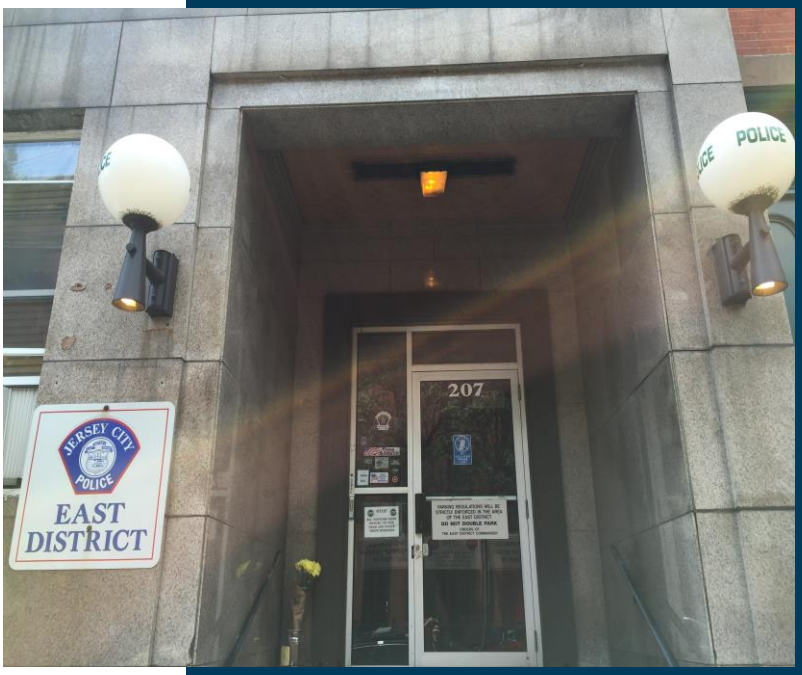
Local Government Energy Audit:
Energy Audit Report



East District Police Precinc

City of Jersey City
207 7th Street,
Jersey City, NJ 07302

February 19, 2018

Final Report by:
TRC Energy Services

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Disclaimer

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

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

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

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

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1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for East District Police Precinct. The goal of a LGEA is to provide you with information on how your facility uses energy, identify energy conservation measures (ECMs) that can reduce your energy use, and put you in a position to implement the ECMs. The LGEA also sets you on the path to receive financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing the ECMs.

This study was conducted by TRC Energy Services (TRC), as part of a comprehensive effort to assist New Jersey's East District Police Precinct in controlling energy costs and protecting our environment by offering a full spectrum of energy management options.

1.1 Facility Summary

East District Police Precinct is a 15,500 square foot facility comprised of four (4) floors including the basement. The space types includes various offices, locker rooms, and holding cells.

East District Police Precinct mostly consists of aging and inefficient lighting and HVAC equipment in need of replacement. A thorough description of the facility and our observations are located in Section 2.

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC recommends six (6) measures which together represent an opportunity for East District Police Precinct to reduce annual energy costs by roughly $9,342 and annual greenhouse gas emissions by 79,776 lbs CO_2e. The measures would pay for themselves in roughly 6.56 years. The breakdown of existing and potential utility costs is illustrated in Figure 1 and Figure 2, respectively. These measures together would reduce East District Police Precinct's annual energy use by approximately 21.9%.

Figure 1 – Previous 12 Month Utility Costs

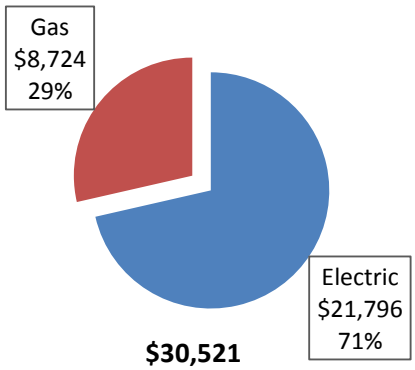
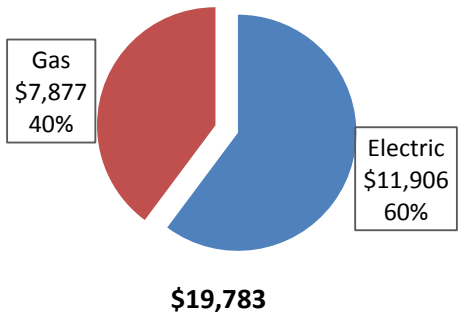


Figure 2 – Potential Post-Implementation Costs



A detailed description of East District Police Precinct's existing energy use can be found in Section 3.

The recommended measures have been grouped by category in Figure 3. Brief descriptions of each category can be found below. Descriptions of the individual ECMs can be found in Section 4.

Figure 3 – Summary of Energy Reduction Opportunities

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**50,156**	**7.6**	**0.0**	**$6,193.79**	**$14,672.91**	**$0.00**	**$14,672.91**	**2.37**	**50,507**
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	49,134	7.3	0.0	$6,067.62	$14,145.18	$0.00	$14,145.18	2.33	49,478
ECM 2	Retrofit Fixtures with LED Lamps	Yes	1,022	0.4	0.0	$126.17	$527.73	$0.00	$527.73	4.18	1,029
Lighting Control Measures			**1,918**	**0.3**	**0.0**	**$236.91**	**$928.00**	**$160.00**	**$768.00**	**3.24**	**1,932**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	1,918	0.3	0.0	$236.91	$928.00	$160.00	$768.00	3.24	1,932
Electric Unitary HVAC Measures			**16,714**	**8.6**	**0.0**	**$2,064.06**	**$19,597.68**	**$0.00**	**$19,597.68**	**9.49**	**16,831**
ECM 4	Install High Efficiency Electric AC	Yes	16,714	8.6	0.0	$2,064.06	$19,597.68	$0.00	$19,597.68	9.49	16,831
Gas Heating (HVAC/Process) Replacement			**0**	**0.0**	**63.6**	**$600.36**	**$28,804.11**	**$2,640.00**	**$26,164.11**	**43.58**	**7,445**
ECM 5	Install High Efficiency Hot Water Boilers	Yes	0	0.0	63.6	$600.36	$28,804.11	$2,640.00	$26,164.11	43.58	7,445
Domestic Water Heating Upgrade			**0**	**0.0**	**26.2**	**$246.93**	**$71.70**	**$0.00**	**$71.70**	**0.29**	**3,062**
ECM 6	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	26.2	$246.93	$71.70	$0.00	$71.70	0.29	3,062
TOTALS			**68,789**	**16.6**	**89.7**	**$9,342.06**	**$64,074.40**	**$2,800.00**	**$61,274.40**	**6.56**	**79,776**

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

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

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

Lighting Controls measures generally involve the installation of automated controls to turn off lights or reduce light output when conditions allow. Automated control reduces reliance on occupant behavior for adjusting lights. These measures save energy by reducing the amount of time lights are on.

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

Gas Heating (HVAC/Process) measures generally involve replacing old inefficient hydronic heating systems with modern energy efficient systems. Gas heating systems can provide heating equivalent to older systems, but use less energy. These measures save energy by reducing the fuel used by the heating due to improved combustion and heat transfer efficiency.

Domestic Water Heating upgrade measures generally involve replacing old inefficient domestic water heating systems with modern energy efficient systems. New domestic water heating systems can provide equivalent or greater capacity as older systems, but use less energy. These measures save energy by reducing the fuel used by the domestic water heating systems due to improved efficiency or the removal of standby losses.

Energy Efficient Practices

TRC also identified nine (9) low (or no) cost energy efficient practices that might benefit the facility. A facility's energy performance can be significantly improved by employing certain behavioral and operational adjustments as well as performing routine maintenance on building systems. Through these practices equipment lifetime can be extended; occupant comfort, health and safety can be improved; and annual energy, operation, and maintenance costs can be reduced. Opportunities identified at East District Police Precinct include:

- Reduce Air Leakage
- Use Window Treatments/Coverings
- Perform Proper Lighting Maintenance
- Develop a Lighting Maintenance Schedule
- Use Fans to Reduce Cooling Load
- Practice Proper Use of Thermostat Schedules and Temperature Resets
- Clean and/or Replace HVAC Filters
- Perform Proper Boiler Maintenance
- Water Conservation

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

On-site Generation Measures

TRC evaluated the potential for installing on-site generation measures for East District Police Precinct. Based on the configuration of the site and its electric and thermal loads there appears to be a low potential for installing any solar photovoltaic (PV) or combined heat and power (CHP) on-site generation measures. For details on our evaluation and the self-generation potential, please refer to Section 6.

1.3 Implementation Planning

To realize the energy savings from the ECMs listed in this report, the equipment changes outlined for each ECM need to be selected and installed through project implementation. One of the first considerations is if there is capital available for project implementation. Another consideration is whether to pursue individual ECMs, a group of ECMs, or a comprehensive approach wherein all ECMs are pursued, potentially in conjunction with other facility projects or improvements.

Rebates, incentives, and financing are available from the NJBPU, NJCEP, as well as some of the state's investor-owned utilities, to help reduce the costs associated with the implementation of energy efficiency projects. Prior to implementing any project, please review the appropriate incentive program guidelines before proceeding. This is important because in most cases you will need to submit an application for the incentives before purchasing materials and beginning installation.

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

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

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

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

Additional information on relevant incentive programs is located in Section 8 or: www.njcleanenergy.com/ci.

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 4 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
John Mercer	Assistant Business Administrator	jmercer@jcnj.org	201-547-4417
TRC Energy Services			
Smruti Srinivasan	Auditor	ssrinivasan@gmail.com	(732) 855-0033

2.2 General Site Information

On July 14, 2016, TRC performed an energy audit at East District Police Precinct located in Jersey City, New Jersey. TRC's team met with Officer Dina Lionakis to review the facility operations and to learn more about some of the specific energy-using systems.

East District Police Precinct is a 15,500 square foot facility comprised of four (4) floors including the basement. The space types predominantly include the offices, locker rooms, and holding cells. The building was constructed in 1900.

2.3 Building Occupancy

The typical schedule is presented in the table below. The entire facility is operational all year round and open 24 hours a day, although the number of people occupying the building vary throughout the day.

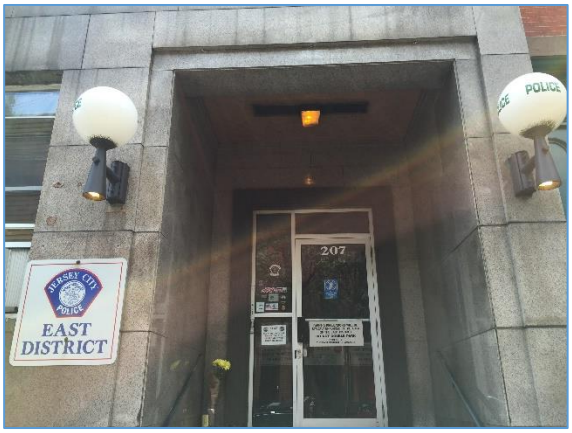
Figure 5 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Police Precinct	Weekday	8:30AM - 8:30AM
Police Precinct	Weekend	8:30AM - 8:30AM

2.4 Building Envelope

The East District Police Precinct is constructed of brick and steel and has a concrete facade. The building has a flat roof and its windows show signs of excessive air infiltration. However, the exterior doors are framed glass doors and in good condition. The building shares its walls on either side with other buildings and hence receives only minimal daylight or natural ventilation.

Basement walls



Building entrance

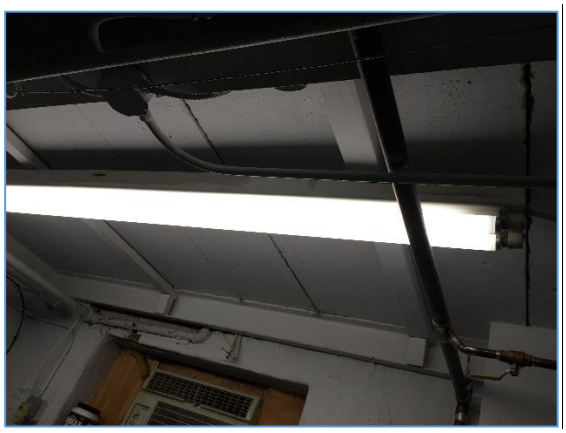
2.5 On-site Generation

East District Police Precinct does not have any on-site electric generation capacity.

2.6 Energy-Using Systems

Lighting System

Lighting at the facility is provided predominately by linear 40-Watt linear fluorescent T12 lamps as well as some compact fluorescent lamps (CFL). Lighting control in most spaces is provided by wall switch.



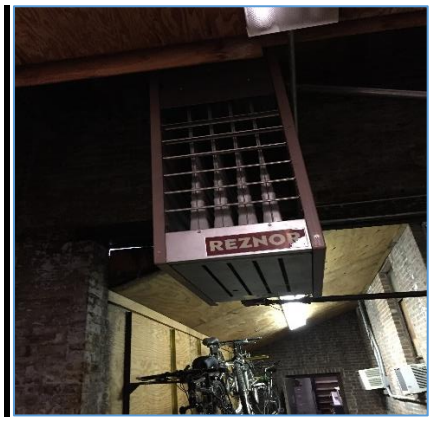
Lighting Fixtures

Please refer to Appendix A: Equipment Inventory & Recommendations for an inventory of your equipment.

Hot Water / Steam System

The heating hot water system consists of one (1) HB Smith boiler with an output capacity of 1194 MBH. The boiler is estimated to have a thermal efficiency of 81.9% and is 20 years old. The boiler has been well-maintained, but is old. We recommend that it be replaced. Majority of the occupants seem to raise the issue of the building being over-heated in the winter.

The hallway and the garage areas have separate warm air unit heaters from Reznor with a capacity of 100MBh each and a thermal efficiency of 83%. These units are about 12 years old and well maintained.



***Left:** Boiler*

***Right:** Warm air unit heater*

Air Conditioning (AC)

Eighteen (18) window air conditioners provide cooling. The reception area has two (2) AC units but one of them was not being used because when both units are turned on together it overloads the circuit and trips the breaker. This is a potential fire hazard.

We recommend replacement of aging AC units. However, before choosing new replacements, we recommend having the building's electrical system inspected and any maintenance needs addressed. Lowering the building's overall energy demand through implementation of the ECMs recommended in this report may help to alleviate current overload conditions.

***Left:** Functional AC unit*

***Right:** Non-functional AC unit in the reception area*

Domestic Hot Water

The domestic hot water system consists of one (1) gas-fired Rheem Fury unit with an input capacity 38,000 Btuh and a nominal efficiency of 59%. The water heater has a 40 gallon storage tank. The unit is only six (6) years old and not the most efficient model. When it is due for replacement, it is suggested that the facility replaces this with a high-efficiency water heater.

2.7 Water-Using Systems

There are nine (9) restrooms at this facility. Faucets are rated for 2.2 gallons per minute (gpm) or higher, the toilets are rated at 3.0 gallons per flush (gpf). Replacement of these fixtures with low-flow devices could provide significant domestic water savings. Another simple measure water-saving measure would be to attach aerators to faucets to restrict water flow rates through the faucets, thereby reducing overall water and energy usage.

3 SITE ENERGY USE AND COSTS

Utility data for electricity and natural gas was analyzed to identify opportunities for savings. In addition, data for electricity and natural gas was evaluated to determine the annual energy performance metrics for the building in energy cost per square foot and energy usage per square foot. These metrics are an estimate of the relative energy efficiency of this building. There are a number of factors that could cause the energy use of this building to vary from the "typical" energy usage profile for facilities with similar characteristics. Local weather conditions, building age and insulation levels, equipment efficiency, daily occupancy hours, changes in occupancy throughout the year, equipment operating hours, and energy efficient behavior of occupants all contribute to benchmarking scores. Please refer to the Benchmarking section within Section 0 for additional information.

3.1 Total Cost of Energy

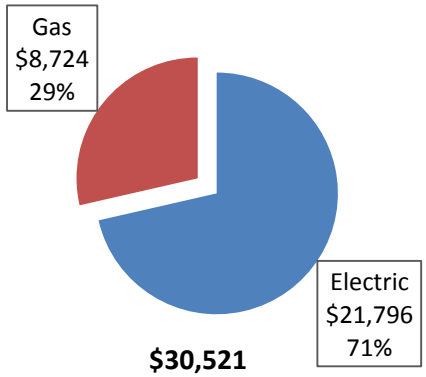
The following energy consumption and cost data is based on the last 12-month period of utility billing data that was provided for each utility. A profile of the annual energy consumption and energy cost of the facility was developed from this information.

Figure 6 - Utility Summary

Utility Summary for East District Police Precinct		
Fuel	**Usage**	**Cost**
Electricity	164,152 kWh	$21,796
Natural Gas	9,240 Therms	$8,724
Total		**$30,521**

The current utility cost for this site is $30,521 as shown in the chart below.

Figure 7 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by PSE&G. The average electric cost over the past 12 months was $0.123/kWh, which is the blended rate used throughout the analyses in this report. This rate is used throughout the analyses in this report to assess energy costs and savings. The third party supply is provided by Constellation Energy. The monthly electricity consumption and peak demand is shown in the chart below.

Figure 8 - Electric Usage & Demand

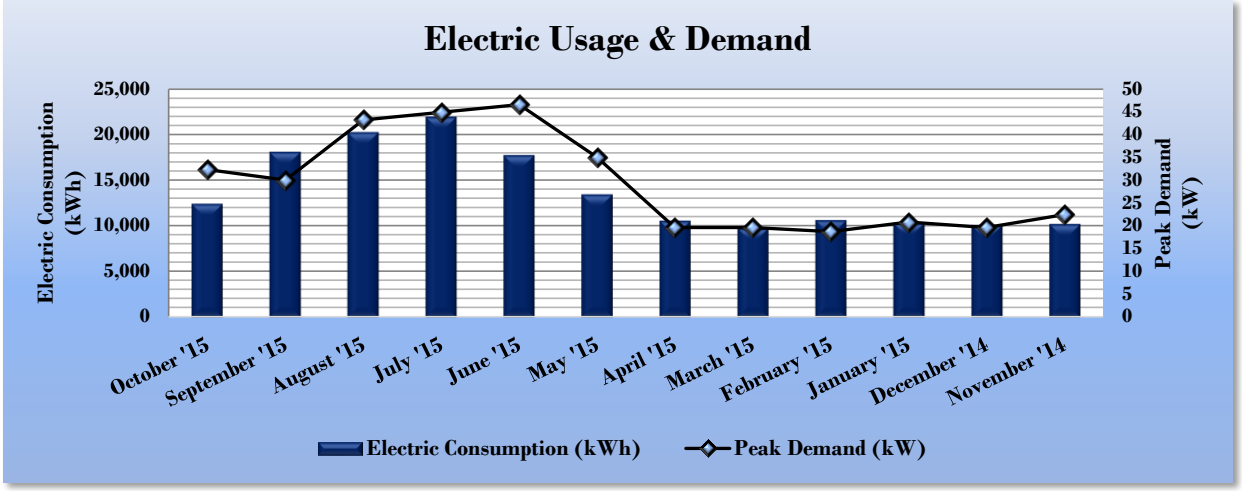


Figure 9 - Electric Usage & Demand

Electric Billing Data for East District Police Precinct					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
10/26/15	31	12,393	32	$141	$1,557
9/25/15	30	18,054	30	$133	$2,648
8/26/15	29	20,205	43	$188	$3,042
7/28/15	32	21,879	45	$195	$2,049
6/26/15	29	17,703	47	$202	$2,799
5/28/15	30	13,392	35	$152	$1,758
4/28/15	32	10,539	20	$85	$1,384
3/27/15	29	9,738	20	$85	$1,279
2/26/15	31	10,593	19	$81	$1,391
1/26/15	31	10,314	21	$90	$1,354
12/26/14	32	10,062	20	$85	$1,321
11/24/14	31	10,179	22	$97	$1,336
Totals	**367**	**165,051**	**46.6**	**$1,534**	**$21,916**
Annual	**365**	**164,152**	**46.6**	**$1,525**	**$21,796**

3.3 Natural Gas Usage

Natural gas is provided by PSE&G. The average gas cost for the past 12 months is $0.944/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is represented graphically in the chart below.

Figure 10 - Natural Gas Usage

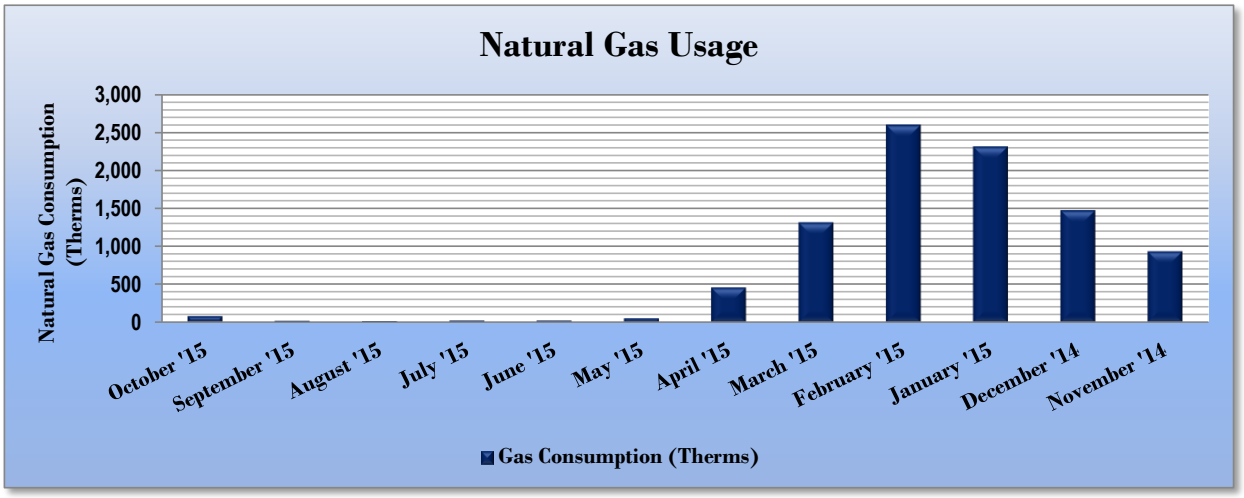


Figure 11 - Natural Gas Usage

Gas Billing Data for East District Police Precinct			
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
10/26/15	31	83	$74
9/25/15	30	19	$27
8/26/15	29	18	$25
7/28/15	32	22	$28
6/26/15	29	22	$28
5/28/15	30	53	$51
4/28/15	32	459	$366
3/27/15	29	1,310	$1,158
2/26/15	31	2,594	$2,353
1/26/15	31	2,306	$2,202
12/26/14	32	1,472	$1,529
11/24/14	31	930	$929
Totals	**367**	**9,290**	**$8,772**
Annual	**365**	**9,240**	**$8,724**

3.4 Benchmarking

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

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

Figure 12 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	East District Police Precinct	National Median Building Type: Fire/Police Station
Source Energy Use Intensity (kBtu/ft^2)	176.1	154.4
Site Energy Use Intensity (kBtu/ft^2)	95.7	88.3

By implementing all recommended measures covered in this reporting, the Project's estimated post-implementation EUI improves as shown in the table below:

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

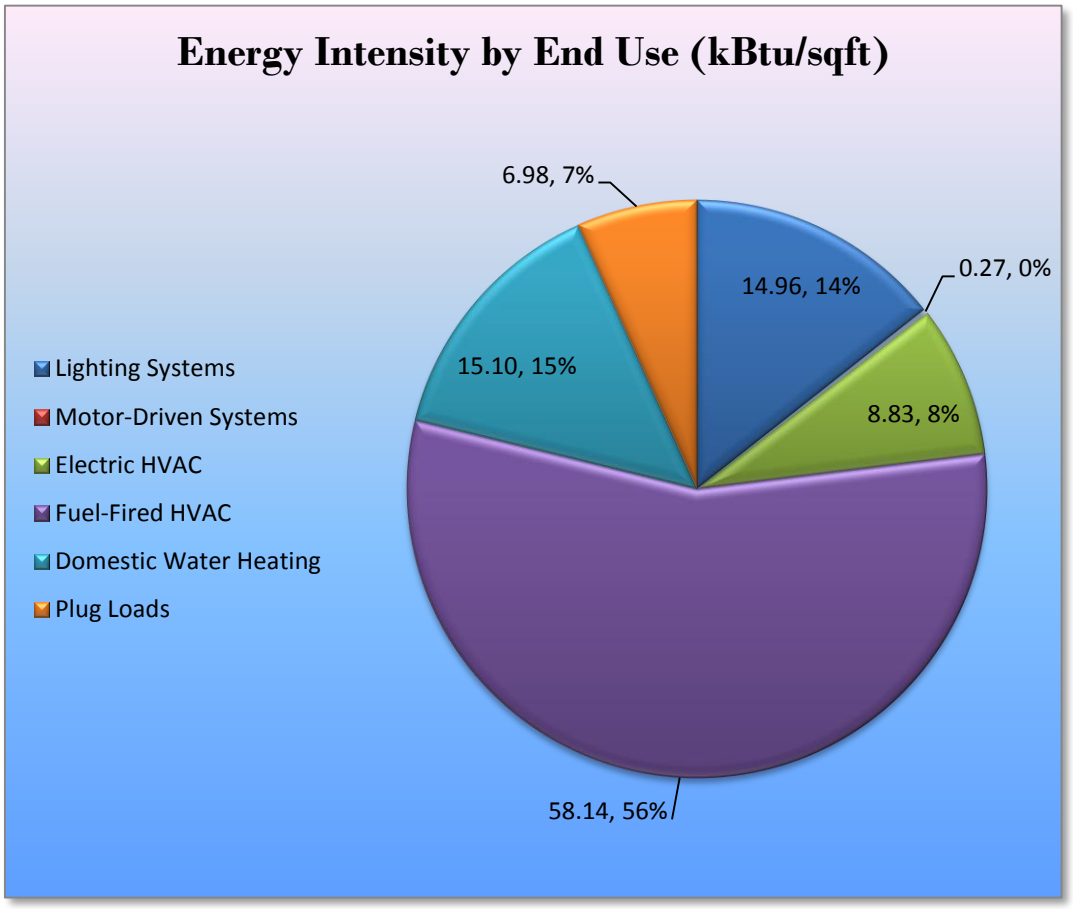
Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	East District Police Precinct	National Median Building Type: Fire/Police Station
Source Energy Use Intensity (kBtu/ft^2)	122.4	154.4
Site Energy Use Intensity (kBtu/ft^2)	74.8	88.3

Many buildings can also receive a 1 – 100 ENERGY STAR® score. This score compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide — and may be eligible for ENERGY STAR® certification. Your building is not in one of the building categories that are eligible to receive a score. However the Portfolio Manager, Statement of Energy Performance can be found in Appendix B: ENERGY STAR® Statement of Energy Performance.

3.5 Energy End-Use Breakdown

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

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



4 ENERGY CONSERVATION MEASURES

Level of Analysis

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

The following sections describe the recommended measures.

4.1 Recommended ECMs

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

Figure 15 – Summary of Recommended ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**50,156**	**7.6**	**0.0**	**$6,193.79**	**$14,672.91**	**$0.00**	**$14,672.91**	**2.37**	**50,507**
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	49,134	7.3	0.0	$6,067.62	$14,145.18	$0.00	$14,145.18	2.33	49,478
ECM 2	Retrofit Fixtures with LED Lamps	1,022	0.4	0.0	$126.17	$527.73	$0.00	$527.73	4.18	1,029
Lighting Control Measures		**1,918**	**0.3**	**0.0**	**$236.91**	**$928.00**	**$160.00**	**$768.00**	**3.24**	**1,932**
ECM 3	Install Occupancy Sensor Lighting Controls	1,918	0.3	0.0	$236.91	$928.00	$160.00	$768.00	3.24	1,932
Electric Unitary HVAC Measures		**16,714**	**8.6**	**0.0**	**$2,064.06**	**$19,597.68**	**$0.00**	**$19,597.68**	**9.49**	**16,831**
ECM 4	Install High Efficiency Electric AC	16,714	8.6	0.0	$2,064.06	$19,597.68	$0.00	$19,597.68	9.49	16,831
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**63.6**	**$600.36**	**$28,804.11**	**$2,640.00**	**$26,164.11**	**43.58**	**7,445**
ECM 5	Install High Efficiency Hot Water Boilers	0	0.0	63.6	$600.36	$28,804.11	$2,640.00	$26,164.11	43.58	7,445
Domestic Water Heating Upgrade		**0**	**0.0**	**26.2**	**$246.93**	**$71.70**	**$0.00**	**$71.70**	**0.29**	**3,062**
ECM 6	Install Low-Flow Domestic Hot Water Devices	0	0.0	26.2	$246.93	$71.70	$0.00	$71.70	0.29	3,062
TOTALS		**68,789**	**16.6**	**89.7**	**$9,342.06**	**$64,074.40**	**$2,800.00**	**$61,274.40**	**6.56**	**79,776**

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

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

4.1.1 Lighting Upgrades

Recommended lighting upgrades to existing lighting fixtures are summarized in Figure 16 below.

Figure 16 – Summary of Lighting Upgrade ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**50,156**	**7.6**	**0.0**	**$6,193.79**	**$14,672.91**	**$0.00**	**$14,672.91**	**2.37**	**50,507**
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	49,134	7.3	0.0	$6,067.62	$14,145.18	$0.00	$14,145.18	2.33	49,478
ECM 2	Retrofit Fixtures with LED Lamps	1,022	0.4	0.0	$126.17	$527.73	$0.00	$527.73	4.18	1,029

ECM 1: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	49,134	7.3	0.0	$6,067.62	$14,145.18	$0.00	$14,145.18	2.33	49,478
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.00	0

Measure Description

We recommend replacing existing fixtures containing linear fluorescent T12 lamps with new high performance LED light fixtures. This measure saves energy by installing LEDs which use less power than other technologies with a comparable light output.

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

ECM 2: Retrofit Fixtures with LED Lamps

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	1,022	0.4	0.0	$126.17	$527.73	$0.00	$527.73	4.18	1,029
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.00	0

Measure Description

We recommend retrofitting existing fluorescent fixtures by removing fluorescent tubes and ballasts and replacing them with LEDs and LED drivers (if necessary), which are designed to be used retrofitted fluorescent fixtures. The measure uses the existing fixture housing but replaces the rest of the components with more efficient lighting technology. This measure saves energy by installing LEDs which use less power than other lighting technologies yet provide equivalent lighting output for the space.

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

4.1.2 Lighting Control Measures

Recommended lighting control measures are summarized in Figure 17 below.

Figure 17 – Summary of Lighting Control ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**1,918**	**0.3**	**0.0**	**$236.91**	**$928.00**	**$160.00**	**$768.00**	**3.24**	**1,932**
ECM 3	Install Occupancy Sensor Lighting Controls	1,918	0.3	0.0	$236.91	$928.00	$160.00	$768.00	3.24	1,932

ECM 3: Install Occupancy Sensor Lighting Controls

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
1,918	0.3	0.0	$236.91	$928.00	$160.00	$768.00	3.24	1,932

Measure Description

We recommend installing occupancy sensors to control light fixtures that are currently manually controlled in restrooms, hallways and private offices. Sensors detect occupancy using ultrasonic and/or infrared technologies. Lighting systems are enabled when an occupant is detected. Fixtures are automatically turned off after an area has been vacant for a preset period. Occupants will also be able to manually turn off fixtures. Energy savings result from only operating lighting systems when they are required.

Occupancy sensors may be mounted on the wall at existing switch locations, mounted on the ceiling, or in remote locations. Ceiling-mounted or remote-mounted sensors require the use of low voltage switching relays or a wireless signal to the switch. In general, use wall switch replacement sensors for single occupant offices and other small rooms. Install ceiling-mounted or remote mounted sensors in locations without local switching, in situations where the existing wall switches are not in the line-of-sight of the main work area, and in large spaces. During lighting upgrade planning and design, we recommend a comprehensive approach that considers both the efficiency of the lighting fixtures and how they are controlled.

4.1.3 Electric HVAC Measures

Recommended electric HVAC measures are summarized in Figure 18 below.

Figure 18 - Summary of Unitary HVAC 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)
Electric Unitary HVAC Measures		**16,714**	**8.6**	**0.0**	**$2,064.06**	**$19,597.68**	**$0.00**	**$19,597.68**	**9.49**	**16,831**
ECM 4	Install High Efficiency Electric AC	16,714	8.6	0.0	$2,064.06	$19,597.68	$0.00	$19,597.68	9.49	16,831

ECM 4: Install High-Efficiency Electric AC

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)
16,714	8.6	0.0	$2,064.06	$19,597.68	$0.00	$19,597.68	9.49	16,831

Measure Description

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

4.1.4 Gas Heating (HVAC/Process) Replacement

Recommended gas heating measures are summarized in Figure 19 below.

Figure 19 - Summary of Gas Heating Replacement 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)
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**63.6**	**$600.36**	**$28,804.11**	**$2,640.00**	**$26,164.11**	**43.58**	**7,445**
ECM 5	Install High Efficiency Hot Water Boilers	0	0.0	63.6	$600.36	$28,804.11	$2,640.00	$26,164.11	43.58	7,445

ECM 5: Install High Efficiency Hot Water Boilers

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)
0	0.0	63.6	$600.36	$28,804.11	$2,640.00	$26,164.11	43.58	7,445

Measure Description

We recommend replacing old inefficient hot water boilers with high efficiency hot water boilers. Significant improvements have been made in combustion technology resulting in increases in overall boiler efficiency. Savings result from improved combustion efficiency and reduced standby losses at low loads.

The most significant heating efficiency improvement will come from upgrading to a condensing hydronic boiler. These boilers typically achieve over 90% efficiency, under the proper conditions. Condensing hydronic boilers typically operate at efficiencies between 85% and 87% (comparable to other high efficiency boilers) when the return water temperature is above 130°F. The boiler efficiency increases as the return water temperature drops below 130°F. Therefore, the analysis of a condensing hydronic boiler

upgrade assumes that the return water temperature will be less than 130°F during most of the operating hours.

4.1.5 Domestic Hot Water Heating System Upgrade

Recommended domestic hot water heating system upgrades are summarized in Figure 20 below.

Figure 20 - Summary of Domestic Water Heating ECMs

Energy Conservation Measure		Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Domestic Water Heating Upgrade		**0**	**0.0**	**26.2**	**$246.93**	**$71.70**	**$0.00**	**$71.70**	**0.29**	**3,062**
ECM 6	Install Low-Flow Domestic Hot Water Devices	0	0.0	26.2	$246.93	$71.70	$0.00	$71.70	0.29	3,062

ECM 6: Install Low-Flow DHW Devices

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)
0	0.0	26.2	$246.93	$71.70	$0.00	$71.70	0.29	3,062

Measure Description

We recommend installing low-flow domestic water devices to reduce overall water usage in general and hot water usage in particular. Low-flow faucet aerators reduce the water flow, relative to standard faucets.

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

5 ENERGY EFFICIENT PRACTICES

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

Reduce Air Leakage

Air leakage, or infiltration, occurs when outside air enters a building uncontrollably through cracks and openings. Properly sealing such cracks and openings can significantly reduce heating and cooling costs, improve building durability, and create a healthier indoor environment. This includes caulking or installing weather stripping around leaky doors and windows allowing for better control of indoor air quality through controlled ventilation.

Use Window Treatments/Coverings

A substantial amount of heat gain can occur through uncovered or untreated windows, especially older single pane windows and east or west-facing windows. Treatments such as high-reflectivity films or covering windows with shades or shutters can reduce solar heat gain and, consequently, cooling load and can reduce internal heat loss and the associated heating load.

Perform Proper Lighting Maintenance

In order to sustain optimal lighting levels, lighting fixtures should undergo routine maintenance. Light levels decrease over time due to lamp aging, lamp and ballast failure, and buildup of dirt and dust on lamps, fixtures and reflective surfaces. Together, these factors can reduce total illumination by 20% - 60% or more, while operating fixtures continue drawing full power. To limit this reduction, lamps, reflectors and diffusers should be thoroughly cleaned of dirt, dust, oil, and smoke film buildup approximately every 6 – 12 months.

Develop a Lighting Maintenance Schedule

In addition to routine fixture cleaning, development of a maintenance schedule can both ensure maintenance is performed regularly and can reduce the overall cost of fixture re-lamping and re-ballasting. By re-lamping and re-ballasting fixtures in groups, lighting levels are better maintained and the number of site visits by a lighting technician or contractor can be minimized, decreasing the overall cost of maintenance.

Use Fans to Reduce Cooling Load

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

Practice Proper Use of Thermostat Schedules and Temperature Resets

Ensure thermostats are correctly set back. By employing proper set back temperatures and schedules, facility heating and cooling costs can be reduced dramatically during periods of low or no occupancy. As

such, thermostats should be programmed for a setback of 5-10°F during low occupancy hours (reduce heating setpoints and increase cooling setpoints). Cooling load can be reduced further by increasing the facility's occupied setpoint temperature. In general, during the cooling season, thermostats should be set as high as possible without sacrificing occupant comfort.

Clean and/or Replace HVAC Filters

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

Perform Proper Boiler Maintenance

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

Water Conservation

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

6 On-site Generation Measures

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

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

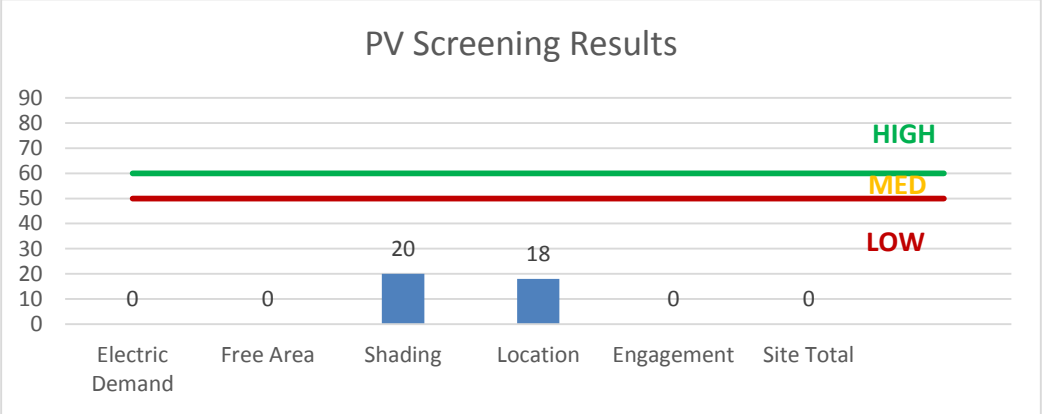
Preliminary screenings were performed to determine the potential that a generation project could provide a cost-effective solution for your facility. Before making a decision to implement, a feasibility study should be conducted that would take a detailed look at existing energy profiles, siting, interconnection,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

6.1 Photovoltaic

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

A preliminary screening based on the facility's electric demand, size and location of free area, and shading elements shows that the facility has a low potential for installing a solar PV array. However, a more comprehensive analysis is necessary to verify the site's solar potential.

Figure 21 - Photovoltaic Screening



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

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

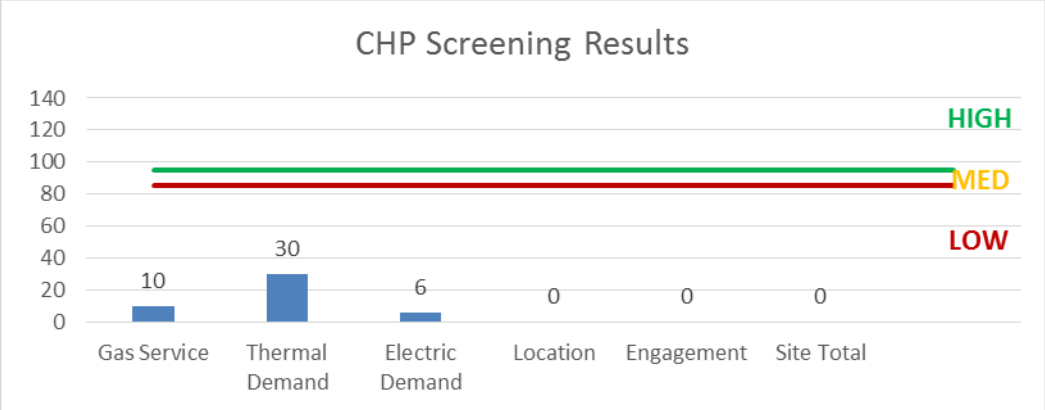
6.2 Combined Heat and Power

Combined heat and power (CHP) is the on-site generation of electricity and recovery of heat which is put to beneficial use. Common prime movers in CHP applications include reciprocating engines, microturbines, fuel cells, and (at large facilities) gas turbines. Electricity is typically interconnected to the sites local distribution system. Heat is recovered from the exhaust stream and the ancillary cooling system and interconnected to the existing hot water (or steam) distribution system.

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

A preliminary screening based on heating and electrical demand, siting, and interconnection shows that the facility has a low potential for installing a cost-effective CHP system, due to insufficient thermal demand.

Figure 22 – CHP Screening



7 DEMAND RESPONSE

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

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

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

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

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

The first step toward participation in a DR program is to contact a Curtailment Service Provider. Curtailment Service Providers typically offer free assessments to determine a facility's eligibility to participate in a DR program. They will provide details regarding the program rules and requirements for metering and controls, a facility's ability to temporarily reduce electric load, as well as the payments involved in participating in the program. Also, these providers usually offer multiple options for DR to larger facilities and may also install controls or remote monitoring equipment to help ensure compliance of all terms and conditions of a DR contract.

The East District Police Precinct does not appear to have sufficient electric load to be able to participate in a DR program.

8 PROJECT FUNDING / INCENTIVES

The NJCEP is able to provide the incentive programs described below, and others, because of the Societal Benefits Charge (SBC) Fund. The SBC was created by the State of New Jersey's Electricity Restructuring Law (1999), which requires all customers of investor-owned electric and gas utilities to pay this charge on their monthly energy bills. As a contributor to the fund you were able to participate in the LGEA program and are also eligible to utilize the equipment incentive programs. Also available through the NJBPU are some alternative financing programs described later in this section. Please refer to Figure 23 for a list of the eligible programs identified for each recommended ECM.

Figure 23 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	Direct Install
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	x	x
ECM 2	Retrofit Fixtures with LED Lamps	x	x
ECM 3	Install Occupancy Sensor Lighting Controls	x	x
ECM 4	Install High Efficiency Electric AC	x	x
ECM 5	Install High Efficiency Hot Water Boilers	x	x
ECM 6	Install Low-Flow Domestic Hot Water Devices		x

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

Generally, the incentive values provided throughout the report assume the SmartStart program is utilized because it provides a consistent comparison of available incentives.

Brief descriptions of all relevant alternative financing and incentive programs are located in the sections below or: www.njcleanenergy.com/ci.

8.1 SmartStart

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

Equipment with Prescriptive Incentives Currently Available:

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

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

Incentives

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

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

How to Participate

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

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

8.2 Direct Install

Overview

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

Incentives

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

How to Participate

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

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

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

8.3 Energy Savings Improvement Program

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

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

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

After adopting a resolution with a chosen implementation approach, the development of the Energy Savings Plan (ESP) can begin. The ESP demonstrates that the total project costs of the ECMs are offset by

the energy savings over the financing term, not to exceed 15 years. The verified savings will then be used to pay for the financing.

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

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

9 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

9.1 Retail Electric Supply Options

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

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

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

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

9.2 Retail Natural Gas Supply Options

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

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

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

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

Appendix A: Equipment Inventory & Recommendations

Lighting Inventory & Recommendations

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Basement	3	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	52	Fixture Replacement	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	52	0.14	10	0.0	$1.28	$250.29	$0.00	194.87
Basement	3	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	46	52	Fixture Replacement	No	3	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	52	0.08	6	0.0	$0.69	$187.56	$0.00	273.52
Basement	1	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	158	52	Fixture Replacement	No	2	LED - Linear Tubes: (4) 2' Lamps	Wall Switch	34	52	0.07	5	0.0	$0.65	$276.52	$0.00	423.42
Basement	2	Linear Fluorescent - T12: 8' T12 (75W) - 1L	Wall Switch	92	52	Fixture Replacement	No	4	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	52	0.10	7	0.0	$0.91	$333.72	$0.00	365.00
Basement	1	Incandescent: Wall mount fixture	Wall Switch	60	52	Relamp	No	1	LED Screw-In Lamps: Wall mount fixtures	Wall Switch	8	52	0.04	3	0.0	$0.38	$53.75	$0.00	142.46
Bathroom	1	Linear Fluorescent - T12: 2' T12 (20W) - 1L	Wall Switch	25	52	Fixture Replacement	No	1	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	52	0.01	1	0.0	$0.12	$77.53	$0.00	647.54
First Floor Reception	5	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	158	8,500	Fixture Replacement	No	10	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	8,500	0.41	4,803	0.0	$593.07	$834.30	$0.00	1.41
First Floor Reception	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	8,500	Fixture Replacement	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	8,500	0.05	567	0.0	$69.98	$83.43	$0.00	1.19
First Floor Reception	2	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	158	8,500	Fixture Replacement	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	8,500	0.16	1,921	0.0	$237.23	$333.72	$0.00	1.41
Hallway light	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	8,500	Fixture Replacement	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	8,500	0.10	1,133	0.0	$139.96	$166.86	$0.00	1.19
Office corps	4	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	8,500	Fixture Replacement	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	8,500	0.24	2,824	0.0	$348.72	$166.86	$0.00	0.48
Captain's office	4	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	8,500	Fixture Replacement	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	5,950	0.22	2,601	0.0	$321.20	$449.72	$20.00	1.34
Bathroom	1	U-Bend Fluorescent - T12: U T12 (34W) - 2L	Wall Switch	72	728	Fixture Replacement	Yes	1	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	510	0.05	49	0.0	$6.11	$229.46	$20.00	34.31
Bathroom	1	U-Bend Fluorescent - T12: U T12 (34W) - 1L	Wall Switch	43	728	Fixture Replacement	No	1	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	728	0.03	28	0.0	$3.50	$77.53	$0.00	22.12
Closet	1	Incandescent: Wall mount fixture	Wall Switch	40	52	Relamp	No	1	LED Screw-In Lamps: Wall mount fixtures	Wall Switch	4	52	0.03	2	0.0	$0.26	$53.75	$0.00	205.77
Cell Room	2	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	158	2,912	Fixture Replacement	Yes	4	LED - Linear Tubes: (4) 2' Lamps	Occupancy Sensor	34	2,038	0.18	727	0.0	$89.72	$669.04	$20.00	7.23
Office	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	4,368	Fixture Replacement	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.05	291	0.0	$35.96	$83.43	$0.00	2.32
Garage	6	Linear Fluorescent - T12: 2' T12 (20W) - 1L	Wall Switch	25	8,736	Fixture Replacement	No	6	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	8,736	0.08	977	0.0	$120.69	$465.18	$0.00	3.85
Garage	6	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	8,736	Fixture Replacement	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	8,736	0.29	3,495	0.0	$431.55	$500.58	$0.00	1.16
Detective's office	2	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	158	4,368	Fixture Replacement	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.19	1,159	0.0	$143.12	$449.72	$20.00	3.00
Detective's office	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	4,368	Fixture Replacement	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.05	291	0.0	$35.96	$83.43	$0.00	2.32
Pantry	1	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	4,368	Fixture Replacement	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	4,368	0.10	582	0.0	$71.92	$138.26	$0.00	1.92
Detective's office	2	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	4,368	Fixture Replacement	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	4,368	0.19	1,165	0.0	$143.85	$276.52	$0.00	1.92
Locker Room	3	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	4,368	Fixture Replacement	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,058	0.17	1,002	0.0	$123.80	$366.29	$20.00	2.80
Bathroom	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	728	Fixture Replacement	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	728	0.05	49	0.0	$5.99	$83.43	$0.00	13.92

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
2nd Floor - Detective's office	4	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	4,368	Fixture Replacement	Yes	4	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	3,058	0.44	2,673	0.0	$330.12	$669.04	$20.00	1.97
2nd Floor - Detective's office	4	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	158	4,368	Fixture Replacement	Yes	8	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	3,058	0.25	1,516	0.0	$187.25	$1,222.08	$20.00	6.42
2nd Floor - Detective's office	3	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	4,368	Fixture Replacement	No	3	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	4,368	0.29	1,747	0.0	$215.77	$414.78	$0.00	1.92
Bathroom	1	Incandescent: Wall mount fixture	Wall Switch	60	728	Relamp	No	1	LED Screw-In Lamps: Wall mount fixtures	Wall Switch	8	728	0.04	43	0.0	$5.28	$53.75	$0.00	10.18
Hallway	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	8,736	Fixture Replacement	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	8,736	0.05	582	0.0	$71.92	$83.43	$0.00	1.16
Hallway	1	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	158	8,736	Fixture Replacement	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	8,736	0.08	987	0.0	$121.91	$166.86	$0.00	1.37
Detective Precinct	2	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	158	4,368	Fixture Replacement	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.16	987	0.0	$121.91	$333.72	$0.00	2.74
Men's Room	1	Linear Fluorescent - T12: 2' T12 (20W) - 2L	Wall Switch	50	728	Fixture Replacement	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	728	0.02	17	0.0	$2.13	$83.43	$0.00	39.11
Women's Room	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	728	Fixture Replacement	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	728	0.10	97	0.0	$11.99	$166.86	$0.00	13.92
ABC - Major keys	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	4,368	Fixture Replacement	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.10	582	0.0	$71.92	$166.86	$0.00	2.32
ABC - Major keys	4	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	4,368	Fixture Replacement	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.19	1,165	0.0	$143.85	$333.72	$0.00	2.32
ABC - Major keys	2	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	158	4,368	Fixture Replacement	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.16	987	0.0	$121.91	$333.72	$0.00	2.74
Major Case Room	3	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	158	4,368	Fixture Replacement	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.24	1,481	0.0	$182.86	$500.58	$0.00	2.74
Bathroom	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	728	Fixture Replacement	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	728	0.05	49	0.0	$5.99	$83.43	$0.00	13.92
Supply Closet	1	Incandescent: Wall mount fixture	Wall Switch	60	52	Relamp	No	1	LED Screw-In Lamps: Wall mount fixtures	Wall Switch	8	52	0.04	3	0.0	$0.38	$53.75	$0.00	142.46
3rd Floor - Hallway	2	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	8,736	Fixture Replacement	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	8,736	0.19	2,330	0.0	$287.70	$276.52	$0.00	0.96
3rd Floor Narcotics Room	7	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	4,368	Fixture Replacement	No	7	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	4,368	0.67	4,077	0.0	$503.47	$967.82	$0.00	1.92
Bathroom	1	Incandescent: Wall mount fixture	Wall Switch	60	728	Relamp	No	1	LED Screw-In Lamps: Wall mount fixtures	Wall Switch	8	728	0.04	43	0.0	$5.28	$43.95	$0.00	8.32
Bathroom	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	728	Fixture Replacement	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	728	0.05	49	0.0	$5.99	$83.43	$0.00	13.92
Clerk's office	1	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	4,368	Fixture Replacement	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	4,368	0.10	582	0.0	$71.92	$138.26	$0.00	1.92
Office	2	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	4,368	Fixture Replacement	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	4,368	0.19	1,165	0.0	$143.85	$276.52	$0.00	1.92
Locker Room	4	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	4,368	Fixture Replacement	No	4	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	4,368	0.38	2,330	0.0	$287.70	$553.04	$0.00	1.92
Prison	2	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	2,912	Fixture Replacement	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,038	0.22	891	0.0	$110.04	$392.52	$20.00	3.39
Hallway	1	Linear Fluorescent - T12: 2' T12 (20W) - 1L	Wall Switch	32	4,368	Fixture Replacement	No	1	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	4,368	0.02	116	0.0	$14.32	$77.53	$0.00	5.41
Office	2	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	4,368	Fixture Replacement	No	2	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	4,368	0.19	1,165	0.0	$143.85	$276.52	$0.00	1.92

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Polygraph	2	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	158	728	Fixture Replacement	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	728	0.16	165	0.0	$20.32	$333.72	$0.00	16.43
Office - Street Crimes	2	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	158	4,368	Fixture Replacement	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.16	987	0.0	$121.91	$333.72	$0.00	2.74
Bathroom	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	728	Fixture Replacement	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	728	0.05	49	0.0	$5.99	$83.43	$0.00	13.92
Office - Street Crimes	1	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	4,368	Fixture Replacement	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	4,368	0.10	582	0.0	$71.92	$138.26	$0.00	1.92
Entrance Wall	2	CFL Screw-In Lamps: Wall mount fixture	Wall Switch	80	4,368	Relamp	No	2	LED Screw-In Lamps: Wall mount fixtures	Wall Switch	4	4,368	0.12	750	0.0	$92.65	$215.01	$0.00	2.32
Entrance Ceiling	1	Incandescent: Wall mount fixture	Wall Switch	40	4,368	Relamp	No	1	LED Screw-In Lamps: Wall mount fixtures	Wall Switch	4	4,368	0.03	178	0.0	$21.94	$53.75	$0.00	2.45

Motor Inventory & Recommendations

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Basement	Police Precinct	1	Condenser Water Pump	0.3	73.4%	No	2,745	No	73.4%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Garage	Police Precinct	1	Exhaust Fan	0.3	73.4%	No	2,745	No	73.4%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric HVAC Inventory & Recommendations

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Install Dual Enthalpy Economizer?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Basment	Rooms of the precinct	1	Window AC	1.50		Yes	1	Window AC	1.50		12.00		No	0.14	279	0.0	$34.40	$1,633.14	$0.00	47.47
First Floor Reception	Rooms of the precinct	2	Window AC	1.50		Yes	1	Window AC	1.50		12.00		No	1.29	2,507	0.0	$309.61	$1,633.14	$0.00	5.27
Cell Room	Rooms of the precinct	1	Window AC	1.50		Yes	1	Window AC	1.50		12.00		No	0.14	279	0.0	$34.40	$1,633.14	$0.00	47.47
Detective's office	Rooms of the precinct	1	Window AC	1.50		Yes	1	Window AC	1.50		12.00		No	0.14	279	0.0	$34.40	$1,633.14	$0.00	47.47
Detective's office	Rooms of the precinct	1	Window AC	1.50		Yes	1	Window AC	1.50		12.00		No	0.14	279	0.0	$34.40	$1,633.14	$0.00	47.47
2nd Floor Detectives office	Rooms of the precinct	4	Window AC	1.50		Yes	1	Window AC	1.50		12.00		No	3.59	6,964	0.0	$860.03	$1,633.14	$0.00	1.90
Narcotics Room	Rooms of the precinct	2	Window AC	1.50		Yes	1	Window AC	1.50		12.00		No	1.29	2,507	0.0	$309.61	$1,633.14	$0.00	5.27
Narcotics Room - Cleark's Office	Rooms of the precinct	1	Window AC	1.50		Yes	1	Window AC	1.50		12.00		No	0.14	279	0.0	$34.40	$1,633.14	$0.00	47.47
Locker Room	Rooms of the precinct	1	Window AC	1.50		Yes	1	Window AC	1.50		12.00		No	0.14	279	0.0	$34.40	$1,633.14	$0.00	47.47
Office	Rooms of the precinct	1	Window AC	1.50		Yes	1	Window AC	1.50		12.00		No	0.14	279	0.0	$34.40	$1,633.14	$0.00	47.47
Polygraph Room	Rooms of the precinct	2	Window AC	1.50		Yes	1	Window AC	1.50		12.00		No	1.29	2,507	0.0	$309.61	$1,633.14	$0.00	5.27
office - Street Crimes	Rooms of the precinct	1	Window AC	1.50		Yes	1	Window AC	1.50		12.00		No	0.14	279	0.0	$34.40	$1,633.14	$0.00	47.47

Fuel Heating Inventory & Recommendations

		Existing Conditions			Proposed Conditions					Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Basement Boiler Room	Police Precinct	1	Non-Condensing Hot Water Boiler	1,194.00	Yes	1	Condensing Hot Water Boiler	1,200.00	91.00%	Et	0.00	0	63.6	$600.36	$28,804.11	$2,640.00	43.58
Garage	Hallway and garage	1	Warm Air Unit Heater	100.00	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

DHW Inventory & Recommendations

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

Low-Flow Device Recommendations

	Recommedation Inputs				Energy Impact & Financial Analysis						
Location	Device Quantity	Device Type	Existing Flow Rate (gpm)	Proposed Flow Rate (gpm)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Basement Bathroom	1	Faucet Aerator (Lavatory)	2.20	1.00	0.00	0	1.7	$16.10	$7.17	$0.00	0.45
Captain's office	1	Faucet Aerator (Lavatory)	2.20	1.00	0.00	0	1.7	$16.10	$7.17	$0.00	0.45
Bathroom	1	Faucet Aerator (Lavatory)	3.00	1.00	0.00	0	2.8	$26.84	$7.17	$0.00	0.27
2nd Floor - Detective's room - Bathroom	1	Faucet Aerator (Lavatory)	3.00	1.00	0.00	0	2.8	$26.84	$7.17	$0.00	0.27
Men's Room 2nd floor	1	Faucet Aerator (Lavatory)	3.00	1.00	0.00	0	2.8	$26.84	$7.17	$0.00	0.27
Women's Room 2nd floor	2	Faucet Aerator (Lavatory)	3.00	1.00	0.00	0	5.7	$53.68	$14.34	$0.00	0.27
Major Case Room - Bathroom	1	Faucet Aerator (Lavatory)	3.00	1.00	0.00	0	2.8	$26.84	$7.17	$0.00	0.27
3rd Floor Narcotics Room - Bathroom	1	Faucet Aerator (Lavatory)	3.00	1.00	0.00	0	2.8	$26.84	$7.17	$0.00	0.27
Office of street crimes	1	Faucet Aerator (Lavatory)	3.00	1.00	0.00	0	2.8	$26.84	$7.17	$0.00	0.27

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Precinct	52	Computer	75.0	No
Precinct	1	Computer	75.0	Yes
Precinct	12	Printer - Small	20.0	No
Precinct	6	Printer - Big	515.0	No
Precinct	7	Paper Shredder	360.0	No
Precinct	8	Microwave	1,000.0	No
Precinct	2	Refrigerator - Small	27.6	No
Precinct	9	Refrigerator - Big	60.0	No
Precinct	6	Coffee Machine	400.0	No
Precinct	2	Toaster Oven	2.0	No
Precinct	5	Ceiling fan	100.0	No
Precinct	9	Television LCD	120.0	No
Precinct	1	Television CRT	120.0	No
Precinct	1	Water dispenser	500.0	No
Precinct	1	Tape recorder	75.0	No
Precinct	1	Standing fan	120.0	No
Precinct	1	Air Cooler	500.0	No

Appendix B: ENERGY STAR® Statement of Energy Performance

ENERGY STAR® Statement of Energy Performance

LEARN MORE AT energystar.gov

N/A

ENERGY STAR® Score[1]

East District Police Precinct

Primary Property Type: Police Station
Gross Floor Area (ft²): 15,500
Built: 1900

For Year Ending: October 31, 2015
Date Generated: December 01, 2016

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
East District Police Precinct 207 7th St Jersey City, New Jersey 07302	_____ , (___)___-_____	___ _____ , (___)___-_____ _____

Property ID: 5082939

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
94.1 kBtu/ft²

Source EUI
173.6 kBtu/ft²

Annual Energy by Fuel	
Natural Gas (kBtu)	905,018 (62%)
Electric - Grid (kBtu)	554,191 (38%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	83.7
National Median Source EUI (kBtu/ft²)	154.4
% Diff from National Median Source EUI	12%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	112

Signature & Stamp of Verifying Professional

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

Signature: _____ Date: _____

Licensed Professional

___ _____
,
(___)___-_____
_____

Professional Engineer Stamp (if applicable)