Local Government Energy Audit Report

General Office Building, GOB

August 2, 2019

Prepared for:

NJ Transit

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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 Energy Services (TRC) reviewed the energy conservation measures and estimates of energy savings were reviewed 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. We encourage the owner of the facility is encouraged 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.

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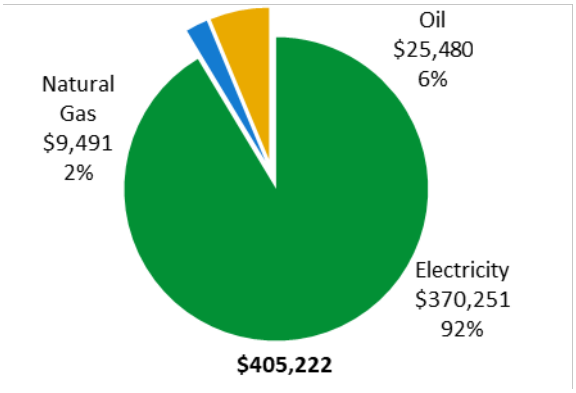
1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for the General Office Building (GOB). 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 Energy Services (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 help protect our environment by reducing statewide energy consumption.

BUILDING PERFORMANCE REPORT

Annual Utilities	Costs: $405,222 Electricity: 3,754,438 kWh Natural Gas: 10,341 Therms No. 2 Fuel Oil: 12,208 Gallons	
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.

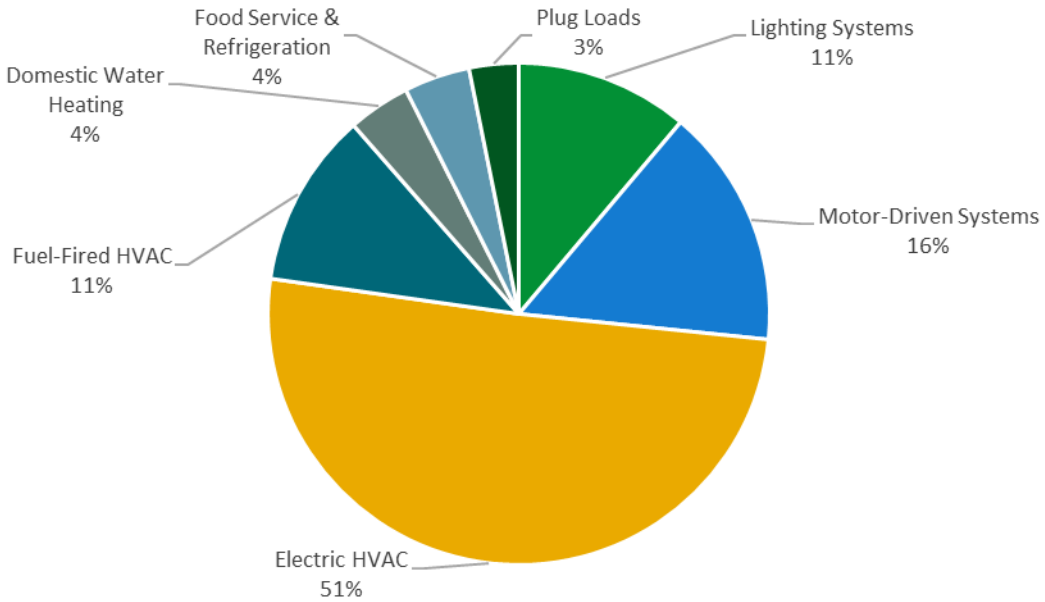


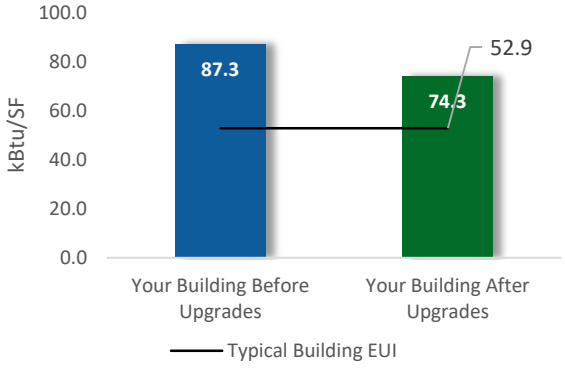
Figure 1 - Energy Use by System

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.

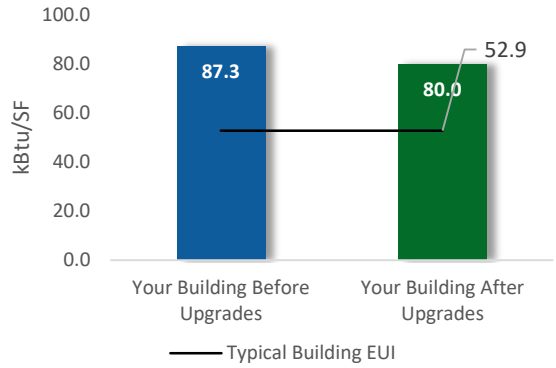
Scenario 1: Full Package (all evaluated measures)

Installation Cost	$639,006
Potential Rebates & Incentives[1]	$46,743
Annual Cost Savings	$64,854
Annual Energy Savings	Electricity: 636,508 kWh No. 2 Fuel Oil: 998 Gallons
Greenhouse Gas Emission Savings	332 Tons
Simple Payback	9.1 Years
Site Energy Savings (all utilities)	15%



Scenario 2: Cost Effective Package[2]

Installation Cost	$167,849
Potential Rebates & Incentives	$30,807
Annual Cost Savings	$37,586
Annual Energy Savings	Electricity: 399,784 kWh
Greenhouse Gas Emission Savings	200 Tons
Simple Payback	3.6 Years
Site Energy Savings (all utilities)	8%



On-site Generation Potential

Photovoltaic	High
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	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		**270,918**	**52.7**	**-107**	**$25,107**	**$96,511**	**$18,697**	**$77,814**	**3.1**	**255,316**
	Install LED Fixtures	18,498	3.1	-1	$1,803	$29,829	$2,800	$27,029	15.0	18,400
ECM 1	Retrofit Fixtures with LED Lamps	252,420	49.7	-106	$23,303	$66,682	$15,897	$50,785	2.2	236,916
Lighting Control Measures		**39,672**	**7.8**	**-17**	**$3,662**	**$42,738**	**$6,385**	**$36,353**	**9.9**	**37,235**
ECM 2	Install Occupancy Sensor Lighting Controls	34,698	6.8	-15	$3,203	$39,088	$4,235	$34,853	10.9	32,567
ECM 3	Install Daylight Dimming Controls	2,811	0.6	-1	$259	$2,250	$1,950	$300	1.2	2,638
ECM 4	Install High/Low Lighting Controls	2,163	0.4	-1	$200	$1,400	$200	$1,200	6.0	2,030
Motor Upgrades		**4,227**	**1.0**	**0**	**$417**	**$17,844**	**$0**	**$17,844**	**42.8**	**4,256**
	Premium Efficiency Motors	4,227	1.0	0	$417	$17,844	$0	$17,844	42.8	4,256
Variable Frequency Drive (VFD) Measures		**102,563**	**26.9**	**0**	**$10,114**	**$55,473**	**$8,360**	**$47,113**	**4.7**	**103,280**
ECM 5	Install VFDs on Constant Volume (CV) Fans	84,063	23.7	0	$8,290	$39,631	$6,560	$33,071	4.0	84,651
ECM 6	Install VFDs on Heating Water Pumps	13,234	1.4	0	$1,305	$9,828	$0	$9,828	7.5	13,327
ECM 7	Install VFDs on Kitchen Hood Fan Motors	5,266	1.8	0	$519	$6,015	$1,800	$4,215	8.1	5,303
Electric Unitary HVAC Measures		**213,998**	**42.4**	**0**	**$21,104**	**$330,326**	**$6,173**	**$324,153**	**15.4**	**215,495**
	Install High Efficiency Air Conditioning Units	213,998	42.4	0	$21,104	$330,326	$6,173	$324,153	15.4	215,495
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**262**	**$3,944**	**$93,158**	**$6,963**	**$86,195**	**21.9**	**42,853**
	Install High Efficiency Hot Water Boilers	0	0.0	262	$3,944	$93,158	$6,963	$86,195	21.9	42,853
Food Service & Refrigeration Measures		**5,129**	**0.4**	**0**	**$506**	**$2,956**	**$165**	**$2,791**	**5.5**	**5,165**
ECM 8	Refrigerator/Freezer Case Electrically Commutated Motors	264	0.0	0	$26	$303	$40	$263	10.1	265
ECM 9	Refrigeration Controls	1,642	0.0	0	$162	$2,193	$125	$2,068	12.8	1,654
ECM 10	Vending Machine Control	3,224	0.4	0	$318	$460	$0	$460	1.4	3,246
TOTALS		**636,508**	**131.3**	**138**	**$64,854**	**$639,006**	**$46,743**	**$592,263**	**9.1**	**663,600**

* - 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

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	Pay For Performance
ECM 1	Retrofit Fixtures with LED Lamps	x	x
ECM 2	Install Occupancy Sensor Lighting Controls	x	x
ECM 3	Install Daylight Dimming Controls	x	x
ECM 4	Install High/Low Lighting Controls		x
ECM 5	Install VFDs on Constant Volume (CV) HVAC		x
ECM 6	Install VFDs on Hot Water Pumps		x
ECM 7	Install VFDs on Single-Speed Kitchen Hoods	x	x
ECM 8	Refrigerator/Freezer Case Electrically Commutated Motors	x	x
ECM 9	Refrigeration Controls		x
ECM 10	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 their 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 Government Office Building (GOB). 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 January 29, 2019, TRC performed an energy audit at the GOB located in Jersey City, New Jersey. TRC met with Jeff Baker to review the facility operations and help focus our investigation on specific energy-using systems.

The GOB is a two-story, 178,000 square foot office building built in 1959. Spaces include private offices, storage spaces, training centers, conference rooms, closets, courtyard, stairwells, kitchen, hallways, bus control center, and a mechanical space.

2.2 Building Occupancy

The facility has various parts of the building that are operational for various hours of the week and are mentioned in the table below. Typical occupancy is 108-full time staff in the building.

Building Name	Weekday/Weekend	Operating Schedule
General office building	Weekday	8:00 AM - 5:00 PM
	Weekend	8:00 AM - 5:00 PM
Bus Control Center	Weekday	12:00 AM - 12:00 PM
	Weekend	12:00 AM - 12:00 PM

Figure 4 - Building Occupancy Schedule

2.3 Building Envelope

Building walls are concrete block over structural steel with a concrete and brick facade. The roof is flat and covered with asphalt layering and observed to be in good condition.

All windows are double paned and installed with low-e reflective film. Aluminum framed glass doors are also double paned. Windows and doors did appear to be in good condition. No excess outdoor air infiltration was observed.

Door and window exterior

Flat roof with asphalt layering

2.4 Lighting Systems

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

Fixture types include 2-lamp 3-lamp, or 4-lamp, 2-foot or 4-foot long troffer fixtures and 2-foot fixtures with U-bend linear tube lamps. Most fixtures are in good condition.

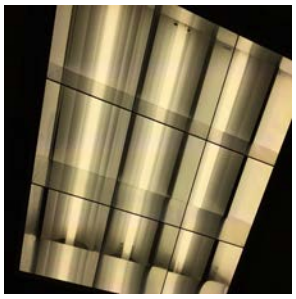
High bay fixtures with 150-Watt metal halide lamps and 100-Watt high pressure sodium lamps are installed in the boiler rooms. Smaller spaces are lit using 23-Watt CFLs and 10-Watt LED screw-in lamps. The lighting in the spaces are controlled using wall switches and occupancy sensors.

Exterior lighting in the facility includes 50-Watt wall mount LED fixtures, 150-watt and 250-Watt high pressure sodium lamps. All exterior lights are scheduled using timeclocks.

Interior lighting levels were generally sufficient.

4-foot T8 Fixtures

LED Screw-in Lamps



2-foot T8 Fixtures

Recessed CFL

2.5 Air Handling Systems

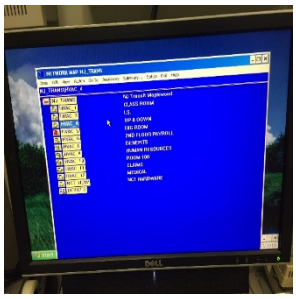
Packaged Units and Air Conditioners

Larger spaces such as the MPR, IS department, TIC Admin, Payroll and Benefit offices are cooled using constant air volume packaged rooftop units (McQuay and Trane) that have capacities ranging from 15-tons to 40 tons. The units are all controlled using a BMS having EER values between 9 and 12.

In addition, there are newer AAON units that were installed more recently and served by the air-cooled Trane chiller.

There is a data center on site that is cooled using the five CRAC units from Liebert with a cooling capacity of 28-tons each with an EER of 11. These units were installed in 2011 and are in good condition.

Smaller spaces such as the main telecommunication room, medical administration, etc. are cooled using smaller split units and the capacities range from 2.5-tons to 5-tons. All units are controlled by the central energy management system.



BMS System

AAON Packaged Units

Split Units

CRAC Units for the Data Center

2.6 Heating Systems

There are two No.2 fuel oil-fired Burnham hot water boilers serving the building's heating load. The output capacities of the boilers are 2,678 MBh with an assumed heating efficiency of 72% based on the age of the equipment. The boilers are controlled using the BMS based off the outside air temperature. The heating setpoint in the building is 70°F.

The boilers serve a primary distribution system with three constant speed 5 hp heating hot water pumps operating in lead/lag fashion. One of these pumps is old and has been evaluated for replacement.

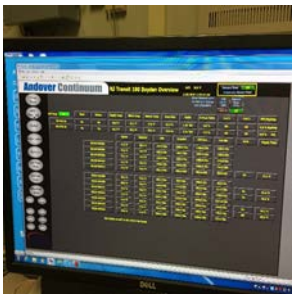
Hot water is also supplied to the air handling units consisting of hot water and chilled water coils. All units are variable air volume units. The AAON units have VFDs on the supply fans, whereas all other AHUs have constant speed fans.

Hot water is supplied at 180°F when the outside air temperature is low and the setpoint is adjusted linearly to 130°F when the outside air is above 70°F. The system is locked out at an outside temperature of 60°F.

Boilers

Heating Hot Water Pumps

Air Handler



BMS Control

2.7 Chilled Water Systems

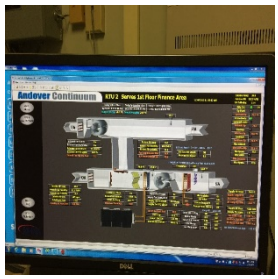
The facility has one variable speed, 125-ton Trane chiller supplying chilled water to the various AHUs located in the building. The Trane chiller was installed in the year 2005 and still has a few years of useful life remaining. The chiller is controlled by the Andover EMS and provides chilled water at 44°F. The chiller is capable of resetting the chilled water supply temperature based on the outdoor weather conditions.

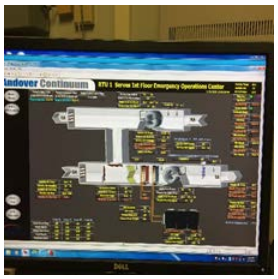
The space cooling setpoint in the facility is 76°F.

Trane 125-ton chiller

2.8 Building Energy Management Systems (EMS)

An Andover Continuum EMS controls the HVAC equipment, the boiler(s), the chiller(s), the air handlers and the package units. The EMS provides equipment scheduling control and monitors and controls space temperatures, supply air temperatures, heating water loop temperatures and chilled water loop temperatures.

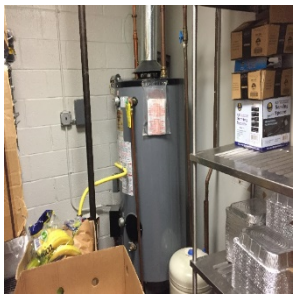




2.9 Domestic Hot Water

Hot water for the restrooms and kitchen is produced using three hot water. Two water heaters are gas-fired and one is electric. The gas-fired water heaters have input capacities of 199 MBh and 299 MBh (Rheem and Mighty Therm, respectively), and tank capacities of 76 gallons and 235 gallons. These units have 80% and 85% efficiencies, respectively.

The electric water heater has an input capacity of 9 kw and a tank capacity of 30 gallons. All water heaters are in good condition and well maintained.



Rheem DHW

Main DHW

2.10 Food Service and Refrigeration Equipment

The kitchen has mixed gas and electric equipment that is used to prepare meals for staff. Most cooking is done using a conventional gas-fired stove and oven. Equipment is not high efficiency and is in fair condition.

The dishwasher is a non-ENERGY STAR® high temperature, electric booster, door type unit.

The kitchen has several stand-up refrigerators and freezers with either solid or glass doors. All equipment is high efficiency and in good condition.

The walk-in refrigerator has an estimated 0.5 ton-compressor located in the kitchen with a one-fan evaporator.

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

Gas stove

Convection Oven

Glass Door Refrigerator

Walk-in Refrigerator

2.11 Plug Load & Vending Machines

The utility bill analysis indicates that plug loads consume approximately 3.20% of total building energy use. This is lower than a typical building.

You seem to already be doing a great job managing your electrical plug loads. This report makes additional suggestions for ECMs in this area as well as Energy Efficient Best Practices.

There are 532 computer work stations throughout the facility. Plug loads throughout the building include general café and office equipment. There are classroom typical loads such as smart boards, projectors, and fans.

There are several residential-style refrigerators throughout the building. These vary in condition and efficiency.

There are two refrigerated beverage vending machines that are not equipped with occupancy-based controls.

Small Printer

Microwave Oven

Mini Refrigerator

Coffee Machine

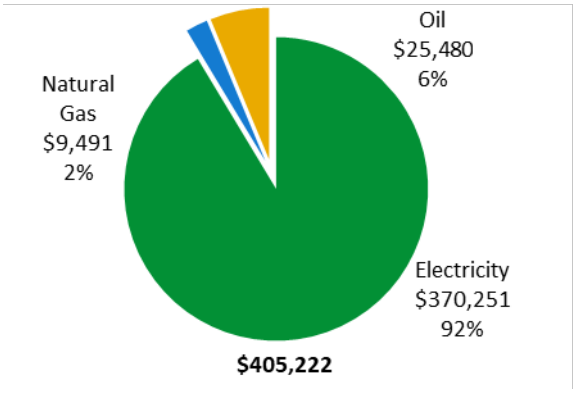
2.12 Water-Using Systems

Faucet flow rates are at 2.2 gallons per minute (gpm) or higher. Toilets are rated at 1.6 gallons per flush (gpf) and urinals are rated at 1.0 gpf.

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	3,754,438 kWh	$370,251
Natural Gas	10,341 Therms	$9,491
No. 2 Fuel Oil	12,208 Gallons	$25,480
Total		**$405,222**



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.

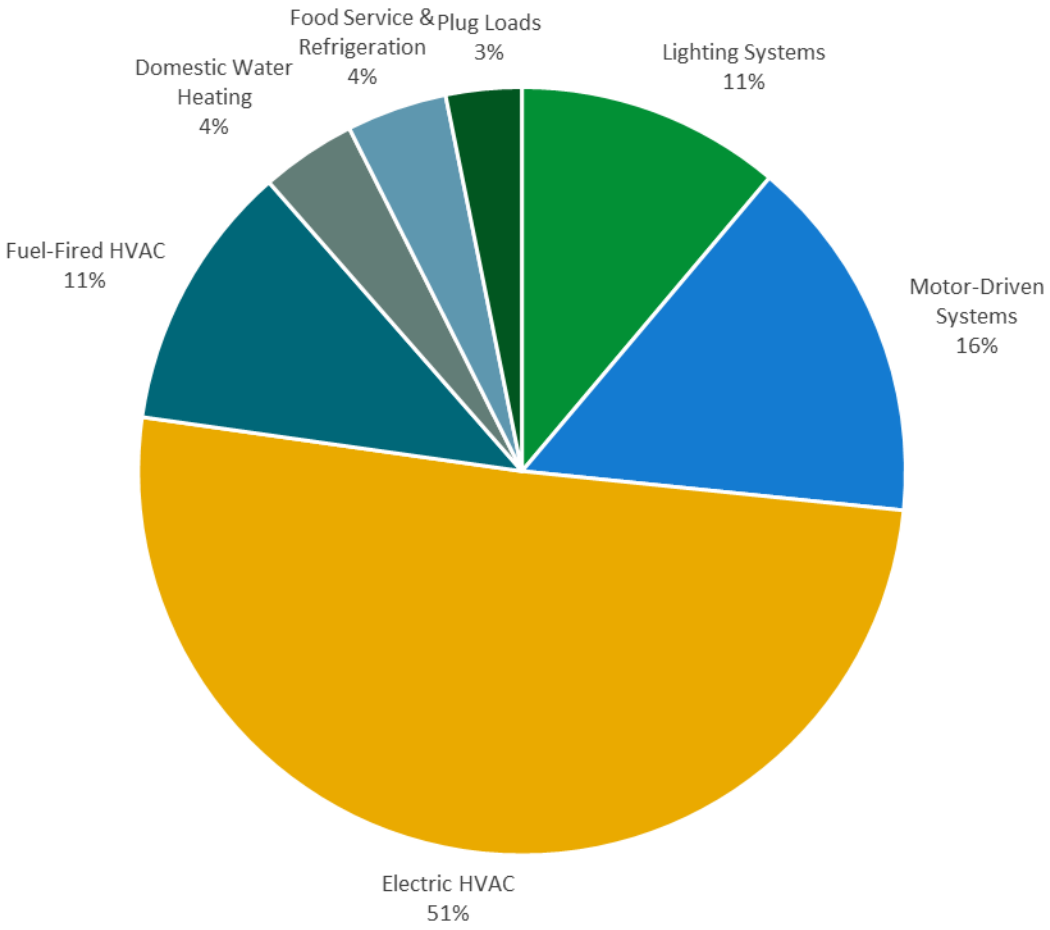
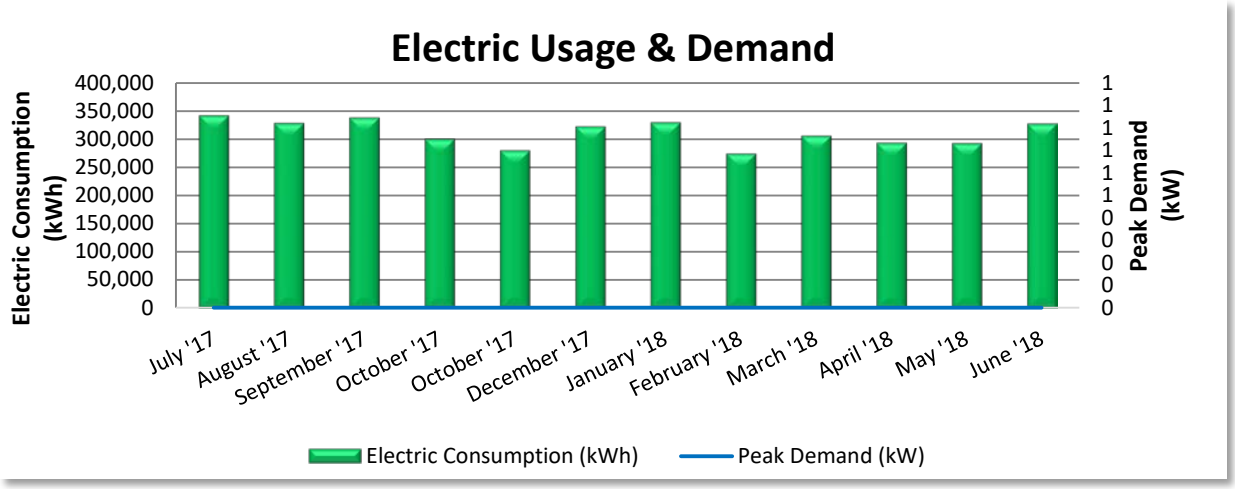


Figure 5 - Energy Balance

3.1 Electricity

PSE&G delivers electricity under rate class LPLP, with electric production provided by Constellation Energy, a third-party supplier.



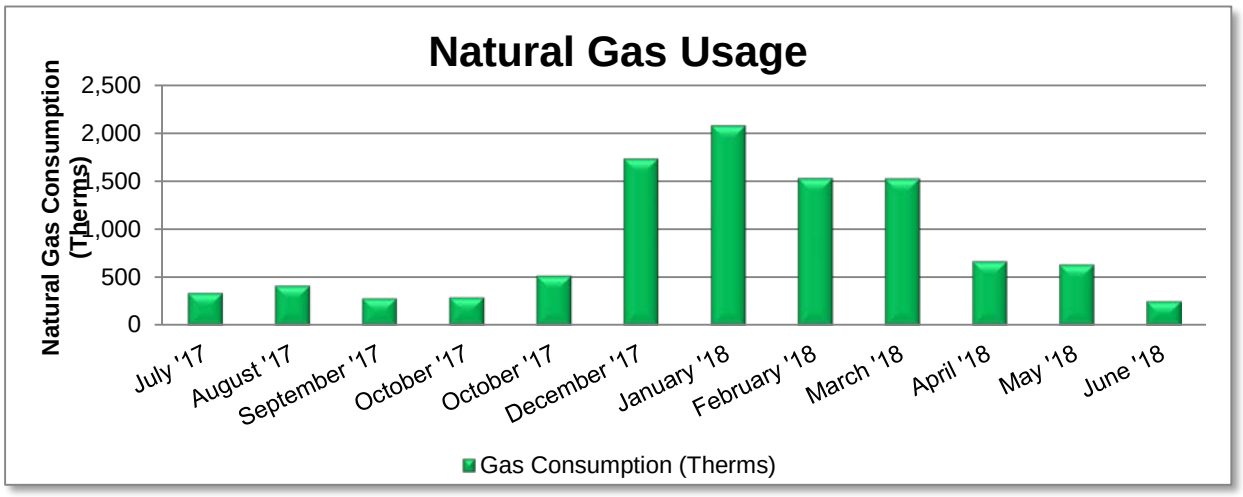
Electric Billing Data					
Period Ending	**Days in Period**	**Electric Usage (kWh)**	**Demand (kW)**	**Demand Cost**	**Total Electric Cost**
7/19/17	30	343,845			$37,834
8/17/17	29	330,473			$36,509
9/18/17	32	340,098			$37,466
10/17/17	29	302,021			$28,320
11/15/17	29	281,307			$26,109
12/18/17	33	323,822			$29,765
1/19/18	32	331,580			$31,056
2/16/18	28	275,379			$26,088
3/20/18	32	307,417			$29,322
4/19/18	30	294,781			$28,137
5/18/18	29	294,383			$28,150
6/19/18	32	329,332			$31,494
Totals	**365**	**3,754,438**	**0**	**$0**	**$370,251**
Annual	**365**	**3,754,438**	**0**	**$0**	**$370,251**

Notes:

- Peak demand of 0 kW occurred in July 2017.
- The average electric cost over the past 12 months was $0.099/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

PSE&G delivers natural gas under rate class GSG.



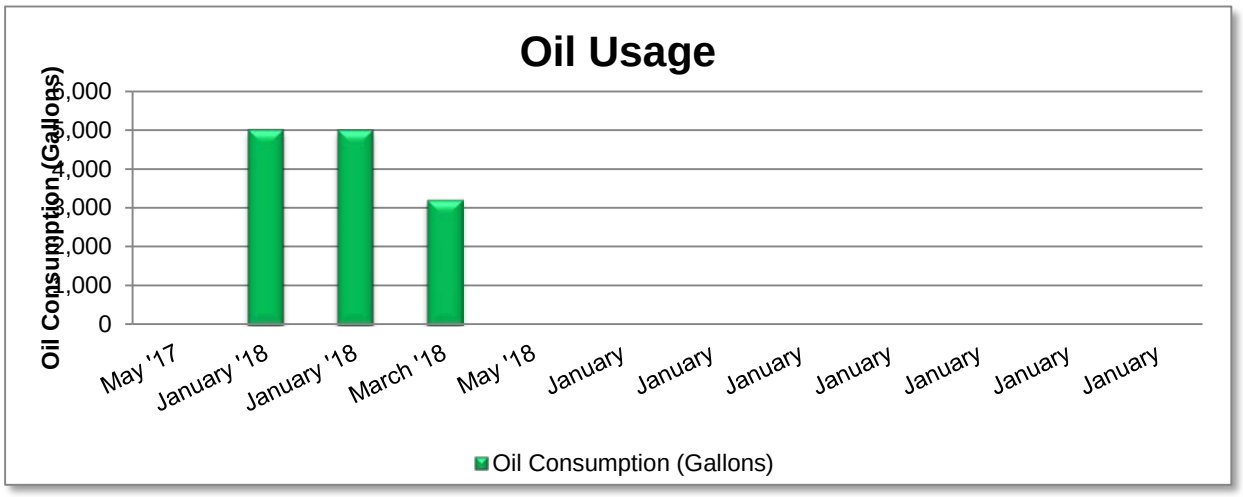
Gas Billing Data			
Period Ending	**Days in Period**	**Natural Gas Usage (Therms)**	**Natural Gas Cost**
7/20/17	30	343	$262
8/17/17	28	417	$284
9/18/17	32	286	$265
10/17/17	29	296	$273
11/15/17	29	521	$483
12/18/17	33	1,737	$1,637
1/19/18	32	2,085	$1,974
2/16/18	28	1,532	$1,462
3/20/18	32	1,529	$1,450
4/19/18	30	671	$584
5/18/18	29	640	$560
6/19/18	32	256	$231
Totals	**364**	**10,313**	**$9,465**
Annual	**365**	**10,341**	**$9,491**

Notes:

- The average gas cost for the past 12 months is $0.918/therm, which is the blended rate used throughout the analysis.

3.3 No. 2 Fuel Oil

Rachels/Michele's Oil Company delivers No. 2 Fuel Oil to the project site.



No. 2 Fuel Oil Billing Data			
Period Ending	**Days in Period**	**Oil Usage (Gallons)**	**Fuel Cost**
6/1/17	30	0	$0
1/25/18	238	5,011	$10,640
1/30/18	5	5,000	$10,828
3/27/18	56	3,201	$6,106
6/1/18	66	0	$0
Totals	**395**	**13,212**	**$27,575**
Annual	**365**	**12,208**	**$25,480**

Notes:

- The average No. 2 Fuel Oil cost for the past 12 months is $2.087/Gallon, which is the blended rate used throughout the analysis.

3.4 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 county, 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.

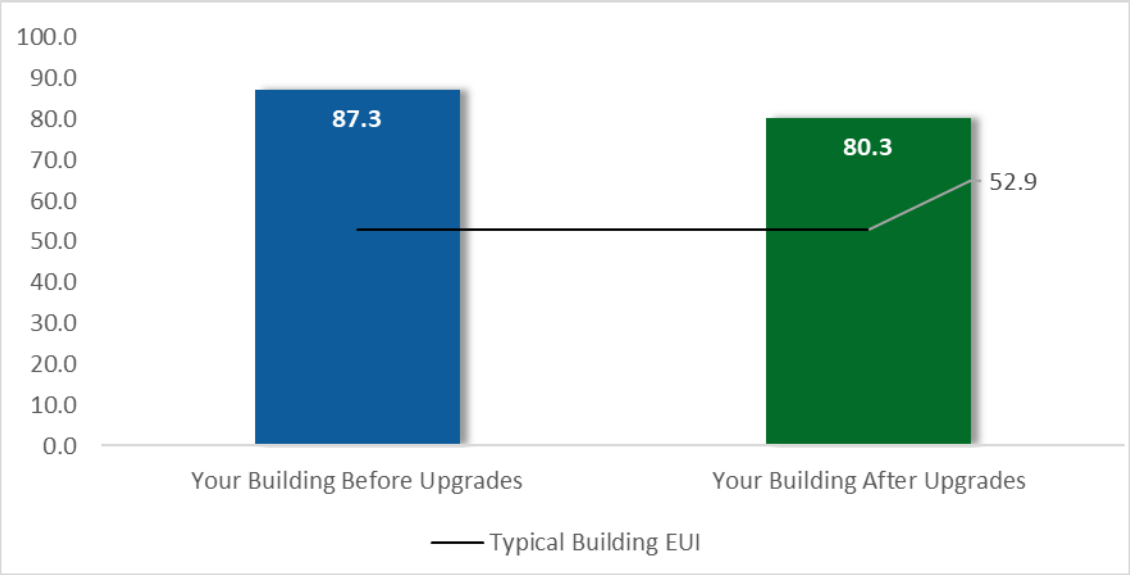


Figure 6 - Energy Use Intensity Comparison

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.

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[3].

[3] 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	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		**270,918**	**52.7**	**-107**	**$25,107**	**$96,511**	**$18,697**	**$77,814**	**3.1**	**255,316**
	Install LED Fixtures	18,498	3.1	-1	$1,803	$29,829	$2,800	$27,029	15.0	18,400
ECM 1	Retrofit Fixtures with LED Lamps	252,420	49.7	-106	$23,303	$66,682	$15,897	$50,785	2.2	236,916
Lighting Control Measures		**39,672**	**7.8**	**-17**	**$3,662**	**$42,738**	**$6,385**	**$36,353**	**9.9**	**37,235**
ECM 2	Install Occupancy Sensor Lighting Controls	34,698	6.8	-15	$3,203	$39,088	$4,235	$34,853	10.9	32,567
ECM 3	Install Daylight Dimming Controls	2,811	0.6	-1	$259	$2,250	$1,950	$300	1.2	2,638
ECM 4	Install High/Low Lighting Controls	2,163	0.4	-1	$200	$1,400	$200	$1,200	6.0	2,030
Motor Upgrades		**4,227**	**1.0**	**0**	**$417**	**$17,844**	**$0**	**$17,844**	**42.8**	**4,256**
	Premium Efficiency Motors	4,227	1.0	0	$417	$17,844	$0	$17,844	42.8	4,256
Variable Frequency Drive (VFD) Measures		**102,563**	**26.9**	**0**	**$10,114**	**$55,473**	**$8,360**	**$47,113**	**4.7**	**103,280**
ECM 5	Install VFDs on Constant Volume (CV) Fans	84,063	23.7	0	$8,290	$39,631	$6,560	$33,071	4.0	84,651
ECM 6	Install VFDs on Heating Water Pumps	13,234	1.4	0	$1,305	$9,828	$0	$9,828	7.5	13,327
ECM 7	Install VFDs on Kitchen Hood Fan Motors	5,266	1.8	0	$519	$6,015	$1,800	$4,215	8.1	5,303
Electric Unitary HVAC Measures		**213,998**	**42.4**	**0**	**$21,104**	**$330,326**	**$6,173**	**$324,153**	**15.4**	**215,495**
	Install High Efficiency Air Conditioning Units	213,998	42.4	0	$21,104	$330,326	$6,173	$324,153	15.4	215,495
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**262**	**$3,944**	**$93,158**	**$6,963**	**$86,195**	**21.9**	**42,853**
	Install High Efficiency Hot Water Boilers	0	0.0	262	$3,944	$93,158	$6,963	$86,195	21.9	42,853
Food Service & Refrigeration Measures		**5,129**	**0.4**	**0**	**$506**	**$2,956**	**$165**	**$2,791**	**5.5**	**5,165**
ECM 8	Refrigerator/Freezer Case Electrically Commutated Motors	264	0.0	0	$26	$303	$40	$263	10.1	265
ECM 9	Refrigeration Controls	1,642	0.0	0	$162	$2,193	$125	$2,068	12.8	1,654
ECM 10	Vending Machine Control	3,224	0.4	0	$318	$460	$0	$460	1.4	3,246
TOTALS		**636,508**	**131.3**	**138**	**$64,854**	**$639,006**	**$46,743**	**$592,263**	**9.1**	**663,600**

* - 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		**252,420**	**49.7**	**-106**	**$23,303**	**$66,682**	**$15,897**	**$50,785**	**2.2**	**236,916**
ECM 1	Retrofit Fixtures with LED Lamps	252,420	49.7	-106	$23,303	$66,682	$15,897	$50,785	2.2	236,916
Lighting Control Measures		**39,672**	**7.8**	**-17**	**$3,662**	**$42,738**	**$6,385**	**$36,353**	**9.9**	**37,235**
ECM 2	Install Occupancy Sensor Lighting Controls	34,698	6.8	-15	$3,203	$39,088	$4,235	$34,853	10.9	32,567
ECM 3	Install Daylight Dimming Controls	2,811	0.6	-1	$259	$2,250	$1,950	$300	1.2	2,638
ECM 4	Install High/Low Lighting Controls	2,163	0.4	-1	$200	$1,400	$200	$1,200	6.0	2,030
Variable Frequency Drive (VFD) Measures		**102,563**	**26.9**	**0**	**$10,114**	**$55,473**	**$8,360**	**$47,113**	**4.7**	**103,280**
ECM 5	Install VFDs on Constant Volume (CV) Fans	84,063	23.7	0	$8,290	$39,631	$6,560	$33,071	4.0	84,651
ECM 6	Install VFDs on Heating Water Pumps	13,234	1.4	0	$1,305	$9,828	$0	$9,828	7.5	13,327
ECM 7	Install VFDs on Kitchen Hood Fan Motors	5,266	1.8	0	$519	$6,015	$1,800	$4,215	8.1	5,303
Food Service & Refrigeration Measures		**5,129**	**0.4**	**0**	**$506**	**$2,956**	**$165**	**$2,791**	**5.5**	**5,165**
ECM 8	Refrigerator/Freezer Case Electrically Commutated Motors	264	0.0	0	$26	$303	$40	$263	10.1	265
ECM 9	Refrigeration Controls	1,642	0.0	0	$162	$2,193	$125	$2,068	12.8	1,654
ECM 10	Vending Machine Control	3,224	0.4	0	$318	$460	$0	$460	1.4	3,246
TOTALS		**399,784**	**84.8**	**-122**	**$37,586**	**$167,849**	**$30,807**	**$137,042**	**3.6**	**382,596**

* - 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		**270,918**	**52.7**	**-107**	**$25,107**	**$96,511**	**$18,697**	**$77,814**	**3.1**	**255,316**
	Install LED Fixtures	18,498	3.1	-1	$1,803	$29,829	$2,800	$27,029	15.0	18,400
ECM 1	Retrofit Fixtures with LED Lamps	252,420	49.7	-106	$23,303	$66,682	$15,897	$50,785	2.2	236,916

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.

Install LED Fixtures

Replace existing fixtures containing HID 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: bus lanes and exterior lighting.

ECM 1: Retrofit Fixtures with LED Lamps

Replace fluorescent, HID, 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.

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		**39,672**	**7.8**	**-17**	**$3,662**	**$42,738**	**$6,385**	**$36,353**	**9.9**	**37,235**
ECM 2	Install Occupancy Sensor Lighting Controls	34,698	6.8	-15	$3,203	$39,088	$4,235	$34,853	10.9	32,567
ECM 3	Install Daylight Dimming Controls	2,811	0.6	-1	$259	$2,250	$1,950	$300	1.2	2,638
ECM 4	Install High/Low Lighting Controls	2,163	0.4	-1	$200	$1,400	$200	$1,200	6.0	2,030

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 2: Install Occupancy Sensor Lighting Controls

Install occupancy sensors to control lighting fixtures in areas that are frequently unoccupied, even for short periods. For most spaces, we recommend 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, restrooms, and storage rooms.

ECM 3: Install Daylight Dimming Controls

Install daylight dimming controls that use photosensors to reduce electric lighting in areas when ample daylight lighting is present. Use photosensor controls for fixtures serving areas that are lit by sunlight. As sunlight levels increase in the room, artificial lighting decreases or turns off.

This measure reduces energy use in spaces where ambient daylight provides sufficient lighting levels. Optimum light levels and the method of dimming should be determined during lighting design.

Affected building areas: catwalk, seating areas, loading dock, and atrium.

ECM 4: 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 requirements. 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.

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

Affected building areas: hallways.

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 approaches.

4.3 Motors

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Motor Upgrades		**4,227**	**1.0**	**0**	**$417**	**$17,844**	**$0**	**$17,844**	**42.8**	**4,256**
	Premium Efficiency Motors	4,227	1.0	0	$417	$17,844	$0	$17,844	42.8	4,256

Premium Efficiency Motors

Replace standard efficiency motors with IHP 2014 efficiency motors. This evaluation assumes that existing motors will be replaced with motors of equivalent size and type. In some cases, additional savings may be possible by downsizing motors to better meet the motor's current load requirements.

Affected motors:

Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor
Roof	IS Dept	1	Supply Fan	7.5
Roof	IS Dept	1	Return Fan	1.5
Roof	TIC Admin	1	Supply Fan	15.0
Roof	TIC Admin	1	Return Fan	7.5

Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor
Boiler room	Boiler room	1	Heating Hot Water Pump	5.0
Boiler room	Boiler room	2	Heating Hot Water Pump	5.0
AHU room	AHU 10	1	Supply Fan	10.0
AHU room	AHU 10	1	Return Fan	5.0
Roof	Exhaust	2	Exhaust Fan	3.0
Roof	MPR	1	Supply Fan	10.0
Aroof	AHU 1	1	Supply Fan	7.5
Roof	MPR	1	Return Fan	5.0
Roof	AHU 1	1	Return Fan	3.0
Roof	Unit 2B	1	Supply Fan	10.0

Savings are based on the difference between baseline and proposed efficiencies and the assumed annual operating hours. The base case motor energy consumption is estimated using the efficiencies found on nameplates or estimated based on the age of the motor and our best estimates of motor run hours. Efficiencies of proposed motor upgrades are obtained from the current *New Jersey's Clean Energy Program Protocols to Measure Resource Savings*.

4.4 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		**102,563**	**26.9**	**0**	**$10,114**	**$55,473**	**$8,360**	**$47,113**	**4.7**	**103,280**
ECM 5	Install VFDs on Constant Volume (CV) Fans	84,063	23.7	0	$8,290	$39,631	$6,560	$33,071	4.0	84,651
ECM 6	Install VFDs on Heating Water Pumps	13,234	1.4	0	$1,305	$9,828	$0	$9,828	7.5	13,327
ECM 7	Install VFDs on Kitchen Hood Fan Motors	5,266	1.8	0	$519	$6,015	$1,800	$4,215	8.1	5,303

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 motor —unless the existing motor meets or exceeds IHP 2014 standards—to conservatively account for the cost of an inverter duty rated motor. The savings and cost associated with the new motor are presented with the Premium Efficiency Motor measures. If the proposed VFD measure is not selected for implementation the motor replacement should be reevaluated.

ECM 5: Install VFDs on Constant Volume (CV) Fans

Install VFDs to control constant volume fan motor speeds. This converts a constant-volume, single-zone air handling system into a variable-air-volume (VAV) system. A separate VFD is usually required to control the return fan motor or dedicated exhaust fan motor, if the air handler has one.

Zone thermostats signal the VFD to adjust fan speed to maintain the appropriate temperature in the zone, while maintaining a constant supply air temperature.

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

For air handlers with direct expansion (DX) cooling systems, the minimum air flow across the cooling coil required to prevent the coil from freezing must be determined during the final project design. The control system programming should maintain the minimum air flow whenever the compressor is operating.

Energy savings result from reducing the fan speed (and power) when conditions allow for reduced air flow.

ECM 6: 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.

ECM 7: Install VFDs on Kitchen Hood Fan Motors

Install VFDs and sensors to control the kitchen hood fan motors. The air flow of the hood is varied based on two key inputs: temperature and smoke/cooking fumes. The VFD controls the amount of exhaust (and kitchen make-up air) based on temperature—the lower the temperature the lower the flow. If the optic sensor is triggered by smoke or cooking fumes, the speed of the fan ramps up to 100%.

Energy savings result from reducing the hood fan speed (and power) when conditions allow for reduced air flow.

4.5 Electric Unitary HVAC

#	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		**213,998**	**42.4**	**0**	**$21,104**	**$330,326**	**$6,173**	**$324,153**	**15.4**	**215,495**
	Install High Efficiency Air Conditioning Units	213,998	42.4	0	$21,104	$330,326	$6,173	$324,153	15.4	215,495

Replacing the unitary HVAC units has a long payback period and may not be justifiable based simply on energy considerations. However, most of the units at this facility are nearing or have reached the end of their normal useful life. Typically, the marginal cost of purchasing a high efficiency unit can be justified by the marginal savings from the improved efficiency. When the [equipment name] is eventually replaced, consider purchasing equipment that exceeds the minimum efficiency required by building codes.

Install High Efficiency Air Conditioning Units

Replace standard efficiency packaged air conditioning units with high efficiency packaged air conditioning units. The magnitude of energy savings for this measure depends on the relative efficiency of the older unit versus the new high efficiency unit, the average cooling load, and the estimated annual operating hours.

4.6 Gas-Fired 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)
Gas Heating (HVAC/Process) Replacement		**0**	**0.0**	**262**	**$3,944**	**$93,158**	**$6,963**	**$86,195**	**21.9**	**42,853**
	Install High Efficiency Hot Water Boilers	0	0.0	262	$3,944	$93,158	$6,963	$86,195	21.9	42,853

Install High Efficiency Hot Water Boilers

Replace older inefficient hot water boilers with high efficiency hot water boilers. Energy savings results from improved combustion efficiency and reduced standby losses at low loads.

The most notable efficiency improvement is condensing hydronic boilers which can 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, condensing hydronic boilers are evaluated when the return water temperature is less than 130°F during most of the operating hours.

For the purposes of this analysis, we evaluated the replacement of boilers on a one-for-one basis with equipment of the same capacity. We recommend that you work with your mechanical design team to select boilers that are sized appropriately for the heating load at this facility. In many cases installing multiple modular boilers rather than one or two large boilers will result in higher overall plant efficiency while providing additional system redundancy.

Replacing the boilers has a long payback and may not be justifiable based simply on energy considerations. However, the boilers [are nearing, have reached] the end of their normal useful life. Typically, the marginal cost of purchasing high efficiency boilers can be justified by the marginal savings from the improved efficiency. When the boiler is eventually replaced, consider purchasing boilers that exceed the minimum efficiency required by building codes. We also recommend working with your mechanical design team to determine whether the heating system can operate with return water temperatures below 130°F, which would allow the use of condensing boilers.

4.7 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		**5,129**	**0.4**	**0**	**$506**	**$2,956**	**$165**	**$2,791**	**5.5**	**5,165**
ECM 8	Refrigerator/Freezer Case Electrically Commutated Motors	264	0.0	0	$26	$303	$40	$263	10.1	265
ECM 9	Refrigeration Controls	1,642	0.0	0	$162	$2,193	$125	$2,068	12.8	1,654
ECM 10	Vending Machine Control	3,224	0.4	0	$318	$460	$0	$460	1.4	3,246

ECM 8: Refrigerator/Freezer Case Electrically Commutated Motors

Replace shaded pole or permanent split capacitor (PSC) motors with electronically commutated (EC) motors in walk-in coolers and freezers. Fractional horsepower EC motors are significantly more efficient than mechanically commutated, brushed motors, particularly at low speeds or partial load. By using variable-speed technology, EC motors can optimize fan usage. Because these motors are brushless and use DC power, losses due to friction and phase shifting are eliminated.

Savings for this measure consider both the increased efficiency of the motor as well as the reduction in refrigeration load due to motor heat loss.

ECM 9: Refrigeration Controls

Install additional controls to optimize the operation of walk-in coolers and freezers.

Defrost controllers can be used to override defrost of evaporator fans when the defrost operation is not necessary, which reduces annual energy consumption. This measure is applicable to existing evaporator fans with a traditional electric defrost mechanism.

Many walk-in coolers and freezers have evaporator fans that run continuously. The measure adds a control system feature to automatically shut off evaporator fans when not needed.

Novelty coolers often run continuously. This measure adds a control system feature to automatically shut off novelty coolers based on pre-set store operating hours. Based on programmed hours, the control mechanism shuts off the cooler at the end of business and then begins operation on reduced cycles. Regular compressor operation begins the following day an hour before the start of business.

Energy savings for each of the control measures account for reduction in compressor and fan operating hours as well as reduction in the refrigeration heat load as appropriate.

ECM 10: 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.

5 ENERGY EFFICIENT BEST PRACTICES

A whole building maintenance plan will extend equipment life; improve occupant comfort, health, and safety; and reduce energy and maintenance costs. 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[4]. Your account has already been established. Now you can continue to keep tabs on your energy performance every month.

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.

Thermostat Schedules and Temperature Resets

Use thermostat setback temperatures and schedules to reduce heating and cooling energy use during periods of low or no occupancy. Thermostats should be programmed for a setback of 5°F-10°F during low occupancy hours (reduce heating setpoints and increase cooling setpoints). Cooling load can be reduced 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.

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.

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

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

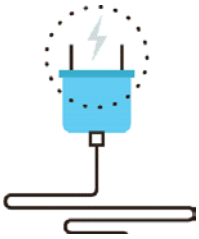
Many boiler problems develop slowly over time, so regular inspection and maintenance is essential to keeping the heating system running efficiently and preventing expensive repairs. Annual tune-ups should include a combustion analysis to analyze the exhaust from the boilers and to ensure the boiler is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

Water Heater Maintenance

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[5]. Your local utility may offer incentives or rebates for this equipment.

[5] 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

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[6] or download a copy of EPA's "WaterSense™ at Work: Best Management Practices for Commercial and Institutional Facilities"[7] 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.

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

[7] 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 reduction, 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.

The amount of free area, ease of installation (location), and the lack of shading elements contribute to the high potential. A PV array located on the roof may be feasible. If you are interested in pursuing the installation of PV, we recommend conducting a full feasibility study.

The graphic below displays the results of the PV potential screening conducted as a part of this audit. The position of each slider indicates the potential (potential increases to the right) that each factor contributes to the overall site potential.

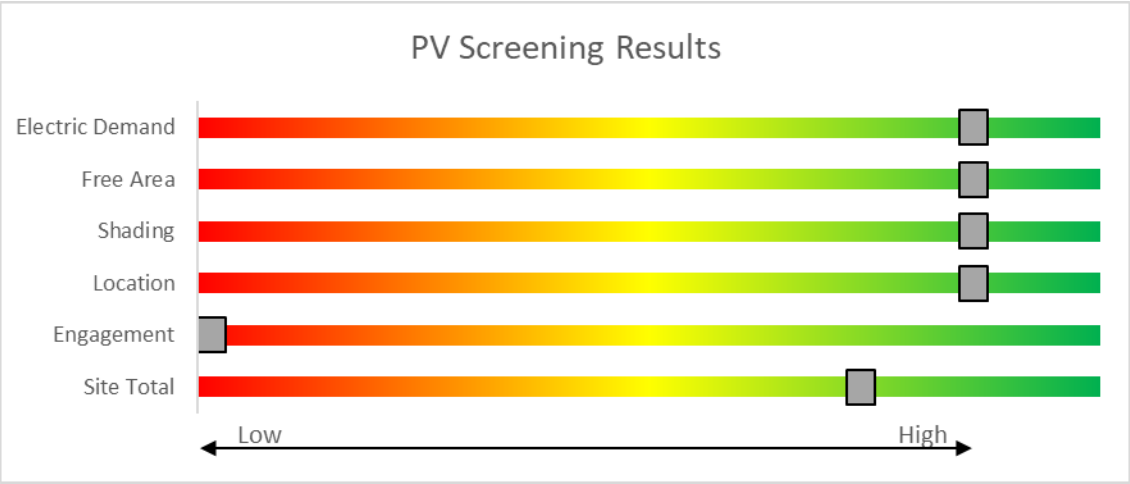


Figure 9 - Photovoltaic Screening

Solar Renewable Energy Certificate (SREC) Registration Program (SRP)

Rebates are not available for solar projects, but owners of solar projects MUST register their projects in the SREC Registration Program before starting construction. Once your PV system is up and running, you periodically earn credits, which can then be sold on the open market for up to 15 years.

If you are considering installing solar photovoltaics on your building, visit www.njcleanenergy.com/srec for more information about the SREC Registration Program.

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:

- **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) generates 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.

The graphic below displays the results of the CHP potential screening conducted as a part of this audit. The position of each slider indicates the potential (potential increases to the right) that each factor contributes to the overall site potential.

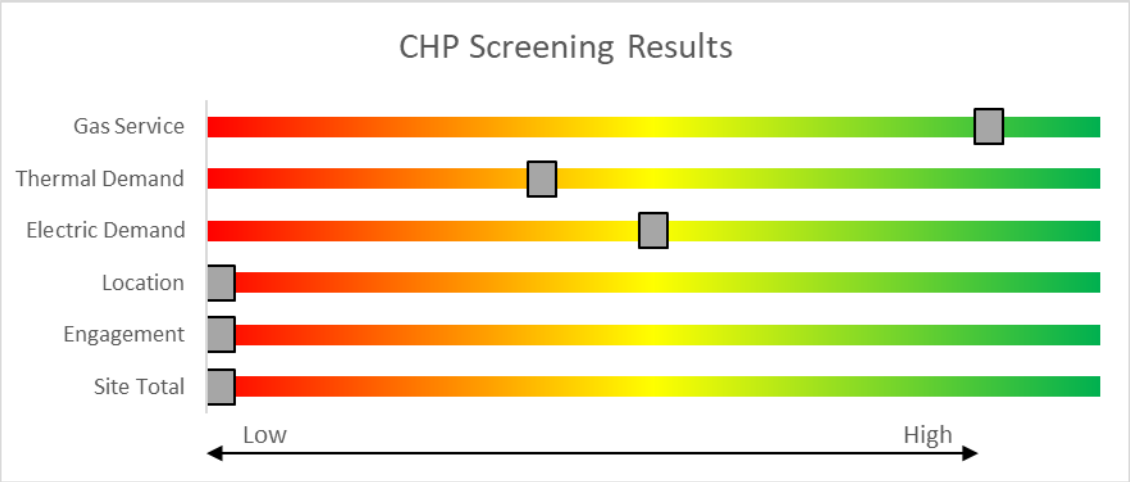


Figure 10 - Combined Heat and Power Screening

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? 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's 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 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.

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.

7.3 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 in to 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.

7.4 SREC Registration Program

The SREC (Solar Renewable Energy Certificate) Registration Program (SRP) 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 SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about the pipeline of anticipated new solar capacity and insight into future SREC pricing.

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 SRECs. SRECs are generated once the solar project has been authorized to be energized by the Electric Distribution Company (EDC).

Each time a solar installation generates 1,000 kilowatt-hours (kWh) of electricity, an SREC is earned. Solar project owners report the energy production to the SREC Tracking System. This reporting allows SRECs to be placed in the customer's electronic account. SRECs can then be sold on the SREC Tracking System, providing revenue for the first 15 years of the project's life.

Electricity suppliers, the primary purchasers of SRECs, are required to pay a Solar Alternative Compliance Payment (SACP) if they do not meet the requirements of New Jersey's Solar Renewable Portfolio Standard. Purchasing SRECs can help them meet those requirements. As SRECs are traded in a competitive market, the price may vary significantly. The actual price of an SREC during a trading period fluctuates depending on supply and demand.

Information about the SRP can be found at: www.njcleanenergy.com/srec.

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[8].

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[9].

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

[9] 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
Boiler room	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.2	793	0	$73	$183	$50	1.8
Boiler room	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.0	168	0	$16	$37	$10	1.7
Boiler room	2	Metal Halide: (1) 150W Lamp	Wall Switch	S	190	4,368	1	Fixture Replacement	No	2	LED - Fixtures: LED fixture	Wall Switch	40	4,368	0.3	1,441	-1	$133	$682	$0	5.1
Boiler room	2	High-Pressure Sodium: (1) 100W Lamp	Wall Switch	S	138	4,368	1	Fixture Replacement	No	2	LED - Fixtures: LED fixture	Wall Switch	20	4,368	0.2	1,134	0	$105	$668	$0	6.4
HR	21	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	21	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.5	2,775	-1	$256	$1,024	$189	3.3
HR	28	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	28	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.9	4,440	-2	$410	$1,022	$280	1.8
HR	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.1	317	0	$29	$73	$20	1.8
HR	3	Compact Fluorescent: 23 W CFL	Wall Switch	S	23	4,368	2	Relamp	No	3	LED Screw-In Lamps: LED screw-in lamps	Wall Switch	15	4,368	0.0	115	0	$11	$52	$0	4.9
HR	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.1	317	0	$29	$73	$20	1.8
Application room	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.0	159	0	$15	$37	$10	1.8
Application room	2	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	4,368	2	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,368	0.0	154	0	$14	$65	$12	3.7
Room205	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Room 202A	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	605	0	$56	$226	$30	3.5
Room 202B	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Room 202B	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	1	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.0	170	0	$16	$165	$9	9.9
Room208	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Conferene Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Conferene Room	5	Compact Fluorescent: 23 W CFL	Wall Switch	S	23	4,368	2	Relamp	No	5	LED Screw-In Lamps: LED screw-in lamps	Wall Switch	15	4,368	0.0	192	0	$18	$86	$0	4.9
Records	16	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	16	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.4	2,114	-1	$195	$780	$144	3.3
Records	34	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	34	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	1.1	5,391	-2	$498	$1,242	$340	1.8
Storage	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.3	1,614	-1	$149	$562	$80	3.2
Office 225A	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.1	634	0	$59	$146	$40	1.8
Office 225A	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	3,014	0.1	423	0	$39	$343	$55	7.4
Open	34	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	34	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.6	2,859	-1	$264	$621	$170	1.7
Room 225	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6

	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
Closet	1	Compact Fluorescent: 23 W CFL	Wall Switch	S	23	4,368	2	Relamp	No	1	LED Screw-In Lamps: LED screw-in lamps	Wall Switch	15	4,368	0.0	38	0	$4	$17	$0	4.9
Storage 224	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	605	0	$56	$226	$30	3.5
Office 219	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Conference room 218	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Conference room 218	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.1	340	0	$31	$368	$53	10.0
IT closet	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Room 220	3	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	3	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.1	510	0	$47	$416	$62	7.5
Training	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	14	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.4	2,220	-1	$205	$511	$140	1.8
Training	9	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	9	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.2	1,189	0	$110	$439	$81	3.3
Exit	10	Exit Signs: LED - 2 W Lamp	Wall Switch		6	8,760		None	No	10	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.0	0	0	$0	$0	$0	0.0
Closet	1	Compact Fluorescent: 23 W CFL	Wall Switch	S	23	4,368	2	Relamp	No	1	LED Screw-In Lamps: LED screw-in lamps	Wall Switch	15	4,368	0.0	38	0	$4	$17	$0	4.9
Restroom (m)	4	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.1	680	0	$63	$465	$71	6.3
Restroom (w)	4	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.1	680	0	$63	$465	$71	6.3
Room 231	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Room 231	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.0	168	0	$16	$37	$10	1.7
Room 233	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Room 233	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.0	168	0	$16	$37	$10	1.7
Room 232	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Room 235	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Room 235	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.0	168	0	$16	$37	$10	1.7
Hallway	31	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	31	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.8	4,096	-2	$378	$1,512	$279	3.3
Conf room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	1,211	-1	$112	$489	$95	3.5
Courtyard	2	High-Pressure Sodium: (1) 150W Lamp	Photocell	S	188	4,380	1	Fixture Replacement	No	2	LED - Fixtures: LED fixture	Photocell	40	4,380	0.2	1,296	0	$128	$682	$0	5.3
Room 237	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Room 237	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.0	168	0	$16	$37	$10	1.7

	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
Conf room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	1,211	-1	$112	$489	$95	3.5
Room 236	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Room 236	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	3,014	0.0	211	0	$20	$153	$10	7.3
Room 236	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Mech room	9	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	9	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.1	757	0	$70	$164	$45	1.7
Restroom (W)	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	3,014	0.0	211	0	$20	$153	$10	7.3
Restroom (M)	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	3,014	0.0	211	0	$20	$153	$10	7.3
Closet	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.0	84	0	$8	$18	$5	1.7
Hallway	4	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	4	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.1	529	0	$49	$195	$36	3.3
Hallway	9	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	9	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.1	757	0	$70	$164	$45	1.7
Hallway	18	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	18	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.5	2,378	-1	$220	$878	$162	3.3
Office 265	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	21	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.7	3,330	-1	$307	$767	$210	1.8
Office 265	9	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	9	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.1	757	0	$70	$164	$45	1.7
Office 264B	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	605	0	$56	$380	$65	5.6
Office 264C	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Conf room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	1,211	-1	$112	$489	$95	3.5
Room 264A	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	605	0	$56	$380	$65	5.6
Room 264A	4	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	4	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.1	336	0	$31	$73	$20	1.7
Room 280	38	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	38	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	1.2	6,025	-3	$556	$1,388	$380	1.8
Room 280C	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Room 280B	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Room 280B	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.1	340	0	$31	$214	$18	6.2
Room 280A	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Open office	26	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	26	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.4	2,186	-1	$202	$475	$130	1.7
Rail payroll	42	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	42	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	1.3	6,659	-3	$615	$1,534	$420	1.8

	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
Rail payroll	26	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	26	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.7	3,435	-1	$317	$1,268	$234	3.3
Rail payroll	18	Exit Signs: LED - 2 W Lamp	Wall Switch		6	8,760		None	No	18	Exit Signs: LED - 2 W Lamp	Wall Switch	6	8,760	0.0	0	0	$0	$0	$0	0.0
Office 273	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Office 273	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.0	84	0	$8	$18	$5	1.7
Office 274	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Office 274	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.0	84	0	$8	$18	$5	1.7
Office 275	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Office 275	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.0	84	0	$8	$18	$5	1.7
File room	4	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	4	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,368	0.2	865	0	$80	$130	$24	1.3
File room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.1	634	0	$59	$146	$40	1.8
File room	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,368	2	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	4,368	0.0	238	0	$22	$55	$15	1.8
Training room	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	1,211	-1	$112	$489	$95	3.5
Training room	2	Compact Fluorescent: 23 W CFL	Wall Switch	S	23	4,368	2	Relamp	No	2	LED Screw-In Lamps: LED screw-in lamps	Wall Switch	15	4,368	0.0	77	0	$7	$34	$0	4.9
Office 272	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Office 272	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.0	84	0	$8	$18	$5	1.7
Office 277	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.0	159	0	$15	$37	$10	1.8
Office 278	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.1	317	0	$29	$73	$20	1.8
Storage	6	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	6	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.2	793	0	$73	$293	$54	3.3
BMS	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Telecomm	10	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2, 3	Relamp	Yes	10	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	3,014	0.2	1,057	0	$98	$453	$85	3.8
Conf room	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.4	2,018	-1	$186	$635	$135	2.7
Open office	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.6	3,228	-1	$298	$1,124	$230	3.0
Open office	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	2	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.1	264	0	$24	$98	$18	3.3
244 H	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	1,211	-1	$112	$489	$95	3.5
244 A	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	1,211	-1	$112	$489	$95	3.5

	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
RSS office	4	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.1	680	0	$63	$465	$71	6.3
RSS office	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.8	4,237	-2	$391	$1,577	$315	3.2
Room 247	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Room 245	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Room 66	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.6	2,825	-1	$261	$1,051	$210	3.2
Room 22A	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Roo 269B	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Room 271	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.5	2,421	-1	$224	$978	$190	3.5
Room 271	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.1	340	0	$31	$214	$18	6.2
Room 269A	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Open office	37	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	37	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	1.5	7,465	-3	$689	$2,431	$510	2.8
Open office	6	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	6	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.2	1,021	0	$94	$563	$89	5.0
Hallway	33	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	33	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.9	4,360	-2	$403	$1,609	$297	3.3
Room 268 (Admin)	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	13	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.4	2,061	-1	$190	$475	$130	1.8
Room 268 (Admin)	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Room 268F	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Room 268E	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Room 268D	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Room 268C	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.0	159	0	$15	$37	$10	1.8
Room 268	11	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	11	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.2	925	0	$85	$201	$55	1.7
Room 268B	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Room 255 TIC	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.4	2,219	-1	$205	$942	$180	3.7
244G	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	605	0	$56	$380	$65	5.6
253 BCC	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	7	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.2	1,110	0	$102	$256	$70	1.8
Director office	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	1,009	0	$93	$453	$85	3.9

	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
267	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
closet	1	Compact Fluorescent: 23 W CFL	Wall Switch	S	23	4,368	2	Relamp	No	1	LED Screw-In Lamps: LED screw-in lamps	Wall Switch	15	4,368	0.0	38	0	$4	$17	$0	4.9
stairwell	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.2	951	0	$88	$219	$60	1.8
closet	1	Compact Fluorescent: 23 W CFL	Wall Switch	S	23	4,368	2	Relamp	No	1	LED Screw-In Lamps: LED screw-in lamps	Wall Switch	15	4,368	0.0	38	0	$4	$17	$0	4.9
Hall	6	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	6	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.2	793	0	$73	$293	$54	3.3
restrooms	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.3	1,614	-1	$149	$562	$115	3.0
BCC (251)	23	Compact Fluorescent: Pin-based. 2 x 13W	Wall Switch	S	26	4,368	2	Relamp	No	23	LED Screw-In Lamps: LED screw-in lamps	Wall Switch	15	4,368	0.2	1,216	-1	$112	$396	$0	3.5
BCC (251)	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.1	634	0	$59	$146	$40	1.8
BCC (kitchen)	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
BCC (kitchen)	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.0	132	0	$12	$49	$9	3.3
TIC	26	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	26	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.8	4,123	-2	$381	$949	$260	1.8
TIC	13	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	13	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.3	1,718	-1	$159	$634	$117	3.3
unknown	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	605	0	$56	$380	$65	5.6
unknown	3	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	3	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.1	510	0	$47	$416	$62	7.5
unknown	9	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	9	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.2	1,189	0	$110	$439	$81	3.3
Upper post	7	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	7	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.2	925	0	$85	$341	$63	3.3
Upper post	1	Compact Fluorescent: Pin-based. 2 x 13W	Wall Switch	S	26	4,368	2	Relamp	No	1	LED Screw-In Lamps: LED screw-in lamps	Wall Switch	15	4,368	0.0	53	0	$5	$17	$0	3.5
Catwalk	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2, 4	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Daylight Dimming	15	2,621	0.1	336	0	$31	$305	$150	5.0
Coset 241	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.3	1,412	-1	$130	$526	$105	3.2
Room 243	3	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	3	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.1	510	0	$47	$416	$62	7.5
Room 243	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.0	159	0	$15	$37	$10	1.8
Room 243	1	Compact Fluorescent: 23 W CFL	Wall Switch	S	23	4,368	2	Relamp	No	1	LED Screw-In Lamps: LED screw-in lamps	Wall Switch	15	4,368	0.0	38	0	$4	$17	$0	4.9
Open office	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	20	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.6	3,171	-1	$293	$730	$200	1.8
Open office	15	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	15	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.4	1,982	-1	$183	$732	$135	3.3
Room 240	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.3	1,412	-1	$130	$526	$105	3.2

	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
Private offices	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.3	1,412	-1	$130	$526	$105	3.2
Private offices	1	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	1	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.0	132	0	$12	$49	$9	3.3
Open office	20	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	20	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.3	1,682	-1	$155	$365	$100	1.7
File room	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	1,009	0	$93	$453	$85	3.9
243C	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
243B	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Conference room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Hallway	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	4,368	2, 5	Relamp	Yes	7	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	3,014	0.4	2,118	-1	$196	$583	$305	1.4
Halway	14	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 5	Relamp	Yes	14	LED - Linear Tubes: (3) 2' Lamps	High/Low Control	26	3,014	0.5	2,382	-1	$220	$883	$126	3.4
Serving area	16	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	16	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.4	2,114	-1	$195	$780	$144	3.3
Kithen hood	4	Compact Fluorescent: 23W CFL	Wall Switch	S	23	4,368	2	Relamp	No	4	LED Screw-In Lamps: LED screw-in lamps	Wall Switch	15	4,368	0.0	154	0	$14	$69	$0	4.9
Storage	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.1	340	0	$31	$214	$18	6.2
Kitchen	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.2	951	0	$88	$219	$60	1.8
Kitchen	3	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	3	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.1	396	0	$37	$146	$27	3.3
Restroom (M)	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Restroom (W)	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Seating area1	8	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 4	Relamp	Yes	8	LED - Linear Tubes: (3) 2' Lamps	Daylight Dimming	26	2,621	0.3	1,449	-1	$134	$640	$322	2.4
Seating area 2	16	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 4	Relamp	Yes	16	LED - Linear Tubes: (3) 2' Lamps	Daylight Dimming	26	2,621	0.6	2,898	-1	$268	$1,280	$644	2.4
Elevator	6	Compact Fluorescent: 23W CFL	Wall Switch	S	23	4,368	2, 3	Relamp	Yes	6	LED Screw-In Lamps: LED screw-in lamps	Occupancy Sensor	15	3,014	0.1	365	0	$34	$373	$35	10.0
Hallway	31	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 5	Relamp	Yes	31	LED - Linear Tubes: (3) 2' Lamps	High/Low Control	26	3,014	1.0	5,274	-2	$487	$2,512	$279	4.6
Loading Dock	3	High-Pressure Sodium: (1) 50W Lamp	Wall Switch	S	66	4,368	1, 4	Fixture Replacement	Yes	3	LED - Fixtures: LED fixture	Daylight Dimming	14	2,621	0.2	830	0	$77	$1,000	$135	11.3
Elevator	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	2	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.0	168	0	$16	$37	$10	1.7
Stairway	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.1	317	0	$29	$73	$20	1.8
Stairway	6	U-Bend Fluorescent - T8: U T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	6	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	4,368	0.3	1,297	-1	$120	$195	$36	1.3
Basement	31	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	31	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.5	2,607	-1	$241	$566	$155	1.7

	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
Basement	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	10	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.3	1,586	-1	$146	$365	$100	1.8
Mail room	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.2	1,268	-1	$117	$292	$80	1.8
Mail room	4	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	4	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.1	529	0	$49	$195	$36	3.3
Revenue/Account	87	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	87	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Office 048	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Office 050	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Office 049	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Conference room	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Storage	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Rolling room	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Storage	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Box storage	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Shred room	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Mech room	7	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	4,368		None	No	7	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.0	0	0	$0	$0	$0	0.0
Revenue	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.6	3,228	-1	$298	$1,124	$230	3.0
Revenue	7	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	7	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.2	1,191	0	$110	$611	$98	4.7
Closet	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	1	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Cafeteria	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Main area	36	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	36	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Main area	26	LED Screw-In Lamps: LED screw-in lamp	Occupancy Sensor	S	10	3,014		None	No	26	LED Screw-In Lamps: LED screw-in lamp	Occupancy Sensor	10	3,014	0.0	0	0	$0	$0	$0	0.0
Office 1	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Conferecne rooms	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Conferecne rooms	8	LED Screw-In Lamps: LED screw-in lamp	Occupancy Sensor	S	10	3,014		None	No	8	LED Screw-In Lamps: LED screw-in lamp	Occupancy Sensor	10	3,014	0.0	0	0	$0	$0	$0	0.0
Elec	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	4,368		None	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.0	0	0	$0	$0	$0	0.0
Office 2	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0

	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
Office 3	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Conference room	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Conference room	9	LED Screw-In Lamps: LED screw-in lamp	Occupancy Sensor	S	10	3,014		None	No	9	LED Screw-In Lamps: LED screw-in lamp	Occupancy Sensor	10	3,014	0.0	0	0	$0	$0	$0	0.0
Conference room	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Reception	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Office 1	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Office 2	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Hallway	17	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	17	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Conferecne room	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Conferecne room	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
op support 1	37	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	37	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
op support 2	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
OSR 3	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
OSR 4	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
OSR 5	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Pantry	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Hallway	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	S	29	3,014		None	No	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.0	0	0	$0	$0	$0	0.0
Restroom (M)	16	LED Screw-In Lamps: LED screw-in lamp	Occupancy Sensor	S	10	3,014		None	No	16	LED Screw-In Lamps: LED screw-in lamp	Occupancy Sensor	10	3,014	0.0	0	0	$0	$0	$0	0.0
Restroom (W)	16	LED Screw-In Lamps: LED screw-in lamp	Occupancy Sensor	S	10	3,014		None	No	16	LED Screw-In Lamps: LED screw-in lamp	Occupancy Sensor	10	3,014	0.0	0	0	$0	$0	$0	0.0
Room 143	30	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	30	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	1.2	6,053	-3	$559	$1,905	$405	2.7
Room 141	24	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	24	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	1.0	4,842	-2	$447	$1,686	$345	3.0
Generator room	5	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2, 3	Relamp	Yes	5	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	3,014	0.1	528	0	$49	$361	$60	6.2
Hallway	8	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	8	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.2	1,057	0	$98	$390	$72	3.3
Lower atrium	26	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 4	Relamp	Yes	26	LED - Linear Tubes: (3) 2' Lamps	Daylight Dimming	26	2,621	0.9	4,710	-2	$435	$2,018	$984	2.4
Training hallway	13	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	13	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.3	1,718	-1	$159	$634	$117	3.3

	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
Room 104	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	12	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.4	1,903	-1	$176	$438	$120	1.8
Trainign room	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.5	2,421	-1	$224	$978	$190	3.5
Trainign room	9	Compact Fluorescent: 23W CFL	Wall Switch	S	23	4,368	2	Relamp	No	9	LED Screw-In Lamps: LED screw-in lamps	Wall Switch	15	4,368	0.1	346	0	$32	$155	$0	4.9
Trainign room	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	8	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.2	1,268	-1	$117	$292	$80	1.8
Telecomm	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Occupancy Sensor	S	62	3,014	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,080	0.1	278	0	$26	$189	$20	6.6
Training room	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.8	4,035	-2	$373	$1,270	$270	2.7
Training room	3	Compact Fluorescent: 23W CFL	Wall Switch	S	23	4,368	2, 3	Relamp	Yes	3	LED Screw-In Lamps: LED screw-in lamps	Occupancy Sensor	15	3,014	0.0	182	0	$17	$322	$35	17.0
Training room	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.5	2,421	-1	$224	$978	$190	3.5
Training room	8	Compact Fluorescent: 23W CFL	Wall Switch	S	23	4,368	2, 3	Relamp	Yes	8	LED Screw-In Lamps: LED screw-in lamps	Occupancy Sensor	15	3,014	0.1	486	0	$45	$408	$35	8.3
Kitchen	4	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.1	680	0	$63	$465	$71	6.3
Closet	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	1,211	-1	$112	$335	$60	2.5
Post 2 LL	4	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 4	Relamp	Yes	4	LED - Linear Tubes: (3) 2' Lamps	Daylight Dimming	26	2,621	0.1	725	0	$67	$445	$216	3.4
Data center	70	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	70	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	2.8	14,123	-6	$1,304	$4,446	$945	2.7
Data center	4	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.1	680	0	$63	$465	$71	6.3
Restroom (M)	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Restrooom (W)	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Pension Dept	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.4	2,219	-1	$205	$942	$180	3.7
Pension Dept	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.1	340	0	$31	$214	$18	6.2
Conference room	4	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.1	680	0	$63	$465	$71	6.3
Cash management	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.8	4,237	-2	$391	$1,577	$315	3.2
Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.1	634	0	$59	$146	$40	1.8
Office	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.3	1,614	-1	$149	$562	$115	3.0
Office	20	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	20	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.3	1,682	-1	$155	$365	$100	1.7
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.0	159	0	$15	$37	$10	1.8
Storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	605	0	$56	$226	$30	3.5

	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
Storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$262	$40	3.0
Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	3,014	0.0	211	0	$20	$153	$10	7.3
Office	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Office 119	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Office 117	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Conference Room	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Office	4	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.1	680	0	$63	$465	$71	6.3
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Office	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.1	340	0	$31	$214	$18	6.2
Office 115	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$416	$75	4.6
Restroom (M)	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	605	0	$56	$380	$65	5.6
Restroom (W)	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	605	0	$56	$380	$65	5.6
Room 100	19	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	19	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.6	3,013	-1	$278	$694	$190	1.8
Room 100	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	2	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.1	264	0	$24	$98	$18	3.3
Storage	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	605	0	$56	$226	$30	3.5
Storage	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	807	0	$75	$262	$40	3.0
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	3,014	0.0	211	0	$20	$153	$10	7.3
Office	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.0	159	0	$15	$37	$10	1.8
Office	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	605	0	$56	$380	$65	5.6
Office	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	3,014	0.1	634	0	$59	$380	$65	5.4
Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	3,014	0.0	211	0	$20	$153	$10	7.3
Storage	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Reception	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2	Relamp	No	4	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	4,368	0.1	634	0	$59	$146	$40	1.8

	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
Elevator	1	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2	Relamp	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	4,368	0.0	84	0	$8	$18	$5	1.7
Waiting	11	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	S	29	4,368	3	None	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	475	0	$44	$270	$35	5.4
Telecomm	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	3,014	0.1	634	0	$59	$380	$65	5.4
Room 7	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Room 6	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Room 5	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Mech	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	1,009	0	$93	$453	$85	3.9
Forms	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	605	0	$56	$380	$65	5.6
Patient rooms x 5	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.4	2,018	-1	$186	$635	$135	2.7
Patient rooms	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	1,211	-1	$112	$489	$95	3.5
Patient rooms	8	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	8	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.3	1,361	-1	$126	$660	$107	4.4
109	4	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	4	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.1	680	0	$63	$465	$71	6.3
110	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	605	0	$56	$380	$65	5.6
111	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Office	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.4	2,219	-1	$205	$942	$180	3.7
Unknown	9	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	9	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.3	1,531	-1	$141	$709	$116	4.2
Unknown	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	1,009	0	$93	$453	$85	3.9
Unknown	2	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 2' Lamps	Occupancy Sensor	26	3,014	0.1	340	0	$31	$214	$18	6.2
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	404	0	$37	$189	$20	4.5
Office	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	4,368	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	3,014	0.0	211	0	$20	$153	$10	7.3
Hall	3	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	3	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.1	396	0	$37	$146	$27	3.3
Hall	8	Linear Fluorescent - T8: 2' T8 (17W) - 3L	Wall Switch	S	53	4,368	2	Relamp	No	8	LED - Linear Tubes: (3) 2' Lamps	Wall Switch	26	4,368	0.2	1,057	0	$98	$390	$72	3.3
GOB Exterior	10	LED - Fixtures: Outdoor Porch Wall Mount	Timeclock		50	4,380	1	Fixture Replacement	No	10	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	15	4,380	0.2	1,533	0	$151	$9,660	$1,000	57.3
GOB Exterior	12	High-Pressure Sodium: (1) 150W Lamp	Timeclock		188	4,380	1	Fixture Replacement	No	12	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	56	4,380	1.1	6,917	0	$682	$11,592	$1,200	15.2
GOB Exterior	6	High-Pressure Sodium: (1) 250W Lamp	Timeclock		295	4,380	1	Fixture Replacement	No	6	LED - Fixtures: Outdoor Wall-Mounted Area Fixture	Timeclock	89	4,380	0.9	5,427	0	$535	$5,796	$600	9.7

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
Boiler room	Boiler room	2	Process Blower	30.0	82.4%	No	B	4,067		No	82.4%	No		0.0	0	0	$0	$0	$0	0.0
Boiler room	Boiler room	1	Heating Hot Water Pump	5.0	82.5%	No	B	2,745	NR, 7	Yes	89.5%	Yes	1	0.7	5,309	0	$524	$4,076	$0	7.8
Boiler room	Boiler room	2	Heating Hot Water Pump	5.0	89.5%	No	W	2,745	NR, 7	Yes	89.5%	Yes	2	1.0	8,580	0	$846	$8,394	$0	9.9
AHU room	AHU 10	1	Supply Fan	10.0	89.5%	No	W	3,391	NR, 6	Yes	91.7%	Yes	1	3.0	11,057	0	$1,090	$5,375	$800	4.2
AHU room	AHU 10	1	Return Fan	5.0	87.5%	No	W	2,745	NR, 6	Yes	89.5%	Yes	1	1.5	4,565	0	$450	$4,197	$400	8.4
Compressor room	Compressor room	2	Air Compressor	10.0	89.5%	No	W	6,978		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Chiller	Chiller	10	Supply Fan	1.0	82.5%	No	W	2,745		No	82.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Exhaust	2	Exhaust Fan	3.0	87.5%	No	W	2,745	NR, 8	Yes	89.5%	Yes	2	1.8	5,477	0	$540	$7,768	$1,800	11.0
Roof	MPR	1	Supply Fan	10.0	89.5%	No	B	3,391	NR, 6	Yes	91.7%	Yes	1	3.0	11,057	0	$1,090	$5,375	$800	4.2
Roof	RTU 1	2	Supply Fan	7.5	89.5%	Yes	W	3,391		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU 2	1	Supply Fan	7.5	89.5%	Yes	W	3,391		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Aroof	AHU 1	1	Supply Fan	7.5	89.5%	No		3,391	NR, 6	Yes	91.7%	Yes	1	2.2	8,293	0	$818	$4,761	$600	5.1
Roof	MPR	1	Return Fan	5.0	87.5%	No	B	2,745	NR, 6	Yes	89.5%	Yes	1	1.5	4,565	0	$450	$4,197	$400	8.4
Roof	RTU 1	2	Return Fan	5.0	87.5%	Yes	W	2,745		No	87.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	RTU 2	1	Return Fan	3.0	87.5%	Yes	W	2,745		No	87.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	AHU 1	1	Return Fan	3.0	87.5%	No		2,745	NR, 6	Yes	89.5%	Yes	1	0.9	2,739	0	$270	$3,812	$240	13.2
Roof	Unit 2A	2	Supply Fan	0.5	60.0%	No	B	2,745		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Unit 2B	1	Supply Fan	10.0	89.5%	No	B	3,391	NR, 6	Yes	91.7%	Yes	1	3.0	11,057	0	$1,090	$5,375	$800	4.2
Attic	Unknown	1	Supply Fan	7.2	85.0%	No	W	3,391		No	85.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Unit 2B	2	Return Fan	1.0	82.5%	No	B	2,745		No	82.5%	No		0.0	0	0	$0	$0	$0	0.0

		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	IS Dept	1	Supply Fan	7.5	89.5%	No	B	3,391	NR, 6	Yes	91.7%	Yes	1	2.2	8,293	0	$818	$4,761	$600	5.1
Roof	IS Dept	1	Return Fan	1.5	84.0%	No	B	2,745	NR, 6	Yes	86.5%	Yes	1	0.5	1,443	0	$142	$3,380	$120	22.9
Roof	TIC Admin	1	Supply Fan	15.0	91.0%	No	B	3,391	NR, 6	Yes	92.4%	Yes	1	4.4	16,063	0	$1,584	$7,086	$1,200	3.7
Roof	TIC Admin	1	Return Fan	7.5	89.5%	No	B	3,391	NR, 6	Yes	91.7%	Yes	1	2.3	8,293	0	$818	$4,761	$600	5.1
Roof	Payroll 280	1	Supply Fan	15.0	91.0%	Yes	W	3,391		No	91.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Café	1	Return Fan	1.0	82.5%	Yes	W	2,745		No	82.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Payroll 280	1	Supply Fan	7.5	89.5%	Yes	W	3,391		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Café	1	Return Fan	3.0	87.5%	Yes	W	2,745		No	87.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Benefit	1	Supply Fan	7.5	89.5%	No	B	3,391		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Benefit	1	Return Fan	3.0	87.5%	No	B	2,745		No	87.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Rail Payroll	1	Supply Fan	15.0	91.0%	No	B	3,391		No	91.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Rail Payroll	1	Return Fan	7.5	89.5%	No	B	3,391		No	89.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Computer room	15	Supply Fan	0.8	70.0%	Yes	W	2,745		No	70.0%	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
Roof	MPR	1	Packaged AC	37.00			NR	Yes	1	Packaged AC	37.00		9.50		1.2	3,805	0	$375	$81,991	$0	218.5
Roof	RTU 1	1	Packaged AC	40.00				No							0.0	0	0	$0	$0	$0	0.0
Roof	RTU 2	1	Packaged AC	15.00		W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Unit 2A	1	Packaged AC	15.00		B	NR	Yes	1	Packaged AC	15.00		11.50		3.5	18,042	0	$1,779	$20,908	$1,185	11.1
Roof	Unit 2B	1	Packaged AC	30.00		B	NR	Yes	1	Packaged AC	15.00		11.50		10.4	52,814	0	$5,208	$20,908	$1,185	3.8
Roof	IS Dept	1	Packaged AC	37.00		B	NR	Yes	1	Packaged AC	15.00		11.50		11.8	60,282	0	$5,945	$20,908	$1,185	3.3
Roof	TIC Admin	1	Packaged AC	30.00		B	NR	Yes	1	Packaged AC	30.00		10.50		7.8	39,895	0	$3,934	$66,479	$0	16.9
Roof	Payroll 280	1	Packaged AC	25.00		W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Café	1	Packaged AC	15.00		W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Benefit	1	Packaged AC	18.00		B	NR	Yes	1	Packaged AC	18.00		11.50		2.9	14,695	0	$1,449	$25,089	$1,422	16.3
Roof	Rail Payroll	1	Packaged AC	30.00		B	NR	Yes	1	Packaged AC	30.00		9.50		2.9	14,776	0	$1,457	$66,479	$0	45.6
Roof	Main tele room	1	Packaged AC	2.50		W	NR	Yes	1	Packaged AC	2.50		14.00		0.1	420	0	$41	$5,672	$230	131.3
Roof	Medical Admin	1	Packaged AC	5.00		W	NR	Yes	1	Packaged AC	5.00		14.00		0.9	4,684	0	$462	$11,345	$460	23.6
Roof	TIC tele room	1	Packaged AC	3.00		W	NR	Yes	1	Packaged AC	3.00		14.00		0.5	2,623	0	$259	$6,807	$276	25.2
Roof	Unknown	1	Split-System AC	2.50		B	NR	Yes	1	Split-System AC	2.50		14.00		0.4	1,963	0	$194	$3,741	$230	18.1
Roof	CU-1,2,3,4	4	Split-System AC	3.00		W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Data center	5	Packaged AC	27.70		W		No							0.0	0	0	$0	$0	$0	0.0

Electric Chiller Inventory & Recommendations

		Existing Conditions				Proposed Conditions								Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Chiller Quantity	System Type	Cooling Capacity per Unit (Tons)	Remaining Useful Life	ECM #	Install High Efficiency Chillers?	Chiller Quantity	System Type	Constant/ Variable Speed	Cooling Capacity (Tons)	Full Load Efficiency (kW/Ton)	IPLV Efficiency (kW/Ton)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Grounds	Building	1	Air-Cooled Screw Chiller	125.00	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
Boiler room	Boiler room	2	Non-Condensing Hot Water Boiler	######	B	NR	Yes	2	Non-Condensing Hot Water Boiler	######	85.00%	Ec	0.0	0	262	$3,944	$93,158	$6,963	21.9

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
Boiler room	Restrooms	1	Storage Tank Water Heater (> 50 Gal)	W		No						0.0	0	0	$0	$0	$0	0.0
Kitchen storage	Kitchen	1	Storage Tank Water Heater (> 50 Gal)	W		No						0.0	0	0	$0	$0	$0	0.0
Unknown	Unknown	1	Storage Tank Water Heater (≤ 50 Gal)	W		No						0.0	0	0	$0	$0	$0	0.0

Walk-In Cooler/Freezer Inventory & Recommendations

	Existing Conditions		Proposed Conditions				Energy Impact & Financial Analysis						
Location	Cooler/ Freezer Quantity	Case Type/Temperature	ECM #	Install EC Evaporator Fan Motors?	Install Electric Defrost Control?	Install Evaporator Fan Control?	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
1st floor kitchen	1	Cooler (35F to 55F)	9, 10	Yes	Yes	Yes	0.0	1,906	0	$188	$2,496	$165	12.4

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions			Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	ENERGY STAR Qualified?	ECM #	Install ENERGY STAR 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
Kitchen	1	Stand-Up Refrigerator, Glass Door (16 - 30 cu. ft.)	Yes		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Stand-Up Refrigerator, Solid Door (16 - 30 cu. ft.)	Yes		No	0.0	0	0	$0	$0	$0	0.0

Commercial Ice Maker Inventory & Recommendations

	Existing Conditions			Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Ice Maker Type	ENERGY STAR Qualified?	ECM #	Install ENERGY STAR 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
Kitchen	1	Ice Making Head (<450 lbs/day), Batch	Yes		No	0.0	0	0	$0	$0	$0	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
Kitchen	4	Insulated Food Holding Cabinet (Full Size)	No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Gas Combination Oven/Steam Cooker (<15 Pans)	No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	1	Gas Fryer	No		No	0.0	0	0	$0	$0	$0	0.0
Kitchen	2	Gas Convection Oven (Full Size)	No		No	0.0	0	0	$0	$0	$0	0.0

Dishwasher Inventory & Recommendations

	Existing Conditions					Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Dishwasher Type	Water Heater Fuel Type	Booster Heater Fuel Type	ENERGY STAR Qualified?	ECM #	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Payback w/ Incentives in Years
Kitchen	1	Under Counter (High Temp)	Electric	N/A	No		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?
Comressor room	1	Ref Air Dryer	17.0	No
1st floor kitchen	11	Hot table	2,030.0	No
1st floor kitchen	6	Toaster	1,200.0	Yes
1st floor kitchen	1	Bunn Coffee	400.0	Yes
1st floor kitchen	11	Ice makers	800.0	Yes
1st floor kitchen	4	Mini reach in	200.0	Yes
GOB	532	Desktop	145.0	Yes
GOB	34	Printer small	60.0	Yes
GOB	41	Printer medium	100.0	Yes
GOB	22	Printer large	200.0	Yes
GOB	25	Microwave	900.0	Yes
GOB	11	Mini fridge	80.0	Yes
GOB	7	Coffee	400.0	Yes
GOB	12	Fax	200.0	Yes
GOB	69	TV	100.0	Yes
GOB	10	Fridge	220.0	Yes
GOB	8	Projector	200.0	Yes
GOB	15	TV CRT	120.0	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
Kitchen 1st floor	2	Refrigerated	11	Yes	0.4	3,224	0	$318	$460	$0	1.4

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]

GOB

Primary Property Type: Repair Services (Vehicle, Shoe, Locksmith, etc.)
Gross Floor Area (ft²): 178,000
Built: 1959

For Year Ending: May 31, 2018
Date Generated: March 26, 2019

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
GOB 180 Boyden Ave Maplewood, New Jersey 07040	NJ Transit 1 Penn Plaza Newark, NJ 07015 (____)____-_____	Steve Jenks 1 Penn Plaza Newark, NJ 07015 9734918589 pdubuc@chacompanies.com

Property ID: 6725704

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
88.2 kBtu/ft²

Source EUI
218.1 kBtu/ft²

Annual Energy by Fuel

Natural Gas (kBtu)	1,058,603 (7%)
Electric - Grid (kBtu)	12,810,141 (82%)
Fuel Oil (No. 2) (kBtu)	1,823,228 (12%)

National Median Comparison

National Median Site EUI (kBtu/ft²)	39.2
National Median Source EUI (kBtu/ft²)	96.9
% Diff from National Median Source EUI	125%

Annual Emissions

Greenhouse Gas Emissions (Metric Tons CO2e/year)	1,489

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)

APPENDIX C: GLOSSARY

TERM	DEFINITION
Blended Rate	Used to calculate financial savings. 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	A British thermal unit is the amount of heat required to increase the temperature of one pound water by one-degree Fahrenheit. Commonly used to measure natural gas consumption.
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.
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 energy management systems.
Generation	The process of generating electric power from sources of primary energy (e.g., natural gas, the sun, oil).
HVAC	Heating, ventilation, and air conditioning.
kW	Kilowatt. Equal to 1,000 Watts.
Load	The total amount of power used by a building system 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.
MMBtu	One million British thermal units.
psig	Pounds per square inch.
Plug Load	Refers to the amount of energy used in a space by products that are powered by means of an ordinary AC plug.
Simple Payback	The amount of time needed to recoup the funds expended in an investment, or to reach the break-even point.
Temperature Setpoint	The temperature at which a temperature regulating device (thermostat, for example) has been set.
Turnkey	Provision of a complete product or service that is ready for immediate use
Watt (W)	Unit of power commonly used to measure electricity use.