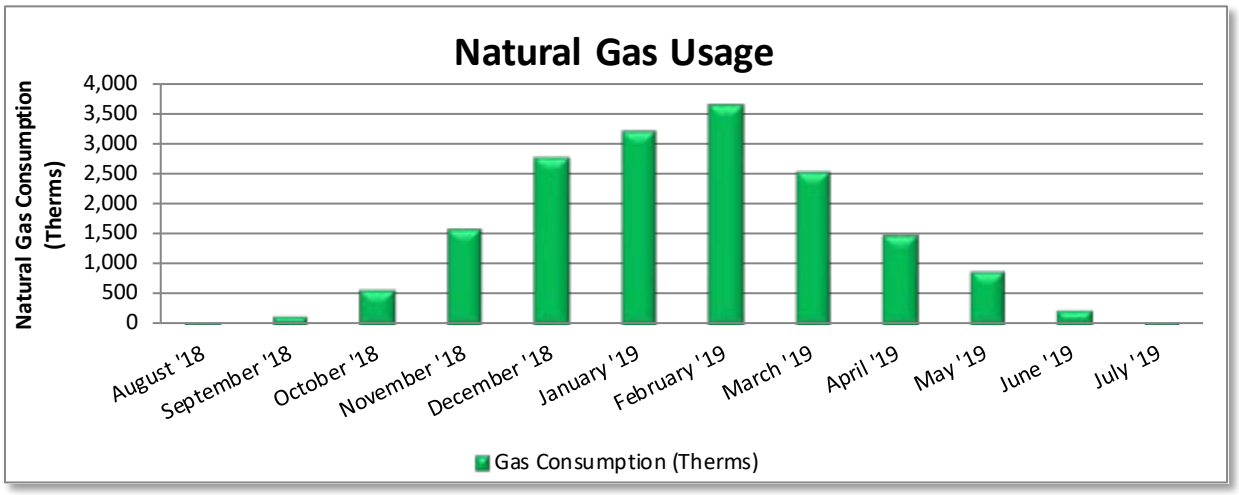
Electric Billing Data						
Period Ending	**Days in Period**	**Electric Usage (kWh)**	**Demand (kW)**	**Demand Cost**	**Total Electric Cost**	**TRC Estimated Usage?**
8/15/18	29	81,232	210	$1,231	$10,509	Yes
9/18/18	34	84,425	196	$1,133	$11,031	Yes
10/17/18	29	67,062	192	$1,030	$9,248	Yes
11/14/18	28	56,289	150	$769	$7,660	Yes
12/17/18	33	64,036	145	$739	$8,383	Yes
1/16/19	30	50,614	147	$769	$6,890	Yes
2/15/19	30	63,804	135	$722	$8,343	Yes
3/18/19	31	60,837	130	$641	$8,193	Yes
4/16/19	29	58,902	133	$658	$8,121	Yes
5/16/19	30	65,092	150	$769	$9,096	Yes
6/17/19	32	77,892	202	$1,162	$10,584	Yes
7/17/19	30	98,677	239	$1,412	$13,144	Yes
Totals	**365**	**828,859**	**239**	**$11,034**	**$111,202**	
Annual	**365**	**828,859**	**239**	**$11,034**	**$111,202**	

Notes:

- Peak demand of 239 kW occurred in July 2019.
- Average demand over the past 12 months was 169 kW.
- The average electric cost over the past 12 months was $0.134/kWh, which is the blended rate that includes energy supply, distribution, demand, and other charges. This report uses this blended rate to estimate energy cost savings.

3.2 Natural Gas

NJ Natural Gas delivers natural gas under rate class 007CNN4G, with natural gas supply provided by UGI Energy, a third-party supplier.



Gas Billing Data			
Period Ending	**Days in Period**	**Natural Gas Usage (Therms)**	**Natural Gas Cost**
8/20/18	26	60	$324
9/24/18	35	141	$401
10/22/18	28	579	$829
11/20/18	29	1,573	$1,766
12/20/18	30	2,765	$2,890
1/21/19	32	3,172	$3,245
2/22/19	32	3,611	$3,641
3/22/19	28	2,520	$2,626
4/23/19	32	1,476	$1,662
5/29/19	36	883	$1,166
6/26/19	28	239	$506
7/25/19	29	59	$337
Totals	**365**	**17,076**	**$19,391**
Annual	**365**	**17,076**	**$19,391**

Notes:

- The average gas cost for the past 12 months is $1.136/therm, which is the blended rate used throughout the analysis.

3.3 Benchmarking

Your building was benchmarked using the United States Environmental Protection Agency's (EPA) *Portfolio Manager®* software. Benchmarking compares your building's energy use to that of similar buildings across the country, while neutralizing variations due to location, occupancy and operating hours. Some building types can be scored with a 1-100 ranking of a building's energy performance relative to the national building market. A score of 50 represents the national average and a score of 100 is best.

This ENERGY STAR® benchmarking score provides a comprehensive snapshot of your building's energy performance. It assesses the building's physical assets, operations, and occupant behavior, which is compiled into a quick and easy-to-understand score.

Benchmarking Score	**N/A**

Due to its unique characteristics, this building type is not able to receive a benchmarking score. This report contains suggestions about how to improve building performance and reduce energy costs.

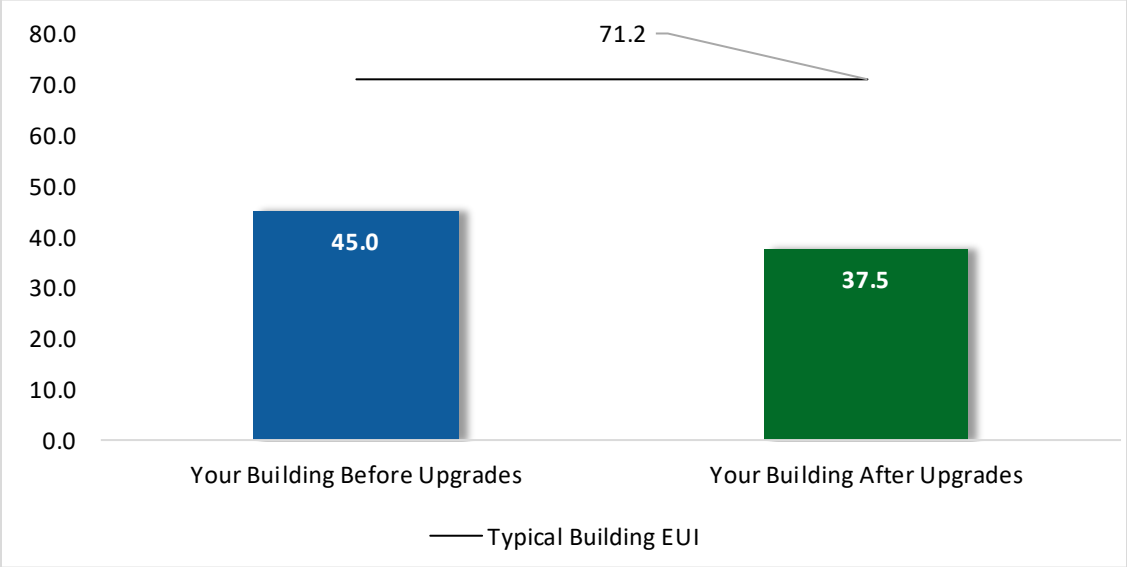


Figure 6 - Energy Use Intensity Comparison[3]

Energy use intensity (EUI) measures energy consumption per square foot and is the standard metric for comparing buildings' energy performance. A lower EUI means better performance and less energy consumed. A number of factors can cause a building to vary from the "typical" energy usage. Local weather conditions, building age and insulation levels, equipment efficiency, daily occupancy hours, changes in occupancy throughout the year, equipment operating hours, and occupant behavior all contribute to a building's energy use and the benchmarking score.

[3] Based on all evaluated ECMs

Tracking Your Energy Performance

Keeping track of your energy use on a monthly basis is one of the best ways to keep energy costs in check. Update your utility information in Portfolio Manager® regularly, so that you can keep track of your building's performance.

We have created a Portfolio Manager® account for your facility and we have already entered the monthly utility data shown above for you. Account login information for your account will be sent via email.

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.

For more information on ENERGY STAR® and Portfolio Manager®, visit their website[4].

[4] https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/earn-recognition/energy-star-certification/how-app-1.

4 Energy Conservation Measures

The goal of this audit report is to identify and evaluate potential energy efficiency improvements, provide information about the cost effectiveness of those improvements, and recognize potential financial incentives from NJBPU. Most energy conservation measures have received preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is typically sufficient to demonstrate project cost-effectiveness and help prioritize energy measures.

Calculations of energy use and savings are based on the current version of the *New Jersey's Clean Energy Program Protocols to Measure Resource Savings*, which is approved by the NJBPU. Further analysis or investigation may be required to calculate more precise savings based on specific circumstances.

Operation and maintenance costs for the proposed new equipment will generally be lower than the current costs for the existing equipment—especially if the existing equipment is at or past its normal useful life. We have conservatively assumed there to be no impact on overall maintenance costs over the life of the equipment.

Financial incentives are based on the current NJCEP prescriptive SmartStart program. A higher level of investigation may be necessary to support any SmartStart Custom, Pay for Performance, or Direct Install incentive applications. Some measures and proposed upgrades may be eligible for higher incentives than those shown below through other NJCEP programs described in a following section of this report.

For a detailed list of the locations and recommended energy conservation measures for all inventoried equipment, see **Appendix A: Equipment Inventory & Recommendations.**

#	Energy Conservation Measure	Cost Effective?	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			**199,640**	**44.4**	**-42**	**$26,303**	**$57,239**	**$16,408**	**$40,831**	**1.6**	**196,074**
ECM 1	Install LED Fixtures	Yes	117,122	21.8	-25	$15,431	$22,653	$1,660	$20,993	1.4	115,030
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	2,335	0.7	0	$308	$954	$280	$674	2.2	2,293
ECM 3	Retrofit Fixtures with LED Lamps	Yes	79,644	21.8	-17	$10,493	$33,415	$14,468	$18,947	1.8	78,220
ECM 4	Install LED Exit Signs	Yes	539	0.1	0	$71	$217	$0	$217	3.1	530
Lighting Control Measures			**21,269**	**5.0**	**-5**	**$2,802**	**$39,060**	**$15,720**	**$23,340**	**8.3**	**20,887**
ECM 5	Install Occupancy Sensor Lighting Controls	No	15,964	3.8	-3	$2,103	$29,160	$6,020	$23,140	11.0	15,678
ECM 6	Install High/Low Lighting Controls	Yes	5,304	1.2	-1	$699	$9,900	$9,700	$200	0.3	5,209
Variable Frequency Drive (VFD) Measures			**9,833**	**1.3**	**0**	**$1,319**	**$8,814**	**$3,800**	**$5,014**	**3.8**	**9,901**
ECM 7	Install VFDs on Heating Water Pumps	Yes	9,833	1.3	0	$1,319	$8,814	$3,800	$5,014	3.8	9,901
Domestic Water Heating Upgrade			**523**	**0.0**	**6**	**$140**	**$194**	**$194**	**$0**	**0.0**	**1,246**
ECM 8	Install Low-Flow DHW Devices	Yes	523	0.0	6	$140	$194	$194	$0	0.0	1,246
Food Service & Refrigeration Measures			**1,954**	**0.2**	**0**	**$262**	**$460**	**$100**	**$360**	**1.4**	**1,968**
ECM 9	Vending Machine Control	Yes	1,954	0.2	0	$262	$460	$100	$360	1.4	1,968
TOTALS			**233,219**	**50.9**	**-41**	**$30,826**	**$105,767**	**$36,222**	**$69,545**	**2.3**	**230,076**

* - All incentives presented in this table are based on NJ SmartStart 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).

Figure 7 – All Evaluated 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		**199,640**	**44.4**	**-42**	**$26,303**	**$57,239**	**$16,408**	**$40,831**	**1.6**	**196,074**
ECM 1	Install LED Fixtures	117,122	21.8	-25	$15,431	$22,653	$1,660	$20,993	1.4	115,030
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,335	0.7	0	$308	$954	$280	$674	2.2	2,293
ECM 3	Retrofit Fixtures with LED Lamps	79,644	21.8	-17	$10,493	$33,415	$14,468	$18,947	1.8	78,220
ECM 4	Install LED Exit Signs	539	0.1	0	$71	$217	$0	$217	3.1	530
Lighting Control Measures		**5,304**	**1.2**	**-1**	**$699**	**$9,900**	**$9,700**	**$200**	**0.3**	**5,209**
ECM 6	Install High/Low Lighting Controls	5,304	1.2	-1	$699	$9,900	$9,700	$200	0.3	5,209
Variable Frequency Drive (VFD) Measures		**9,833**	**1.3**	**0**	**$1,319**	**$8,814**	**$3,800**	**$5,014**	**3.8**	**9,901**
ECM 7	Install VFDs on Heating Water Pumps	9,833	1.3	0	$1,319	$8,814	$3,800	$5,014	3.8	9,901
Domestic Water Heating Upgrade		**523**	**0.0**	**6**	**$140**	**$194**	**$194**	**$0**	**0.0**	**1,246**
ECM 8	Install Low-Flow DHW Devices	523	0.0	6	$140	$194	$194	$0	0.0	1,246
Food Service & Refrigeration Measures		**1,954**	**0.2**	**0**	**$262**	**$460**	**$100**	**$360**	**1.4**	**1,968**
ECM 9	Vending Machine Control	1,954	0.2	0	$262	$460	$100	$360	1.4	1,968
TOTALS		**217,255**	**47.1**	**-37**	**$28,723**	**$76,607**	**$30,202**	**$46,405**	**1.6**	**214,398**

* - All incentives presented in this table are based on NJ SmartStart 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).

Figure 8 – Cost Effective ECMs

4.1 Lighting

#	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		**199,640**	**44.4**	**-42**	**$26,303**	**$57,239**	**$16,408**	**$40,831**	**1.6**	**196,074**
ECM 1	Install LED Fixtures	117,122	21.8	-25	$15,431	$22,653	$1,660	$20,993	1.4	115,030
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	2,335	0.7	0	$308	$954	$280	$674	2.2	2,293
ECM 3	Retrofit Fixtures with LED Lamps	79,644	21.8	-17	$10,493	$33,415	$14,468	$18,947	1.8	78,220
ECM 4	Install LED Exit Signs	539	0.1	0	$71	$217	$0	$217	3.1	530

When considering lighting upgrades, we suggest using a comprehensive design approach that simultaneously upgrades lighting fixtures and controls to maximize energy savings and improve occupant lighting. Comprehensive design will also consider appropriate lighting levels for different space types to make sure that the right amount of light is delivered where needed. If conversion to LED light sources are proposed, we suggest converting all of a specific lighting type (e.g., linear fluorescent) to LED lamps to minimize the number of lamp types in use at the facility, which should help reduce future maintenance costs.

ECM 1: Install LED Fixtures

Replace existing fixtures containing metal halide lamps with new LED light fixtures. This measure saves energy by installing LEDs which use less power than other technologies with a comparable light output.

In some cases, HID fixtures can be retrofit with screw-based LED lamps. Replacing an existing HID fixture with a new LED fixture will generally provide better overall lighting optics; however, replacing the HID lamp with a LED screw-in lamp is typically a less expensive retrofit. We recommend you work with your lighting contractor to determine which retrofit solution is best suited to your needs and will be compatible with the existing fixture(s).

Maintenance savings may also be achieved since LED lamps last longer than other light sources and therefore do not need to be replaced as often.

Affected building areas: garage and exterior fixtures.

ECM 2: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

Retrofit fluorescent fixtures by removing the fluorescent tubes and ballasts and replacing them with LED tubes and LED drivers (if necessary), which are designed to be used in retrofitted fluorescent fixtures.

The measure uses the existing fixture housing but replaces the electric components with more efficient lighting technology which use less power than other lighting technologies but provides equivalent lighting output. Maintenance savings may also be achieved since LED tubes last longer than fluorescent tubes and therefore do not need to be replaced as often.

Affected building areas: all areas with fluorescent fixtures with T12 tubes.

ECM 3: Retrofit Fixtures with LED Lamps

Replace linear fluorescent, CFL, or incandescent lamps with LED lamps. Many LED tubes are direct replacements for existing fluorescent tubes and can be installed while leaving the fluorescent fixture ballast in place. LED lamps 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. Maintenance savings may also be available, as longer-lasting LEDs lamps will not need to be replaced as often as the existing lamps.

Affected building areas: all areas with fluorescent fixtures with T8 tubes.

ECM 4: Install LED Exit Signs

Replace 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. Maintenance savings and improved reliability may also be achieved, as the longer-lasting LED lamps will not need to be replaced as often as the existing lamps.

Affected Exit Signs: Mayor's front desk and Lamell Room.

4.2 Lighting Controls

#	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		**21,269**	**5.0**	**-5**	**$2,802**	**$39,060**	**$15,720**	**$23,340**	**8.3**	**20,887**
ECM 5	Install Occupancy Sensor Lighting Controls	15,964	3.8	-3	$2,103	$29,160	$6,020	$23,140	11.0	15,678
ECM 6	Install High/Low Lighting Controls	5,304	1.2	-1	$699	$9,900	$9,700	$200	0.3	5,209

Lighting controls reduce energy use by turning off or lowering lighting fixture power levels when not in use. A comprehensive approach to lighting design should upgrade the lighting fixtures and the controls together for maximum energy savings and improved lighting for occupants.

ECM 5: Install Occupancy Sensor Lighting Controls

We evaluated installing occupancy sensors to control lighting fixtures in areas that are frequently unoccupied, even for short periods. For most spaces, we recommend that lighting controls use dual technology sensors, which reduce the possibility of lights turning off unexpectedly.

Occupancy sensors detect occupancy using ultrasonic and/or infrared sensors. When an occupant enters the space, the lighting fixtures switch to full lighting levels. Most occupancy sensor lighting controls allow users to manually turn fixtures on/off, as needed. Some controls can also provide dimming options.

Occupancy sensors can be mounted on the wall at existing switch locations, mounted on the ceiling, or in remote locations. In general, wall switch replacement sensors are best suited to single occupant offices and other small rooms. Ceiling-mounted or remote mounted sensors are used in large spaces, locations without local switching, and where wall switches are not in the line-of-sight of the main work area.

This measure provides energy savings by reducing the lighting operating hours.

Affected building areas: offices, conference rooms, restrooms, lounge and storage rooms.

ECM 6: Install High/Low Lighting Controls

Install 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.

Lighting fixtures with these controls operate at default low levels when the area is unoccupied to provide minimal lighting to meet security or safety code requirements for egress. Sensors detect occupancy using ultrasonic and/or infrared sensors. When an occupant enters the space, the lighting fixtures switch to full lighting levels. Fixtures automatically switch back to low level after a predefined period of vacancy. In parking lots and parking garages with significant ambient lighting, this control can sometimes be combined with photocell controls to turn the lights off when there is sufficient daylight.

The controller lowers the light level by dimming the fixture output. Therefore, the controlled fixtures need to have a dimmable ballast or driver. This will need to be considered when selecting retrofit lamps and bulbs for the areas proposed for high/low control.

This measure provides energy savings by reducing the light fixture power draw when reduced light output is appropriate.

Affected building areas: hallways and stairwells.

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

4.3 Variable Frequency Drives (VFD)

#	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		**9,833**	**1.3**	**0**	**$1,319**	**$8,814**	**$3,800**	**$5,014**	**3.8**	**9,901**
ECM 7	Install VFDs on Heating Water Pumps	9,833	1.3	0	$1,319	$8,814	$3,800	$5,014	3.8	9,901

Variable frequency drives control motors for fans, pumps, and process equipment based on the actual output required of the driven equipment. Energy savings result from more efficient control of motor energy usage when equipment operates at partial load. The magnitude of energy savings depends on the estimated amount of time that the motor would operate at partial load. For equipment with proposed VFDs, we have included replacing the controlled motor with a new inverter duty rated motor to conservatively account for the cost of an inverter duty rated motor.

ECM 7: Install VFDs on Heating Water Pumps

Install variable frequency drives (VFD) to control heating water pumps. Two-way valves must serve the hot water coils and the hot water loop must have a differential pressure sensor installed. If three-way valves or a bypass leg are used in the hot water distribution they will need to be modified when this measure is implemented. As the hot water valves close, the differential pressure increases and the VFD modulates the pump speed to maintain a differential pressure setpoint.

Energy savings result 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.

Affected pumps: boiler room P-4 and P-5.

4.4 Domestic Water Heating

#	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		**523**	**0.0**	**6**	**$140**	**$194**	**$194**	**$0**	**0.0**	**1,246**
ECM 8	Install Low-Flow DHW Devices	523	0.0	6	$140	$194	$194	$0	0.0	1,246

ECM 8: Install Low-Flow DHW Devices

Install low-flow devices to reduce overall hot water demand. The following low flow devices are recommended to reduce hot water usage:

Device	Flow Rate
Faucet aerators (lavatory)	0.5 gpm
Faucet aerator (kitchen)	1.5 gpm
Showerhead	2.0 gpm
Pre-rinse spray valve (kitchen)	1.28 gpm

Low-flow devices reduce the overall water flow from the fixture, while still providing adequate pressure for washing.

Additional cost savings may result from reduced water usage.

4.5 Food Service & Refrigeration Measures

#	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)
Food Service & Refrigeration Measures		**1,954**	**0.2**	**0**	**$262**	**$460**	**$100**	**$360**	**1.4**	**1,968**
ECM 9	Vending Machine Control	1,954	0.2	0	$262	$460	$100	$360	1.4	1,968

ECM 9: Vending Machine Control

Vending machines operate continuously, even during unoccupied hours. Install occupancy sensor controls to reduce energy use. These controls power down vending machines when the vending machine area has been vacant for some time, and they power up the machines at necessary regular intervals or when the surrounding area is occupied. Energy savings are dependent on the vending machine and activity level in the area surrounding the machines.

A whole building maintenance plan will extend equipment life; improve occupant comfort, health, and safety; and reduce energy and maintenance costs.

Operation and maintenance (O&M) plans enhance the operational efficiency of HVAC and other energy intensive systems and could save between 5 to 20 percent of the energy usage in your building without substantial capital investment. A successful plan includes your records of energy usage trends and costs, building equipment lists, current maintenance practices, planned capital upgrades, and incorporates your ideas for improved building operation. Your plan will address goals for energy-efficient operation, provide detail on how to reach the goals, and will outline procedures for measuring and reporting whether goals have been achieved.

You may already be doing some of these things— see our list below for potential additions to your maintenance plan. Be sure to consult with qualified equipment specialists for details on proper maintenance and system operation.

Energy Tracking with ENERGY STAR® Portfolio Manager®

You've heard it before - you can't manage what you don't measure. ENERGY STAR® Portfolio Manager® is an online tool that you can use to measure and track energy and water consumption, as well as greenhouse gas emissions[5]. Your account has already been established. Now you can continue to keep tabs on your energy performance every month.

Doors and Windows

Close exterior doors and windows in heated and cooled areas. Leaving doors and windows open leads to a loss of heat during the winter and chilled air during the summer. Reducing air changes per hour (ACH) can lead to increased occupant comfort as well as heating and cooling savings, especially when combined with proper HVAC controls and adequate ventilation.

Lighting Maintenance

Clean lamps, reflectors and lenses of dirt, dust, oil, and smoke buildup every six to twelve months. Light levels decrease over time due to lamp aging, lamp and ballast failure, and buildup of dirt and dust. Together, this can reduce total light output by up to 60% while still drawing full power.

In addition to routine cleaning, developing a maintenance schedule can ensure that maintenance is performed regularly, and it can reduce the overall cost of fixture re-lamping and re-ballasting. Group re-lamping and re-ballasting maintains lighting levels and minimizes the number of site visits by a lighting technician or contractor, decreasing the overall cost of maintenance.

[5] https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager.

Lighting Controls

As part of a lighting maintenance schedule, test lighting controls to ensure proper functioning. For occupancy sensors, this requires triggering the sensor and verifying that the sensor's timer settings are correct. For daylight and photocell sensors, maintenance involves cleaning sensor lenses and confirming that setpoints and sensitivity are configured properly. Adjust exterior lighting time clock controls seasonally as needed to match your lighting requirements.

Motor Controls

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. Whenever possible, use automatic devices such as twist timers or occupancy sensors to turn off motors when they are not needed.

Motor Maintenance

Motors have many moving parts. As these parts degrade over time, the efficiency of the motor is reduced. Routine maintenance prevents damage to motor components. Routine maintenance should include 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.

AC System Evaporator/Condenser Coil Cleaning

Dirty evaporator and condenser coils restrict air flow and restrict heat transfer. This increases the loads on the evaporator and condenser fan and decreases overall cooling system performance. Keeping the coils clean allows the fans and cooling system to operate more efficiently.

HVAC Filter Cleaning and Replacement

Air filters should be checked regularly (often monthly) and cleaned or replaced when appropriate. Air filters reduce indoor air pollution, increase occupant comfort, and help keep equipment operating efficiently. If the building has a building management system, consider installing a differential pressure switch across filters to send an alarm about premature fouling or overdue filter replacement. Over time, filters become less and less effective as particulate buildup increases. Dirty filters also restrict air flow through the air conditioning or heat pump system, which increases the load on the distribution fans.

Boiler Maintenance

Many boiler problems develop slowly over time, so regular inspection and maintenance is essential to keeping the heating system running efficiently and preventing expensive repairs. Annual tune-ups should include a combustion analysis to analyze the exhaust from the boilers and to ensure the boiler is operating safely and efficiently. Boilers should be cleaned according to the manufacturer's instructions to remove soot and scale from the boiler tubes to improve heat transfer.

Furnace Maintenance

Preventative maintenance can extend the life of the system, maintain energy efficiency, and ensure safe operation. Following the manufacturer's instructions, a yearly tune-up should: check for gas / carbon monoxide leaks; change the air and fuel filters; check components for cracks, corrosion, dirt, or debris build-up; ensure the ignition system is working properly; test and adjust operation and safety controls; inspect electrical connections; and lubricate motors and bearings.

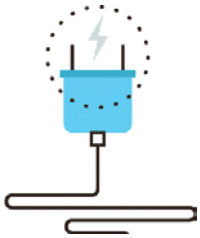
Water Heater Maintenance

The lower the supply water temperature that is used for hand washing sinks, the less energy is needed to heat the water. Reducing the temperature results in energy savings and the change is often unnoticeable to users. Be sure to review the domestic water temperature requirements for sterilizers and dishwashers as you investigate reducing the supply water temperature.

Also, preventative maintenance can extend the life of the system, maintain energy efficiency, and ensure safe operation. At least once a year, follow manufacturer instructions to 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. Annual checks should include checks for:

- Leaks or heavy corrosion on the pipes and valves.
- 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 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 more than three years old, have a technician inspect the sacrificial anode annually.

Plug Load Controls



Reducing plug loads is a common way to decrease your electrical use. Limiting the energy use of plug loads can include increasing occupant awareness, removing under-used equipment, installing hardware controls, and using software controls. Consider enabling the most aggressive power settings on existing devices or install load sensing or occupancy sensing (advanced) power strips[6]. Your local utility may offer incentives or rebates for this equipment.

Computer Monitor Replacement

ENERGY STAR® labeled computer monitors can be up to 25% more efficient than standard monitors. ENERGY STAR® rated monitors have power consumption requirements for different operating modes such as on, idle, and sleep.

[6] For additional information refer to "Assessing and Reducing Plug and Process Loads in Office Buildings" http://www.nrel.gov/docs/fy13osti/54175.pdf, or "Plug Load Best Practices Guide" http://www.advancedbuildings.net/plug-load-best-practices-guide-offices.

Computer Power Management Software

Many computers consume power during nights, weekends, and holidays. Screen savers are commonly confused as a power management strategy. This contributes to avoidable, excessive electrical energy consumption. There are innovative power management software packages available that are designed to deliver significant energy saving and provide ongoing tracking measurements. A central power management platform helps enforce energy savings policies as well as identify and eliminate underutilized devices.

Water Conservation

Installing dual flush or low-flow toilets and low-flow/waterless urinals are ways to reduce water use. The EPA WaterSense® ratings for urinals is 0.5 gallons per flush (gpf) and for flush valve toilets is 1.28 gpf (this is lower than the current 1.6 gpf federal standard).

For more information regarding water conservation go to the EPA's WaterSense® website[7] or download a copy of EPA's "WaterSense® at Work: Best Management Practices for Commercial and Institutional Facilities"[8] to get ideas for creating a water management plan and best practices for a wide range of water using systems.

Water conservation devices that do not reduce hot water consumption will not provide energy savings at the site level, but they may significantly affect your water and sewer usage costs. 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.

If the facility has detached buildings with a master water meter for the entire campus, check for unnatural wet areas in the lawn or water seeping in the foundation at water pipe penetrations through the foundation. Periodically check overnight meter readings when the facility is unoccupied, and there is no other scheduled water usage.

Manage irrigation systems to use water more effectively outside the building. Adjust spray patterns so that water lands on intended lawns and plantings and not on pavement and walls. Consider installing an evapotranspiration irrigation controller that will prevent over-watering.

Procurement Strategies

Purchasing efficient products reduces energy costs without compromising quality. Consider modifying your procurement policies and language to require ENERGY STAR® or WaterSense® products where available.

[7] https://www.epa.gov/watersense.

[8] https://www.epa.gov/watersense/watersense-work-0.

6 ON-SITE GENERATION

You don't have to look far in New Jersey to see one of the thousands of solar electric systems providing clean power to homes, businesses, schools, and government buildings. On-site generation includes both renewable (e.g., solar, wind) and non-renewable (e.g., fuel cells) technologies that generate power to meet all or a portion of the facility's electric energy needs. Also referred to as distributed generation, these systems contribute to greenhouse gas (GHG) emission reductions, demand reductions and reduced customer electricity purchases, which results in improved electric grid reliability through better use of transmission and distribution systems.

Preliminary screenings were performed to determine if an on-site generation measure could be a cost-effective solution for your facility. Before deciding to install an on-site generation system, we recommend conducting a feasibility study to analyze 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 Solar Photovoltaic

Photovoltaic (PV) panels convert sunlight into electricity. Individual panels are combined into an array that produces direct current (DC) electricity. The DC current is converted to alternating current (AC) through an inverter. The inverter is then connected to the building's electrical distribution system.

A preliminary screening based on the facility's electric demand, size and location of free area, and shading elements shows that the facility has **no** potential for installing additional PV arrays.

This facility does not appear to meet the minimum criteria for a cost-effective solar PV installation. To be cost-effective, a solar PV array needs certain minimum criteria, such as sufficient and sustained electric demand and sufficient flat or south-facing rooftop or other unshaded space on which to place the PV panels.

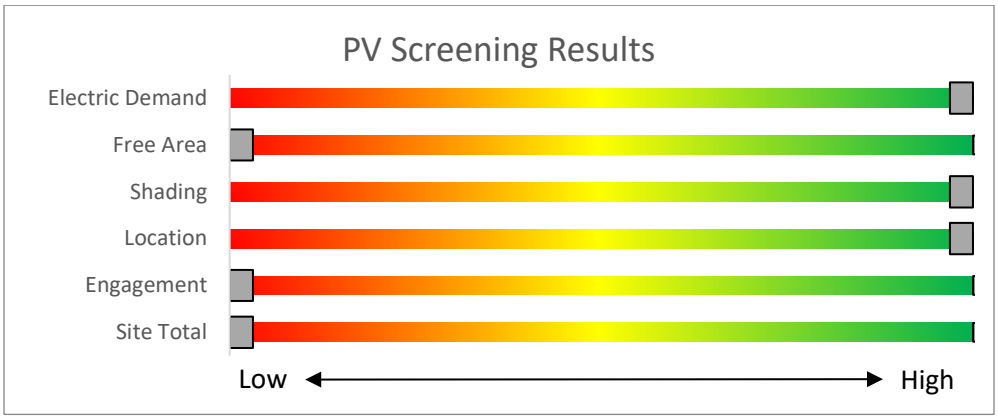


Figure 9 - Solar Potential Screening

Transition Incentive (TI) Program

The TI program is a bridge between the Legacy SREC Program and a to-be determined Successor Incentive Program. The program is used to register the intent to install solar projects in New Jersey. Rebates are not available for solar projects, but owners of solar projects *must* register their projects prior to the start of construction to establish the project's eligibility to earn TRECs (Transition Incentive Renewable Energy Certificates). The Transition Incentive is structured as a factorized renewable energy certificate. The factors allow the TI Program to provide differentiated financial incentives for different types of solar installation.

Get more information about solar power in New Jersey or find a qualified solar installer who can help you decide if solar is right for your building:

Transition Incentive (TI) Program: https://www.njcleanenergy.com/renewable-energy/programs/transition-incentive-program

- **Basic Info on Solar PV in NJ**: www.njcleanenergy.com/whysolar.
- **NJ Solar Market FAQs**: www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-transition/solar-market-faqs.
- **Approved Solar Installers in the NJ Market**: 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) generate electricity at the facility and puts waste heat energy to good use. Common types of CHP systems are reciprocating engines, microturbines, fuel cells, backpressure steam turbines, and (at large facilities) gas turbines.

CHP systems typically produce a portion of the electric power used on-site, with the balance of electric power needs supplied by the local utility company. The heat is used to supplement (or replace) existing boilers and provide space heating and/or domestic hot water heating. Waste heat can also be routed through absorption chillers for space cooling.

The key criteria used for screening is the amount of time that the CHP system would operate at full load and the facility's ability to use the recovered heat. Facilities with a continuous need 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 **no** potential for installing a cost-effective CHP system.

Based on a preliminary analysis, the facility does not appear to meet the minimum requirements for a cost-effective CHP installation. The lack of gas service, low or infrequent thermal load, and lack of space for siting the equipment are the most significant factors contributing to the lack of CHP potential.

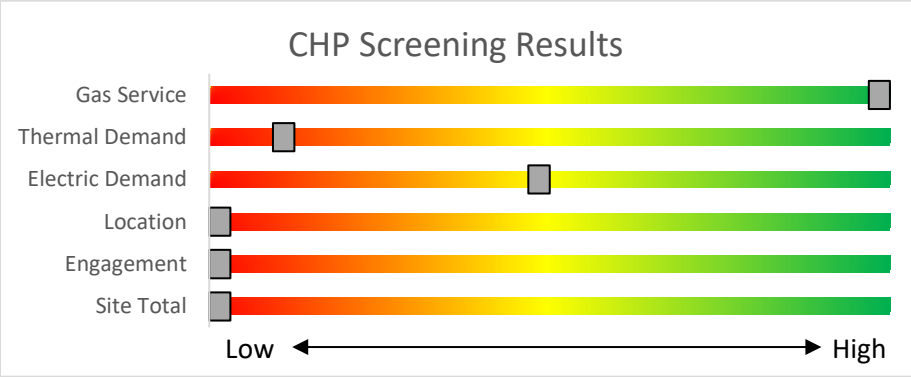


Figure 10 - CHP Screening

Find a qualified firm that specializes in commercial CHP cost assessment and installation: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/.

7 PROJECT FUNDING AND INCENTIVES

Ready to improve your building's performance? New Jersey's Clean Energy Programs can help. Pick the program that works best for you. Incentive programs that may apply to this facility are identified in the Executive Summary. This section provides an overview of currently available New Jersey Clean Energy Programs.

	SmartStart *Flexibility to install at your own pace*	**Direct Install** *Turnkey installation*	**Pay for Performance** *Whole building upgrades*
Who should use it?	Buildings installing individual measures or small group of measures.	Small to mid-size facilities that can bundle multiple measures together. Average peak demand should be below 200 kW. Not suitable for significant building shell issues.	Mid to large size facilities looking to implement as many measures as possible at one time. Peak demand should be over 200 kW.
How does it work?	Use in-house staff or your preferred contractor.	Pre-approved contractors pass savings along to you via reduced material and labor costs.	Whole-building approach to energy upgrades designed to reduce energy use by at least 15%. The more you save, the higher the incentives.
What are the Incentives?	Fixed incentives for specific energy efficiency measures.	Incentives pay up to 70% of eligible costs, up to $125,000 per project. You pay the remaining 30% directly to the contractor.	Up to 25% of installation cost, calculated based on level of energy savings per square foot.
How do I participate?	Submit an application for the specific equipment to be installed.	Contact a participating contractor in your region.	Contact a pre-qualified Partner to develop your Energy Reduction Plan and set your energy savings targets.
Take the next step by visiting **www.njcleanenergy.com** for program details, applications, and to contact a qualified contractor.			

7.1 SmartStart

SmartStart offers incentives for installing prescriptive and custom energy efficiency measures at your facility. This program provides an effective mechanism for securing incentives for energy efficiency measures installed individually or as part of a package of energy upgrades. This program serves most common equipment types and sizes.

SmartStart routinely adds, removes, or modifies incentives from year-to-year for various energy-efficient 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

Incentives

The SmartStart Prescriptive program provides fixed incentives for specific energy efficiency measures. Prescriptive incentives vary by equipment type.

SmartStart Custom provides incentives for more unique or specialized technologies or systems that are not addressed through prescriptive incentives. Custom incentives are calculated at $0.16/kWh and $1.60/therm based on estimated annual savings. Incentives are 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

Submit an application for the specific equipment to be installed. Many applications are designed as rebates, although others require application approval prior to installation. You can work with your preferred contractor or use internal staff to install measures.

Visit www.njcleanenergy.com/SSB for a detailed program description, instructions for applying, and applications.

7.2 Direct Install

Direct Install is a turnkey program available to existing small to medium-sized facilities with an average peak electric demand that does not exceed 200 kW over the recent 12-month period. You 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. Each entity is limited to incentives up to $250,000 per fiscal year.

How to Participate

To participate in Direct Install, you will need to contact the participating contractor assigned to 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.

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

7.3 Pay for Performance - Existing Buildings

Pay for Performance works for larger customers with a peak demand over 200 kW. The minimum installed scope of work must include at least two unique measures that results in at least 15% source energy savings, and lighting cannot make up the majority of the savings.

P4P is a generally a good option for medium-to-large sized facilities looking to implement as many measures as possible under a single project to achieve deep energy savings. This program has an added benefit of addressing measures that may not qualify for other programs. Many facilities pursuing an Energy Savings Improvement Program loan also use this program.

Based on the site building and utility data provided, the facility does not meet the requirements of the current P4P program.

Incentives

Incentives are based on estimated and achieved energy savings ranging from $0.18-$0.22/kWh and $1.80-$2.50/therm, capped at the lesser of 50% total project cost, or $1 million per electric account and $1 million per natural gas account, per fiscal year, not to exceed $2 million per project. An incentive of $0.15/square foot is also available to offset the cost of developing the Energy Reduction Plan (see below) contingent on the project moving forward with measure installation.

How to Participate

Contact one of the pre-approved consultants and contractors ("Partners"). Under direct contract to you, they will help further evaluate the measures identified in this report through development of the energy reduction plan), assist you in implementing selected measures, and verify actual savings one year after the installation. Your Partner will also help you apply for incentives.

Approval of the final scope of work is required by the program prior to installation. Installation can be done by the contractor of your choice (some P4P Partners are also contractors) or by internal staff, but the Partner remains involved throughout construction to ensure compliance with the program requirements.

Detailed program descriptions, instructions for applying, applications and list of Partners can be found at: www.njcleanenergy.com/P4P.

7.4 Combined Heat and Power

The Combined Heat & Power (CHP) program provides incentives for eligible CHP or waste heat to power (WHP) projects. Eligible CHP or WHP projects must achieve an annual system efficiency of at least 65% (lower heating value, or LHV), based on total energy input and total utilized energy output. Mechanical energy may be included in the efficiency evaluation.

Incentives

Eligible Technologies	Size (Installed Rated Capacity)[1]	Incentive ($/kW)	% of Total Cost Cap per Project[3]	$ Cap per Project[3]
Powered by non-renewable or renewable fuel source[4]	≤500 kW	$2,000	30-40%[2]	$2 million
Gas Internal Combustion Engine	>500 kW - 1 MW	$1,000		
Gas Combustion Turbine	> 1 MW - 3 MW	$550	30%	$3 million
Microturbine Fuel Cells with Heat Recovery	>3 MW	$350		
Waste Heat to Power*	<1 MW	$1,000	30%	$2 million
	> 1MW	$500		$3 million

*Waste Heat to Power: Powered by non-renewable fuel source, heat recovery or other mechanical recovery from existing equipment utilizing new electric generation equipment (e.g. steam turbine).

Check the NJCEP website for details on program availability, current incentive levels, and requirements.

How to Participate

You work with a qualified developer or consulting firm to complete the CHP application. Once the application is approved the project can be installed. Information about the CHP program can be found at: www.njcleanenergy.com/CHP.

7.5 Energy Savings Improvement Program

The Energy Savings Improvement Program (ESIP) serves New Jersey's government agencies by financing energy projects. An ESIP is a type of performance contract, whereby school districts, counties, municipalities, housing authorities and other public and state entities enter into contracts to help finance building energy upgrades. Annual payments are lower than the savings projected from the ECMs, ensuring that ESIP projects are cash flow positive for the life of the contract.

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 described above can also be used to help further reduce the total project cost of eligible measures.

How to Participate

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 used 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. Carefully consider all alternatives to develop an approach that best meets your needs. A detailed program description and application can be found at: www.njcleanenergy.com/ESIP.

ESIP is a program delivered directly by the NJBPU and is not an NJCEP incentive program. As mentioned above, you can use NJCEP incentive programs to help further reduce costs when developing the energy savings plan. Refer to the ESIP guidelines at the link above for further information and guidance on next steps.

7.6 Transition Incentive (TI) Program

The TI program is a bridge between the Legacy SREC Program and a to-be determined Successor Incentive Program. The program is used to register the intent to install solar projects in New Jersey. Rebates are not available for solar projects, but owners of solar projects *must* register their projects prior to the start of construction to establish the project's eligibility to earn TRECs (Transition Incentive Renewable Energy Certificates). The Transition Incentive is structured as a factorized renewable energy certificate. The factors allow the TI Program to provide differentiated financial incentives for different types of solar installations. NJBPU calculates the value of a Transition Renewable Energy Certificate (TREC) by multiplying the base compensation rate ($152/MWh) by the project's assigned factor (i.e. $152 x 0.85 = $129.20/MWh). The TREC factors are defined based on the chart below:

Project Type	Factor
Subsection (t): landfill, brownfield, areas of historic fill	1.00
Grid supply (Subsection (r)) rooftop	1.00
Net metered non-residential rooftop and carport	1.00
Community solar	0.85
Grid supply (Subsection (r)) ground mount	0.60
Net metered residential ground mount	0.60
Net metered residential rooftop and carport	0.60
Net metered non-residential ground mount	0.60

After the registration is accepted, construction is complete, and final paperwork has been submitted and is deemed complete, the project is issued a New Jersey certification number, which enables it to generate New Jersey TRECs.

Eligible projects may generate TRECs for 15 years following the commencement of commercial operations (also referred to as the "Transition Incentive Qualification Life"). After 15 years, projects may be eligible for a NJ Class I REC.

TRECs will be used by the identified compliance entities to satisfy a compliance obligation tied to a new Transition Incentive Renewable Portfolio Standard ("TI-RPS"), which will exist in parallel with, and completely separate from, the existing Solar RPS for Legacy SRECs. The TI-RPS is a carve-out of the current Class I RPS requirement. The creation of TRECs is based upon metered generation supplied to PJM-EIS General Attribute Tracking System ("GATS") by the owners of eligible facilities or their agents. GATS would create one TREC for each MWh of energy produced from a qualified facility.

TRECs will be purchased monthly by a TREC Administrator who will allocate the TRECs to the Load Serving Entities (BGS Providers and Third-Party Suppliers) annually based on their market share of retail electricity sold during the relevant Energy Year.

Solar projects help the State of New Jersey reach renewable energy goals outlined in the state's Energy Master Plan. The Transition Incentive Program online portal is now open to new applications effective May 1, 2020. There are instructions on "How and When to Transfer my SRP Registration to the Transition Incentive Program". If you are considering installing solar photovoltaics on your building, visit the following link for more information:

https://www.njcleanenergy.com/renewable-energy/programs/transition-incentive-program

8 Energy Purchasing and Procurement Strategies

8.1 Retail Electric Supply Options

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 already buys electricity from a third-party supplier, review and compare prices at the end of each contract year.

A list of licensed third-party electric suppliers is available at the NJBPU website[9].

8.2 Retail Natural Gas Supply Options

The natural gas market in New Jersey is also deregulated. Most customers that remain with the utility for natural gas service pay rates that are market-based and that fluctuate monthly. 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 typically depends on whether a customer prefers 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 does not already purchase natural gas from a third-party supplier, consider shopping for a reduced rate from third-party natural gas suppliers. If your facility already purchases natural gas from a third-party supplier, review and compare prices at the end of each contract year.

A list of licensed third-party natural gas suppliers is available at the NJBPU website[10].

[9] www.state.nj.us/bpu/commercial/shopping.html.

[10] 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	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	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
Roof Stairs	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,440	0.0	150	0	$20	$342	$20	16.3
Mayor's Front Desk	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.0	162	0	$21	$335	$94	11.3
Mayor's Front Desk	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,440	0.1	599	0	$79	$290	$80	2.7
Mayor's Front Desk	1	Exit Signs: Fluorescent	None		25	8,760	4	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	180	0	$24	$72	$0	3.1
HR Office	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	6	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,440	0.2	899	0	$118	$705	$190	4.3
Mayor Office	6	Compact Fluorescent: (2) 40W Biax Lamps	Wall Switch	S	80	3,536	3, 5	Relamp	Yes	6	LED Lamps: Bulb - 2L	Occupancy Sensor	56	2,440	0.2	948	0	$125	$432	$94	2.7
Mayor Office	13	Incandescent: Dimming Light Bulb	Daylight Dimming	S	65	2,122	3	Relamp	No	13	LED Lamps: Bulb - 1L	Daylight Dimming	10	2,122	0.6	1,646	0	$217	$224	$26	0.9
BA Office	6	Compact Fluorescent: (2) 40W Biax Lamps	Wall Switch	S	80	3,536	3, 5	Relamp	Yes	6	LED Lamps: Bulb - 2L	Occupancy Sensor	56	2,440	0.2	948	0	$125	$432	$94	2.7
BA Office	13	Incandescent: Dimming Light Bulb	Daylight Dimming	S	65	2,122	3	Relamp	No	13	LED Lamps: Bulb - 1L	Daylight Dimming	10	2,122	0.6	1,646	0	$217	$224	$26	0.9
Secretary of BA Office	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	6	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,440	0.2	899	0	$118	$705	$190	4.3
Pantry Area	4	LED - Fixtures: Ceiling Mount	Wall Switch	S	12	3,536	5	None	Yes	4	LED - Fixtures: Ceiling Mount	Occupancy Sensor	12	2,440	0.0	57	0	$7	$270	$0	36.1
Attic	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	641	0	$85	$416	$150	3.1
Pantry Hall	6	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	S	11	3,536	6	None	Yes	6	LED Lamps: (1) 10.5W Plug-In Lamp	High/Low Control	11	2,440	0.0	75	0	$10	$225	$225	0.0
Benefits Director Office	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,440	0.1	599	0	$79	$560	$150	5.2
HR Assistant Office	3	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	3	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,440	0.1	449	0	$59	$487	$130	6.0
Stairs to Mayor Office	1	LED Lamps: (1) 10.5W Plug-In Lamp	Occupancy Sensor	S	11	2,440		None	No	1	LED Lamps: (1) 10.5W Plug-In Lamp	Occupancy Sensor	11	2,440	0.0	0	0	$0	$0	$0	0.0
Lobby by Mayor Office	14	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	S	11	3,536	6	None	Yes	14	LED Lamps: (1) 10.5W Plug-In Lamp	High/Low Control	11	2,440	0.0	174	0	$23	$675	$675	0.0
Lobby by Mayor Office	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Women	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	33	2,440	3	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.0	126	0	$17	$98	$36	3.7
Women	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Occupancy Sensor	S	88	2,440	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	155	0	$20	$69	$20	2.4
Men	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	33	2,440	3	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.0	84	0	$11	$65	$24	3.7
Custodian Closet	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Occupancy Sensor	S	88	260	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	260	0.1	17	0	$2	$69	$20	22.3
Elevator	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,440	0.0	168	0	$22	$307	$20	12.9
Meeting Room	9	Compact Fluorescent: (2) 40W Biax Lamps	Wall Switch	S	80	3,536	3, 5	Relamp	Yes	9	LED Lamps: Bulb - 2L	Occupancy Sensor	56	2,440	0.3	1,422	0	$187	$513	$106	2.2
Hall by Finance Office	12	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 6	Relamp	Yes	12	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	2,440	0.4	1,798	0	$237	$1,320	$690	2.7

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	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
Hall by Finance Office	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 6	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,440	0.3	1,283	0	$169	$742	$610	0.8
Finance Office	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.3	870	0	$115	$365	$200	1.4
Finance Office	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	33	2,440	3	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.0	84	0	$11	$65	$24	3.7
Payroll Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Occupancy Sensor	S	93	2,440	3	Relamp	No	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,440	0.1	261	0	$34	$110	$60	1.4
Office 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	174	0	$23	$73	$40	1.4
Server Room	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Occupancy Sensor	S	88	2,440	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	155	0	$20	$69	$20	2.4
File Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	348	0	$46	$146	$80	1.4
File Room	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	33	2,440	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.0	42	0	$6	$33	$12	3.7
Office 2	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	174	0	$23	$73	$40	1.4
Office 3 & 4	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	348	0	$46	$146	$80	1.4
CFO Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	641	0	$85	$416	$150	3.1
CFO Office	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.0	81	0	$11	$303	$12	27.1
Printer Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	174	0	$23	$73	$40	1.4
Engineering Dept	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.1	244	0	$32	$368	$106	8.1
Engineering Dept	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	481	0	$63	$110	$60	0.8
Personal Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	481	0	$63	$380	$130	3.9
Engineering Dept Front Desk	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	321	0	$42	$343	$110	5.5
Engineering Offices	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.6	2,405	-1	$317	$818	$370	1.4
Engineering File Room	5	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	5	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.1	406	0	$54	$433	$130	5.7
Zoning Officer	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	321	0	$42	$343	$110	5.5
Engineering Conference Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	641	0	$85	$416	$150	3.1
Engeering Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	481	0	$63	$380	$130	3.9
Assistant Engineer Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	481	0	$63	$380	$130	3.9
Cabinet Area	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	641	0	$85	$416	$150	3.1
Engineering Hall	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 6	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	2,440	0.0	162	0	$21	$290	$164	5.9

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	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
Planning Officer	6	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	6	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.1	487	0	$64	$465	$142	5.0
Office 1	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.0	81	0	$11	$303	$12	27.1
Restroom	1	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	S	11	3,536	5	None	Yes	1	LED Lamps: (1) 10.5W Plug-In Lamp	Occupancy Sensor	11	2,440	0.0	12	0	$2	$270	$0	164.9
Engineering Offices	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.1	244	0	$32	$368	$106	8.1
Engineering Office 2	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.0	81	0	$11	$303	$12	27.1
Electric Room	1	Compact Fluorescent: (2) 13W Plug-In Lamps	Wall Switch	S	26	3,536	3	Relamp	No	1	LED Lamps: Bulb - 2L	Wall Switch	18	3,536	0.0	30	0	$4	$27	$4	5.9
Custodian Closet	1	Incandescent: Bulb - 1L	Wall Switch	S	60	260	3	Relamp	No	1	LED Lamps: Bulb - 1L	Wall Switch	9	260	0.0	14	0	$2	$17	$2	8.1
Men Restroom	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	33	2,440	3	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.0	126	0	$17	$98	$36	3.7
Men Restroom	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	3,536	2, 5	Relamp & Reballast	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	260	0	$34	$339	$90	7.3
Women	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	33	2,440	3	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.0	84	0	$11	$65	$24	3.7
Women	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	3,536	2, 5	Relamp & Reballast	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	260	0	$34	$339	$90	7.3
Lobby 3rd Fl	20	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	S	11	3,536	6	None	Yes	20	LED Lamps: (1) 10.5W Plug-In Lamp	High/Low Control	11	2,440	0.1	249	0	$33	$900	$900	0.0
Lobby 3rd Fl	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 6	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,440	0.4	1,604	0	$211	$815	$650	0.8
LMH Room	31	LED - Fixtures: Ceiling Mount	Wall Switch	S	16	3,536	5	None	Yes	31	LED - Fixtures: Ceiling Mount	Occupancy Sensor	16	2,440	0.1	587	0	$77	$270	$70	2.6
LMH Room	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
LMH Room	40	LED - Linear Tubes: (4) 3' Lamps	Wall Switch	S	42	3,536	5	None	Yes	40	LED - Linear Tubes: (4) 3' Lamps	Occupancy Sensor	42	2,440	0.5	1,989	0	$262	$270	$70	0.8
LMH Room	18	LED - Fixtures: Ceiling Mount	Wall Switch	S	16	3,536	5	None	Yes	18	LED - Fixtures: Ceiling Mount	Occupancy Sensor	16	2,440	0.1	341	0	$45	$270	$70	4.5
Control Room	1	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	1	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,440	0.0	150	0	$20	$342	$90	12.8
Staris by LMH Room	2	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,440	0.1	300	0	$39	$415	$110	7.7
Sunshine Room	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.3	1,443	0	$190	$599	$250	1.8
Main Entrance	6	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	S	11	3,536	5	None	Yes	6	LED Lamps: (1) 10.5W Plug-In Lamp	Occupancy Sensor	11	2,440	0.0	75	0	$10	$270	$70	20.4
Building Department	31	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	31	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	1.2	4,971	-1	$655	$1,672	$760	1.4
Office 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	321	0	$42	$343	$110	5.5
Office 2	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	481	0	$63	$380	$130	3.9
Break Room	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	33	2,440	3	Relamp	No	4	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.1	169	0	$22	$130	$48	3.7

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	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
Break Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	321	0	$42	$343	$110	5.5
Break Room	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	481	0	$63	$380	$130	3.9
Lamell Room	20	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	S	11	3,536	5	None	Yes	20	LED Lamps: (1) 10.5W Plug-In Lamp	Occupancy Sensor	11	2,440	0.1	249	0	$33	$270	$70	6.1
Lamell Room	16	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	16	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,440	0.6	2,397	-1	$316	$1,699	$460	3.9
Lamell Room	9	LED Lamps: PAR38	Wall Switch	S	11	3,536	5	None	Yes	9	LED Lamps: PAR38	Occupancy Sensor	11	2,440	0.0	117	0	$15	$270	$70	13.0
Lamell Room	2	Exit Signs: Fluorescent	None		25	8,760	4	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.0	360	0	$47	$145	$0	3.1
Lobby 1st Fl	24	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	S	11	3,536	6	None	Yes	24	LED Lamps: (1) 10.5W Plug-In Lamp	High/Low Control	11	2,440	0.1	298	0	$39	$900	$900	0.0
Lobby 1st Fl	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Backside Entrance	6	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	S	11	3,536	5	None	Yes	6	LED Lamps: (1) 10.5W Plug-In Lamp	Occupancy Sensor	11	2,440	0.0	75	0	$10	$270	$70	20.4
Main Stair	6	LED Lamps: PAR38	Wall Switch	S	11	3,536	6	None	Yes	6	LED Lamps: PAR38	High/Low Control	11	2,440	0.0	78	0	$10	$225	$225	0.0
Men Restroom	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	37	2,440	3	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.1	158	0	$21	$98	$36	3.0
Men Restroom	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Occupancy Sensor	S	88	2,440	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	155	0	$20	$69	$20	2.4
Men Restroom	1	LED Lamps: (1) 10.5W Plug-In Lamp	Occupancy Sensor	S	11	2,440		None	No	1	LED Lamps: (1) 10.5W Plug-In Lamp	Occupancy Sensor	11	2,440	0.0	0	0	$0	$0	$0	0.0
Custodian Closet	1	Incandescent: Bulb - 1L	Wall Switch	S	60	260	3	Relamp	No	1	LED Lamps: Bulb - 1L	Wall Switch	9	260	0.0	14	0	$2	$17	$2	8.1
Women Restroom	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	33	2,440	3	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.0	126	0	$17	$98	$36	3.7
Women Restroom	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Occupancy Sensor	S	88	2,440	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	155	0	$20	$69	$20	2.4
Women Restroom	1	LED Lamps: (1) 10.5W Plug-In Lamp	Occupancy Sensor	S	11	2,440		None	No	1	LED Lamps: (1) 10.5W Plug-In Lamp	Occupancy Sensor	11	2,440	0.0	0	0	$0	$0	$0	0.0
Main Lobby	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 6	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,440	0.1	321	0	$42	$298	$180	2.8
1st Fl Hall	24	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 6	Relamp	Yes	24	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	2,440	0.8	3,596	-1	$474	$2,639	$1,380	2.7
1st Fl Hall	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 6	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,440	0.3	1,122	0	$148	$706	$590	0.8
1st Fl Hall	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
North Lobby	19	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	S	11	3,536	6	None	Yes	19	LED Lamps: (1) 10.5W Plug-In Lamp	High/Low Control	11	2,440	0.1	236	0	$31	$900	$900	0.0
North Lobby	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Vending Machine Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	321	0	$42	$343	$110	5.5
Vending Machine Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	260	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	260	0.1	19	0	$2	$73	$40	13.5

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	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
Building Department Annex	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.2	696	0	$92	$292	$160	1.4
Building Department Annex	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.0	81	0	$11	$303	$12	27.1
Electric Room 1st Fl	1	Compact Fluorescent: (1) 18W Plug-In Lamp	Wall Switch	S	18	3,536	3	Relamp	No	1	LED Lamps: Bulb - 1L	Wall Switch	13	3,536	0.0	21	0	$3	$17	$2	5.6
Tax Assessor Office	25	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	25	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.7	2,174	0	$286	$913	$500	1.4
Tax Assessor Office	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	33	2,440	3	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.0	126	0	$17	$98	$36	3.7
Tax Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	481	0	$63	$380	$130	3.9
Tax Office Front Desk	10	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	S	11	3,536	5	None	Yes	10	LED Lamps: (1) 10.5W Plug-In Lamp	Occupancy Sensor	11	2,440	0.0	124	0	$16	$270	$70	12.2
Tax Assessor Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	641	0	$85	$416	$150	3.1
Registar Lobby	6	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 6	Relamp	Yes	6	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	2,440	0.1	487	0	$64	$420	$297	1.9
Tax Collector Office	3	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	S	11	3,536	5	None	Yes	3	LED Lamps: (1) 10.5W Plug-In Lamp	Occupancy Sensor	11	2,440	0.0	37	0	$5	$270	$0	55.0
Tax Collector Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	321	0	$42	$343	$110	5.5
Tax Collector Dept	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.4	1,217	0	$160	$511	$280	1.4
Tax Collector	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	348	0	$46	$146	$80	1.4
Office 1	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	174	0	$23	$73	$40	1.4
Tax Collector	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
1st Fl Copy Room	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	435	0	$57	$183	$100	1.4
Registar's Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.2	522	0	$69	$219	$120	1.4
Clerk Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	174	0	$23	$73	$40	1.4
Municipality Clerk Office Area	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.6	1,913	0	$252	$803	$440	1.4
Closet	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	260	3, 5	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	179	0.1	35	0	$5	$380	$60	68.6
Council Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.2	962	0	$127	$489	$190	2.4
Clerk Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	641	0	$85	$416	$150	3.1
Council Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	641	0	$85	$416	$150	3.1
Records Planner	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	321	0	$42	$343	$110	5.5
Clerk Lobby	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 6	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,440	0.1	641	0	$85	$371	$305	0.8

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	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
Clerk Lobby	6	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	S	11	3,536	6	None	Yes	6	LED Lamps: (1) 10.5W Plug-In Lamp	High/Low Control	11	2,440	0.0	75	0	$10	$225	$225	0.0
Closet	1	Incandescent: Bulb - 1L	Wall Switch	S	60	260	3	Relamp	No	1	LED Lamps: Bulb - 1L	Wall Switch	9	260	0.0	14	0	$2	$17	$2	8.1
Men Restroom	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.0	162	0	$21	$335	$94	11.3
Women Restroom	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.0	162	0	$21	$335	$94	11.3
Women Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.0	160	0	$21	$307	$90	10.2
Custodian Closet	1	Incandescent: Bulb - 1L	Wall Switch	S	60	260	3	Relamp	No	1	LED Lamps: Bulb - 1L	Wall Switch	9	260	0.0	14	0	$2	$17	$2	8.1
Law Dept Lobby	5	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 6	Relamp	Yes	5	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	2,440	0.1	406	0	$54	$388	$285	1.9
Copy Room	2	Compact Fluorescent: (1) 18W Plug-In Lamp	Wall Switch	S	18	3,536	3, 5	Relamp	Yes	2	LED Lamps: Bulb - 1L	Occupancy Sensor	13	2,440	0.0	71	0	$9	$304	$4	32.1
Law Office	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.1	325	0	$43	$400	$118	6.6
Law Dept	6	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	6	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.1	487	0	$64	$465	$142	5.0
Law Dept	2	Compact Fluorescent: (1) 18W Plug-In Lamp	Wall Switch	S	18	3,536	3, 5	Relamp	Yes	2	LED Lamps: Bulb - 1L	Occupancy Sensor	13	2,440	0.0	71	0	$9	$304	$4	32.1
Closet	1	Incandescent: Bulb - 1L	Wall Switch	S	60	260	3	Relamp	No	1	LED Lamps: Bulb - 1L	Wall Switch	9	260	0.0	14	0	$2	$17	$2	8.1
Law Office 2	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.1	325	0	$43	$400	$118	6.6
Township Attorney	6	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	6	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.1	487	0	$64	$465	$142	5.0
Law Dept Break Room	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.1	325	0	$43	$400	$118	6.6
Law Dept Break Room	1	Compact Fluorescent: (1) 18W Plug-In Lamp	Wall Switch	S	18	3,536	3, 5	Relamp	Yes	1	LED Lamps: Bulb - 1L	Occupancy Sensor	13	2,440	0.0	36	0	$5	$287	$2	60.9
Law Dept Conference Room	15	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	15	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.3	1,218	0	$161	$758	$250	3.2
Law Dept Conference Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.0	160	0	$21	$307	$90	10.2
Law Secretary	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.0	160	0	$21	$307	$90	10.2
Law Secretary Closet	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	260	2	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	260	0.1	17	0	$2	$69	$20	22.3
North Stair	5	U-Bend Fluorescent - T8: U T8 (32W) - 2L	None	S	62	3,536	3	Relamp	No	5	LED - Linear Tubes: (2) U-Lamp	None	33	3,536	0.1	554	0	$73	$362	$100	3.6
Server Room	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.1	325	0	$43	$400	$118	6.6
Basement	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.3	1,443	0	$190	$599	$250	1.8
Basement	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	3,536	2, 5	Relamp & Reballast	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	519	0	$68	$408	$110	4.3
Basement Hall	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 6	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,440	0.3	1,283	0	$169	$742	$610	0.8

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	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
Women Restroom	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.1	244	0	$32	$368	$106	8.1
Women Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.0	87	0	$11	$37	$20	1.4
Men Restroom	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	33	2,440	3	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.0	84	0	$11	$65	$24	3.7
Basement Hall	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.2	609	0	$80	$256	$140	1.4
EMR	1	Incandescent: Bulb - 1L	Wall Switch	S	60	3,536	3, 5	Relamp	Yes	1	LED Lamps: Bulb - 1L	Occupancy Sensor	9	2,440	0.0	205	0	$27	$287	$72	8.0
Score Office	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	435	0	$57	$183	$100	1.4
Code Enforcement	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	17	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.5	1,478	0	$195	$621	$340	1.4
Code Enforcement	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	33	2,440	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.0	42	0	$6	$33	$12	3.7
Code Enforcement	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	37	2,440		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	37	2,440	0.0	0	0	$0	$0	$0	0.0
IT Office	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.4	1,604	0	$211	$635	$270	1.7
Parking Authority Break Room	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	321	0	$42	$343	$110	5.5
Parking Authority	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.3	783	0	$103	$329	$180	1.4
Parking Authority	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Occupancy Sensor	S	114	2,440	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,440	0.0	148	0	$19	$73	$40	1.7
Hall by Fire Prevention	36	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	36	LED - Linear Tubes: (2) U-Lamp	Occupancy Sensor	33	2,440	0.9	2,751	-1	$362	$2,609	$720	5.2
Fire Prevention Office	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	21	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.6	1,826	0	$241	$767	$420	1.4
Fire Prevention Office	9	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Occupancy Sensor	S	33	2,440	3	Relamp	No	9	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.1	379	0	$50	$293	$108	3.7
Stationary Storage	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	260	3	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	260	0.0	4	0	$1	$33	$12	34.7
Kitchen Area	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.0	160	0	$21	$307	$90	10.2
Fire Dept Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	321	0	$42	$343	$110	5.5
Lounge	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	321	0	$42	$343	$110	5.5
Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	260	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	179	0.1	24	0	$3	$343	$40	97.5
Records Department	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.2	696	0	$92	$292	$160	1.4
Communications Rm	25	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	2,440	3	Relamp	No	25	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.7	2,174	0	$286	$913	$500	1.4
Communications Rm	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Kitchen	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	321	0	$42	$343	$110	5.5

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	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
Employee Lounge	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.4	1,604	0	$211	$635	$270	1.7
Employee Lounge	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Employee Lounge	2	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	S	11	3,536	5	None	Yes	2	LED Lamps: (1) 10.5W Plug-In Lamp	Occupancy Sensor	11	2,440	0.0	25	0	$3	$270	$0	82.4
Men Restroom	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.1	325	0	$43	$400	$118	6.6
Women Restroom	4	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.1	325	0	$43	$400	$118	6.6
Women Restroom	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.0	160	0	$21	$307	$90	10.2
Vending Area	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	641	0	$85	$416	$150	3.1
Vending Area	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,536	3, 5	Relamp	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	2,440	0.0	81	0	$11	$303	$12	27.1
Electric Room	1	Compact Fluorescent: (1) 18W Plug-In Lamp	Wall Switch	S	18	3,536	3	Relamp	No	1	LED Lamps: Bulb - 1L	Wall Switch	13	3,536	0.0	21	0	$3	$17	$2	5.6
Elevator Control Rm	2	Compact Fluorescent: (1) 18W Plug-In Lamp	Wall Switch	S	18	3,536	3, 5	Relamp	Yes	2	LED Lamps: Bulb - 1L	Occupancy Sensor	13	2,440	0.0	71	0	$9	$304	$4	32.1
Risk Management Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	321	0	$42	$343	$110	5.5
B&G Secretary Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	321	0	$42	$343	$110	5.5
Craig's Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	321	0	$42	$343	$110	5.5
Records Management	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	321	0	$42	$343	$110	5.5
Basement Hall	26	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 6	Relamp	Yes	26	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,440	1.0	4,169	-1	$549	$2,074	$1,645	0.8
Basement Hall	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Basement Hall	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 6	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,440	0.1	481	0	$63	$335	$270	1.0
Tunnel	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 5	Relamp	Yes	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.5	2,245	0	$296	$781	$350	1.5
IT Storage	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	260	3, 5	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	179	0.1	18	0	$2	$368	$36	140.5
Elec Room	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	3,536	2, 5	Relamp & Reballast	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,440	0.1	519	0	$68	$408	$40	5.4
Boiler Room	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,536	3	Relamp	No	13	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,536	0.4	1,638	0	$216	$475	$260	1.0
Main Lobby Stair	3	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	3,536	3, 6	Relamp	Yes	3	LED - Linear Tubes: (2) U-Lamp	High/Low Control	33	2,440	0.1	449	0	$59	$442	$270	2.9
Elevator Main	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,536	3, 5	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,440	0.1	252	0	$33	$325	$30	8.9
Lounge	4	Linear Fluorescent - T8: 8' T8 (59W) - 2L	Wall Switch	S	110	3,536	3, 5	Relamp	Yes	4	LED - Linear Tubes: (2) 8' Lamps	Occupancy Sensor	72	2,440	0.2	921	0	$121	$624	$230	3.2
Storage	3	Linear Fluorescent - T8: 8' T8 (59W) - 2L	Wall Switch	S	110	260	3, 5	Relamp	Yes	3	LED - Linear Tubes: (2) 8' Lamps	Occupancy Sensor	72	179	0.2	51	0	$7	$536	$120	62.1

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	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
Locker Area	1	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	S	158	3,536	2, 5	Relamp & Reballast	Yes	1	LED - Linear Tubes: (2) 8' Lamps	Occupancy Sensor	72	2,440	0.1	414	0	$54	$399	$110	5.3
Locker Area	2	LED Lamps: (1) 10.5W Plug-In Lamp	Wall Switch	S	11	3,536	5	None	Yes	2	LED Lamps: (1) 10.5W Plug-In Lamp	Occupancy Sensor	11	2,440	0.0	25	0	$3	$270	$0	82.4
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,536	3, 5	Relamp	Yes	1	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,440	0.1	283	0	$37	$343	$110	6.3
Exterior	2	LED - Fixtures: Outdoor Pole/Arm-Mounted Decorative Fixture	Photocell		45	4,380		None	No	2	LED - Fixtures: Outdoor Pole/Arm-Mounted Decorative Fixture	Photocell	45	4,380	0.0	0	0	$0	$0	$0	0.0
Garage	73	Metal Halide: (1) 400W Lamp	Photocell	S	458	4,380	1	Fixture Replacement	No	73	LED - Fixtures: Close to Ceiling Mount	Photocell	120	4,380	21.8	116,718	-25	$15,377	$21,687	$1,460	1.3
Main Entrance	18	LED Lamps: (1) 10.5W Plug-In Lamp	Timeclock		11	5,460		None	No	18	LED Lamps: (1) 10.5W Plug-In Lamp	Timeclock	11	5,460	0.0	0	0	$0	$0	$0	0.0
Side Entrance	1	Metal Halide: (1) 70W Lamp	Timeclock		95	5,460	1	Fixture Replacement	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	21	5,460	0.0	404	0	$54	$966	$200	14.1
Exterior	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock		55	5,460		None	No	1	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	55	5,460	0.0	0	0	$0	$0	$0	0.0
Exterior	3	LED - Fixtures: Wall Sconces	Timeclock		22	5,460		None	No	3	LED - Fixtures: Wall Sconces	Timeclock	22	5,460	0.0	0	0	$0	$0	$0	0.0
Exterior	23	LED - Fixtures: Bollard Fixture	Timeclock		18	5,460		None	No	23	LED - Fixtures: Bollard Fixture	Timeclock	18	5,460	0.0	0	0	$0	$0	$0	0.0
Floods	2	LED Lamps: PAR38L	Timeclock		16	5,460		None	No	2	LED Lamps: PAR38L	Timeclock	16	5,460	0.0	0	0	$0	$0	$0	0.0
Wall Sconces	12	LED Lamps: (1) 10.5W Plug-In Lamp	Timeclock		11	5,460		None	No	12	LED Lamps: (1) 10.5W Plug-In Lamp	Timeclock	11	5,460	0.0	0	0	$0	$0	$0	0.0
Exterior	8	LED - Fixtures: Downlight Surface Mount	Photocell		45	4,380		None	No	8	LED - Fixtures: Downlight Surface Mount	Photocell	45	4,380	0.0	0	0	$0	$0	$0	0.0
Flag Pole	1	LED - Fixtures: Track or Mono-Point Directional Lighting Fixtures	Photocell		20	4,380		None	No	1	LED - Fixtures: Track or Mono-Point Directional Lighting Fixtures	Photocell	20	4,380	0.0	0	0	$0	$0	$0	0.0
Vehicle Path	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Timeclock		62	5,460	3	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Timeclock	29	5,460	0.0	180	0	$24	$37	$20	0.7
Pole Light	15	LED - Fixtures: Large Pole/Arm-Mounted Area/Roadway Fixture	Timeclock		150	5,460		None	No	15	LED - Fixtures: Large Pole/Arm-Mounted Area/Roadway Fixture	Timeclock	150	5,460	0.0	0	0	$0	$0	$0	0.0
Wall Sconces	2	Compact Fluorescent: (1) 18W Plug-In Lamp	Timeclock		18	5,460	3	Relamp	No	2	LED Lamps: Bulb - 1L	Timeclock	13	5,460	0.0	59	0	$8	$34	$4	3.8

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?	Remaining Useful Life	Annual Operating Hours	ECM #	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
Roof	RTU-3	1	Supply Fan	20.0	93.0%	Yes	W	3,952		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-3	2	Exhaust Fan	1.5	84.0%	Yes	W	3,952		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-2	1	Supply Fan	15.0	93.0%	Yes	W	3,952		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-2	2	Exhaust Fan	1.5	84.0%	Yes	W	3,952		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-1	1	Supply Fan	15.0	93.0%	Yes	W	3,952		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU-1	2	Exhaust Fan	1.5	84.0%	Yes	W	3,952		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0
Basement Storage	AHU-1	1	Supply Fan	10.0	91.7%	Yes	W	3,952		No	91.7%	No		0.0	0	0	$0	$0	$0	0.0
Basement Storage	AHU-2	1	Supply Fan	3.0	89.5%	Yes	W	3,952		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Basement Storage	AHU-3	1	Supply Fan	5.0	89.5%	Yes	W	3,952		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
EMR	Elevator Motor	1	Other	25.0	91.7%	No	W	3,952		No	91.7%	No		0.0	0	0	$0	$0	$0	0.0
Boiler Room	P-4	1	Heating Hot Water Pump	7.5	88.5%	No	W	3,952	7	No	91.0%	Yes	1	0.8	9,833	0	$1,319	$4,738	$2,000	2.1
Boiler Room	P-5	1	Heating Hot Water Pump	5.0	87.5%	No	W	0	7	No	89.5%	Yes	1	0.5	0	0	$0	$4,076	$1,800	0.0
Boiler Room	DHW Circulation	1	Water Supply Pump	0.1	60.0%	No	W	8,760		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0

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 (MBh)	Remaining Useful Life	ECM #	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (MBh)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	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
Municipal Building - Roof	CU-3	1	Packaged AC	10.00		W		No							0.0	0	0	$0	$0	$0	0.0
Municipal Building - Roof	CU-2	1	Packaged AC	12.50		W		No							0.0	0	0	$0	$0	$0	0.0
Municipal Building - Roof	RTU-3	1	Packaged AC	50.00		W		No							0.0	0	0	$0	$0	$0	0.0
Municipal Building - Roof	RTU-2	1	Packaged AC	50.00		W		No							0.0	0	0	$0	$0	$0	0.0
Municipal Building - Roof	RTU-1	1	Packaged AC	50.00		W		No							0.0	0	0	$0	$0	$0	0.0
Municipal Building - Roof	CU-1	1	Packaged AC	15.00		W		No							0.0	0	0	$0	$0	$0	0.0
Municipal Building - Server IT Room	Server IT Room	2	Ductless Mini-Split AC	3.00		W		No							0.0	0	0	$0	$0	$0	0.0
Municipal Building - Main Lobby	Electric Baseboard	4	Electric Resistance Heat		6.82	W		No							0.0	0	0	$0	$0	$0	0.0
Maintenance Building	Electric Heater	1	Electric Resistance Heat		18.77	W		No							0.0	0	0	$0	$0	$0	0.0
Maintenance Building	Window AC	1	Window AC	1.50		W		No							0.0	0	0	$0	$0	$0	0.0
Maintenance Building	Electric Heater	1	Electric Resistance Heat		13.65	W		No							0.0	0	0	$0	$0	$0	0.0
Maintenance Building Restroom	Electric Baseboard	1	Electric Resistance Heat		3.41	W		No							0.0	0	0	$0	$0	$0	0.0

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)	Remaining Useful Life	ECM #	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
Municipal Building - Boiler Room	Boilers - 1 to 4	4	Condensing Hot Water Boiler	371	W		No						0.0	0	0	$0	$0	$0	0.0

DHW Inventory & Recommendations

		Existing Conditions			Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Remaining Useful Life	ECM #	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
Municipal Building - Basement Storage	DHW Heater	1	Storage Tank Water Heater (≤ 50 Gal)	W		No						0.0	0	0	$0	$0	$0	0.0
Municipal Building - Boiler Room	DHW Heaters	2	Storage Tank Water Heater (> 50 Gal)	W		No						0.0	0	0	$0	$0	$0	0.0
Maintenance Building	DHW Heater	1	Storage Tank Water Heater (≤ 50 Gal)	W		No						0.0	0	0	$0	$0	$0	0.0

Low-Flow Device Recommendations

	Recommedation Inputs					Energy Impact & Financial Analysis						
Location	ECM #	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
Municipal Building Restrooms	8	22	Faucet Aerator (Lavatory)	1.50	0.50	0.0	0	6	$70	$158	$158	0.0
Municipal Building Restrooms	8	3	Faucet Aerator (Lavatory)	1.50	0.50	0.0	245	0	$33	$22	$22	0.0
Maintenance Building Restrooms	8	2	Faucet Aerator (Lavatory)	2.20	0.50	0.0	278	0	$37	$14	$14	0.0

Cooking Equipment Inventory & Recommendations

	Existing Conditions			Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	High Efficiency Equipement?	ECM #	Install High Efficiency Equipment?	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
Municipal Building	2	Gas Griddle (4 Feet Width)	Yes		No	0.0	0	0	$0	$0	$0	0.0

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Municipal Building	4	Electrical Filing System	500	Yes
Municipal Building	153	Computers	145	Yes
Municipal Building	8	Servers	500	Yes
Municipal Building	41	Small Printers	20	Yes
Municipal Building	10	Medium Printers	120	Yes
Municipal Building	26	Copy Machines	200	Yes
Municipal Building	8	Paper Shredder	200	Yes
Municipal Building	16	Microwave	900	Yes
Municipal Building	4	Small Refrigerator	40	Yes
Municipal Building	4	Medium Refrigerator	70	Yes
Municipal Building	6	Large Refrigerator	200	Yes
Municipal Building	13	Coffee Machine	400	No
Municipal Building	6	Toaster	850	No
Municipal Building	6	Toaster Oven	1,200	No
Municipal Building	3	Ceiling Fan	60	No
Municipal Building	10	Portable Fan	60	Yes
Municipal Building	2	LCD Tv - 50"	150	Yes
Municipal Building	3	LED Tv - 50"	100	Yes
Municipal Building	5	Water Cooler	500	Yes
Municipal Building	2	Dehumidifier	280	Yes
Municipal Building	1	Portable AC	3,530	Yes
Municipal Building	2	Dehumidifier	913	Yes

Vending Machine Inventory & Recommendations

	Existing Conditions		Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Vending Machine Type	ECM #	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
Municipal Building	1	Refrigerated	9	Yes	0.2	1,612	0	$216	$230	$100	0.6
Municipal Building	1	Non-Refrigerated	9	Yes	0.0	343	0	$46	$230	$0	5.0

APPENDIX B: ENERGY STAR® STATEMENT OF ENERGY PERFORMANCE

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.

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ENERGY STAR® Statement of Energy Performance

N/A

ENERGY STAR® Score[1]

Toms River Municipal Complex

Primary Property Type: Office
Gross Floor Area (ft²): 100,722
Built: 1974

For Year Ending: June 30, 2019
Date Generated: August 10, 2020

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
Toms River Municipal Complex 33 Washington Street Toms River, New Jersey 08753	Township of Toms River 33 Washington Street Toms River, NJ 08753 (742) 341-1000	Donald Guardian 33 Washington Street Toms River, NJ 08753 (742) 341-1000 dguardian@tomsrivertownship.com

Property ID: 11984355

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
51.3 kBtu/ft²

Source EUI
83.8 kBtu/ft²

Annual Energy by Fuel	
Electric - Solar (kBtu)	1,686,031 (33%)
Natural Gas (kBtu)	1,708,586 (33%)
Electric - Grid (kBtu)	1,772,480 (34%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	71.2
National Median Source EUI (kBtu/ft²)	116.4
% Diff from National Median Source EUI	-28%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	270

Signature & Stamp of Verifying Professional

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

LP Signature: _____ Date: _____

Licensed Professional

____ _____
,
(___)___-____
_____

Professional Engineer or Registered Architect Stamp (if applicable)

APPENDIX C: GLOSSARY

TERM	DEFINITION
Blended Rate	Used to calculate fiscal savings associated with measures. The blended rate is calculated by dividing the amount of your bill by the total energy use. For example, if your bill is $22,217.22, and you used 266,400 kilowatt-hours, your blended rate is 8.3 cents per kilowatt-hour.
Btu	*British thermal unit*: a unit of energy equal to the amount of heat required to increase the temperature of one pound of water by one-degree Fahrenheit.
CHP	*Combined heat and power*. Also referred to as cogeneration.
COP	*Coefficient of performance*: a measure of efficiency in terms of useful energy delivered divided by total energy input.
Demand Response	Demand response reduces or shifts electricity usage at or among participating buildings/sites during peak energy use periods in response to time-based rates or other forms of financial incentives.
DCV	*Demand control ventilation*: a control strategy to limit the amount of outside air introduced to the conditioned space based on actual occupancy need.
US DOE	*United States Department of Energy*
EC Motor	*Electronically commutated motor*
ECM	*Energy conservation measure*
EER	*Energy efficiency ratio*: a measure of efficiency in terms of cooling energy provided divided by electric input.
EUI	*Energy Use Intensity:* measures energy consumption per square foot and is a standard metric for comparing buildings' energy performance.
Energy Efficiency	Reducing the amount of energy necessary to provide comfort and service to a building/area. Achieved through the installation of new equipment and/or optimizing the operation of energy use systems. Unlike conservation, which involves some reduction of service, energy efficiency provides energy reductions without sacrifice of service.
ENERGY STAR®	ENERGY STAR® is the government-backed symbol for energy efficiency. The ENERGY STAR® program is managed by the EPA.
EPA	*United States Environmental Protection Agency*
Generation	The process of generating electric power from sources of primary energy (e.g., natural gas, the sun, oil).
GHG	*Greenhouse gas* gases that are transparent to solar (short-wave) radiation but opaque to long-wave (infrared) radiation, thus preventing long-wave radiant energy from leaving Earth's atmosphere. The net effect is a trapping of absorbed radiation and a tendency to warm the planet's surface.
gpf	*Gallons per flush*

gpm	*Gallon per minute*
HID	*High intensity discharge:* high-output lighting lamps such as high-pressure sodium, metal halide, and mercury vapor.
hp	*Horsepower*
HPS	*High-pressure sodium*: a type of HID lamp
HSPF	*Heating seasonal performance factor:* a measure of efficiency typically applied to heat pumps. Heating energy provided divided by seasonal energy input.
HVAC	*Heating, ventilating, and air conditioning*
IHP 2014	US DOE Integral Horsepower rule. The current ruling regarding required electric motor efficiency.
IPLV	*Integrated part load value:* a measure of the part load efficiency usually applied to chillers.
kBtu	One thousand British thermal units
kW	*Kilowatt*: equal to 1,000 Watts.
kWh	*Kilowatt-hour*: 1,000 Watts of power expended over one hour.
LED	*Light emitting diode*: a high-efficiency source of light with a long lamp life.
LGEA	*Local Government Energy Audit*
Load	The total power a building or system is using at any given time.
Measure	A single activity, or installation of a single type of equipment, that is implemented in a building system to reduce total energy consumption.
MH	*Metal halide*: a type of HID lamp
MBh	*Thousand Btu per hour*
MBtu	*One thousand British thermal units*
MMBtu	*One million British thermal units*
MV	*Mercury Vapor:* a type of HID lamp
NJBPU	*New Jersey Board of Public Utilities*
NJCEP	*New Jersey's Clean Energy Program:* NJCEP is a statewide program that offers financial incentives, programs and services for New Jersey residents, business owners and local governments to help them save energy, money and the environment.
psig	Pounds per square inch gauge
Plug Load	Refers to the amount of power used in a space by products that are powered by means of an ordinary AC plug.
PV	*Photovoltaic:* refers to an electronic device capable of converting incident light directly into electricity (direct current).

SEER	*Seasonal energy efficiency ratio:* a measure of efficiency in terms of annual cooling energy provided divided by total electric input.
SEP	*Statement of energy performance:* a summary document from the ENERGY STAR® Portfolio Manager®.
Simple Payback	The amount of time needed to recoup the funds expended in an investment or to reach the break-even point between investment and savings.
SREC	*Solar renewable energy credit*: a credit you can earn from the state for energy produced from a photovoltaic array.
TREC	*Transition Incentive Renewable Energy Certificate:* a factorized renewable energy certificate you can earn from the state for energy produced from a photovoltaic array.
T5, T8, T12	A reference to a linear lamp diameter. The number represents increments of 1/8th of an inch.
Temperature Setpoint	The temperature at which a temperature regulating device (thermostat, for example) has been set.
therm	100,000 Btu. Typically used as a measure of natural gas consumption.
tons	A unit of cooling capacity equal to 12,000 Btu/hr.
Turnkey	Provision of a complete product or service that is ready for immediate use
VAV	*Variable air volume*
VFD	*Variable frequency drive*: a controller used to vary the speed of an electric motor.
WaterSense®	The symbol for water efficiency. The WaterSense® program is managed by the EPA.
Watt (W)	Unit of power commonly used to measure electricity use.