Local Government Energy Audit Report

December 4, 2023

Prepared for:

State of NJ Dept. of Law & PS

140 East Front Street

Trenton, New Jersey 08625

Prepared by:

TRC

317 George Street

New Brunswick, New Jersey 08901

Disclaimer

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

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

TRC bases estimated material and labor costs primarily on RS Means cost manuals as well as on our experience at similar facilities. This approach is based on standard cost estimating manuals and is vendor neutral. Cost estimates include material and labor pricing associated with one for one equipment replacements. Cost estimates do not include demolition or removal of hazardous waste. The actual implementation costs for energy savings projects are anticipated to be significantly higher based on the specific conditions at your site(s). We strongly recommend that you work with your design engineer or contractor to develop actual project costs for your specific scope of work for the installation of high efficiency equipment. We encourage you to obtain multiple estimates when considering measure installations. Actual installation costs can vary widely based on selected products and installers. TRC and NJBPU do not guarantee cost estimates and shall in no event be held liable should actual installed costs vary from these material and labor estimates.

Incentive values provided in this report are estimated based on previously run state efficiency programs. Incentive levels are not guaranteed. The NJBPU reserves the right to extend, modify, or terminate programs without prior notice. Please review all available utility program incentives and eligibility requirements prior to selecting and installing any energy conservation measures.

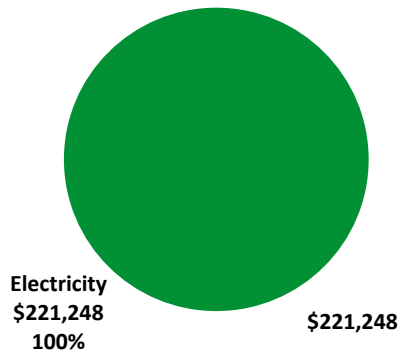
The customer and their respective contractor(s) are responsible to implement energy conservation measures in complete conformance with all applicable local, state, and federal requirements.

Table of Contents

1 EXECUTIVE SUMMARY

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

BUILDING PERFORMANCE REPORT

Annual Utilities	Costs: $221,248 Electricity: 1,483,115 kWh	
ENERGY STAR® Benchmarking Score	80 *(1-100 scale)*	Congratulations, your building performs better than the national average. This report has suggestions about how to keep your building running efficiently, further improve performance, and lower your energy bills even more.

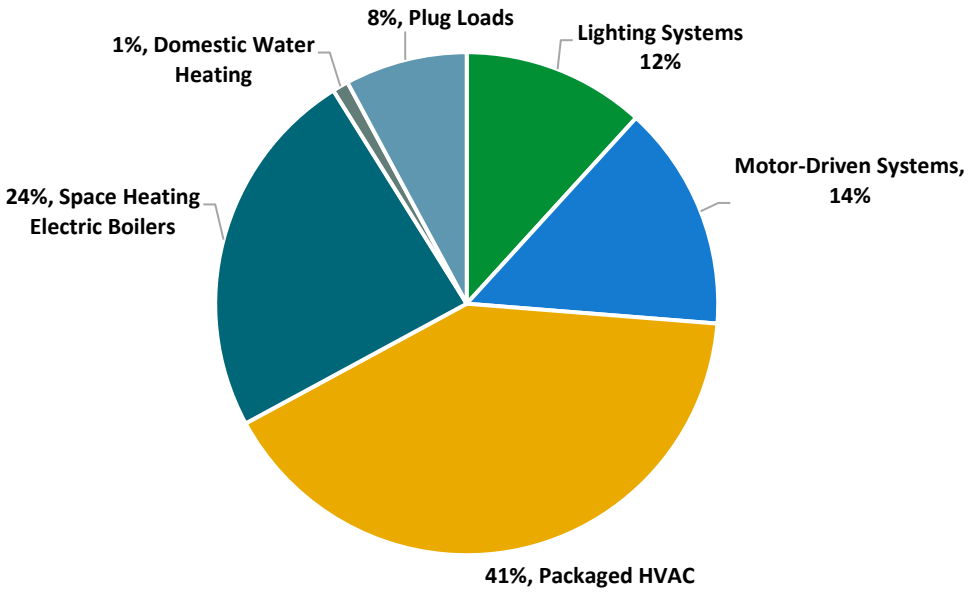


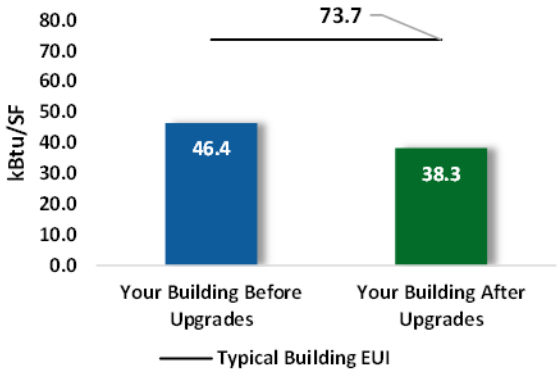
Figure 1 - Energy Use by System

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.

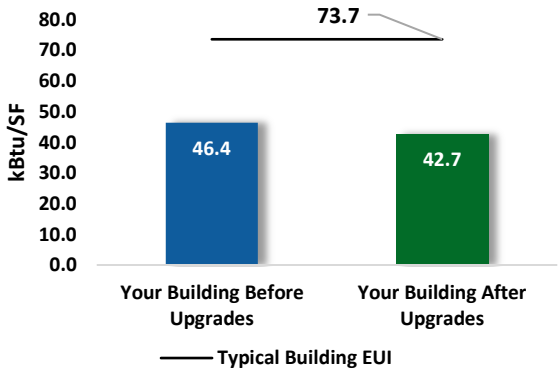
Scenario 1: Full Package (All Evaluated Measures)

Installation Cost	$919,866
Potential Rebates & Incentives[1]	$24,494
Annual Cost Savings	$38,504
Annual Energy Savings	Electricity: 258,110 kWh
Greenhouse Gas Emission Savings	130 Tons
Simple Payback	23.3 Years
Site Energy Savings (All Utilities)	17%



Scenario 2: Cost Effective Package[2]

Installation Cost	$155,403
Potential Rebates & Incentives	$4,125
Annual Cost Savings	$17,662
Annual Energy Savings	Electricity: 118,395 kWh
Greenhouse Gas Emission Savings	60 Tons
Simple Payback	8.6 Years
Site Energy Savings (all utilities)	8%



On-site Generation Potential

Photovoltaic	High
Combined Heat and Power	None

[1] Incentives are based on previously run state rebate programs. Contact your utility provider for current program incentives that may apply.

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

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**9,887**	**1.8**	**0**	**$1,475**	**$4,181**	**$385**	**$3,796**	**2.6**	**9,957**
ECM 1	Install LED Fixtures	Yes	1,095	0.3	0	$163	$1,332	$100	$1,232	7.5	1,103
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	5,868	1.3	0	$875	$2,185	$235	$1,950	2.2	5,909
ECM 3	Retrofit Fixtures with LED Lamps	Yes	2,924	0.2	0	$436	$663	$50	$613	1.4	2,945
Lighting Control Measures			**1,305**	**0.3**	**0**	**$195**	**$2,214**	**$390**	**$1,824**	**9.4**	**1,314**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	1,190	0.3	0	$178	$1,938	$215	$1,723	9.7	1,198
ECM 5	Install High/Low Lighting Controls	Yes	115	0.0	0	$17	$276	$175	$101	5.9	115
Motor Upgrades			**1,456**	**0.6**	**0**	**$217**	**$7,989**	**$0**	**$7,989**	**36.8**	**1,466**
ECM 6	Premium Efficiency Motors	No	1,456	0.6	0	$217	$7,989	$0	$7,989	36.8	1,466
Variable Frequency Drive (VFD) Measures			**16,946**	**3.6**	**0**	**$2,528**	**$32,448**	**$4,800**	**$27,648**	**10.9**	**17,065**
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	4,976	2.2	0	$742	$6,679	$1,000	$5,679	7.7	5,011
ECM 8	Install VFDs on Heating Water Pumps	Yes	8,535	1.4	0	$1,273	$13,347	$2,000	$11,347	8.9	8,594
ECM 9	Install VFDs on Cooling Tower Fans	No	3,436	-0.1	0	$513	$12,422	$1,800	$10,622	20.7	3,460
Unitary HVAC Measures			**134,823**	**81.0**	**0**	**$20,113**	**$744,051**	**$18,569**	**$725,482**	**36.1**	**135,766**
ECM 10	Install High Efficiency Air Conditioning Units	No	2,680	1.9	0	$400	$28,818	$1,258	$27,560	68.9	2,699
ECM 11	Install High Efficiency Heat Pumps	No	132,143	79.1	0	$19,713	$715,233	$17,311	$697,922	35.4	133,067
Domestic Water Heating Upgrade			**5,929**	**0.0**	**0**	**$884**	**$462**	**$200**	**$262**	**0.3**	**5,970**
ECM 12	Install Low-Flow DHW Devices	Yes	5,929	0.0	0	$884	$462	$200	$262	0.3	5,970
Food Service & Refrigeration Measures			**4,654**	**0.5**	**0**	**$694**	**$1,606**	**$150**	**$1,456**	**2.1**	**4,687**
ECM 13	Vending Machine Control	Yes	4,654	0.5	0	$694	$1,606	$150	$1,456	2.1	4,687
Custom Measures			**83,110**	**0.0**	**0**	**$12,398**	**$126,914**	**$0**	**$126,914**	**10.2**	**83,691**
ECM 14	Installation of an Energy Management System	Yes	83,110	0.0	0	$12,398	$126,914	$0	$126,914	10.2	83,691
TOTALS (COST EFFECTIVE MEASURES)			**118,395**	**6.3**	**0**	**$17,662**	**$155,403**	**$4,125**	**$151,278**	**8.6**	**119,223**
TOTALS (ALL MEASURES)			**258,110**	**87.8**	**0**	**$38,504**	**$919,866**	**$24,494**	**$895,372**	**23.3**	**259,915**

* - All incentives presented in this table are included as placeholders for planning purposes and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

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

Figure 2 – Evaluated Energy Improvements

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

1.1 Planning Your Project

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

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

Pick Your Installation Approach

Utility-run energy efficiency programs and 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.

Options from Your Utility Company

Prescriptive and Custom Rebates

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 Prescriptive and Custom Rebates 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 may be required for some incentives. Contact your utility company for more details prior to project installation.

Direct Install

The Direct Install program provides turnkey installation of multiple measures through an authorized contractor. This program can provide incentives up to 70% or 80% of the cost of selected measures. A Direct Install contractor will assess and verify individual measure eligibility and perform the installation work. The Direct Install program is available to sites with an average peak demand of less than 200 kW.

Engineered Solutions

The Engineered Solutions program provides tailored energy-efficiency assistance and turnkey engineering services to municipalities, universities, schools, hospitals, and healthcare facilities (MUSH), non-profit entities, and multifamily buildings. The program provides all professional services from audit, design, construction administration, to commissioning and measurement and verification for custom whole-building energy-efficiency projects. Engineered Solutions 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.

For more details on these programs please contact your utility provider.

Options from New Jersey's Clean Energy Program

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 and Power (CHP)

The CHP program provides incentives for combined heat and power (i.e., 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.

Successor Solar Incentive Program (SuSI)

New Jersey is committed to supporting solar energy. Solar projects help the state reach the renewable goals outlined in the state's Energy Master Plan. The SuSI program is used to register and certify solar projects in New Jersey. Rebates are not available, but certified solar projects are able to earn one SREC II (Solar Renewable Energy Certificates II) for each megawatt-hour of solar electricity produced from a qualifying solar facility.

Ongoing Electric Savings with Demand Response

The Demand Response Energy Aggregator program reduces electric loads at commercial facilities when wholesale electricity prices are high or when the reliability of the electric grid is threatened due to peak power demand. By enabling commercial facilities to reduce electric demand during times of peak demand, the grid is made more reliable, and overall transmission costs are reduced for all ratepayers. Curtailment service providers provide regular payments to medium and large consumers of electric power for their participation in demand response (DR) programs. Program participation is voluntary, and facilities receive payments regardless of whether they are called upon to curtail their load during times of peak demand.

Large Energy User Program (LEUP)

LEUP is designed to promote self-investment in energy efficiency. It incentivizes owners/users of buildings to upgrade or install energy conserving measures in existing buildings to help offset the capital costs associated with the project. The efficiency upgrades are customized to meet the requirements of the customers' existing facilities, while advancing the State's energy efficiency, conservation, and greenhouse gas reduction goals.

For more details on these programs please visit New Jersey's Clean Energy Program website .

2 Existing Conditions

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Dept. of Law & Public Safety. 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.

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 August 3, 2023, TRC performed an energy audit at Dept. of Law & Public Safety located in Trenton, New Jersey. TRC met with facility staff to review the facility operations and help focus our investigation on specific energy-using systems.

The New Jersey Department of Law and Public Safety is a government agency that focuses on protection of the lives and property of NJ residents and visitors. It is a 10-story, 109,025 square foot high rise building built in 1990. Spaces include enclose and open offices, conference room, corridors, lobbies, restrooms, kitchens, stairs, a loading dock and a penthouse mechanical room.

Lighting is mainly provided by LED fixtures. The building is 100% heated and cooled by water source heat pumps (WSHPs) supplemented by an electric boiler. The building has three passenger elevators.

Recent improvements and Facility Concerns

In 2019, the facility implemented a comprehensive interior lighting systems replacement with LED fixtures along with installation of lighting control systems. Additionally, the roof was replaced three years ago.

The facility concerns include the aging water source heat pumps which has reached the end of their useful life and required high maintenance. Additionally, the facility is interested in installing new building automation system (BAS) for a better HVAC equipment control.

4th Floor Conference Room

2.2 Building Occupancy

The facility is occupied year-round 24/7. It should be noted that the energy and economic analysis is based on the use of the building during the utility billing period, and that results will vary based on changes to building use patterns.

Building Name	Weekday/Weekend	Operating Schedule
Dept. of Law & Public Safety - General Operating Hours	Weekday	24/7
	Weekend	24/7

Figure 3 - Building Occupancy Schedule

2.3 Building Envelope

Building walls are concrete block over structural steel. The lower enclosed carpool spaces have brick veneer walls. The flat roof is supported with steel trusses and a reinforced concrete deck and is finished with an insulated layer and a covering with a black membrane. The roof was replaced 3 years ago is in good condition, and is under warranty. There's also a penthouse housing the passenger elevator machines.

The windows are double glazed and have aluminum frames. The window weather seals are in good condition, showing no evidence of excessive wear. Windows are typically equipped with solar shades or blinds for glare control.

The front-entry area walls are part of an aluminum-framed storefront style system incorporating two revolving entry doors and two regular entry doors. The entrance doors are fully glazed, and aluminum framed. The exit doors are constructed of metal and are in good condition. Overall, the windows and exterior doors are in good condition with no signs of uncontrolled moisture, air leakage, or other energy-compromising issues.

Main Building & Underneath Carpool Enclose Walls

Roof & Exterior Doors

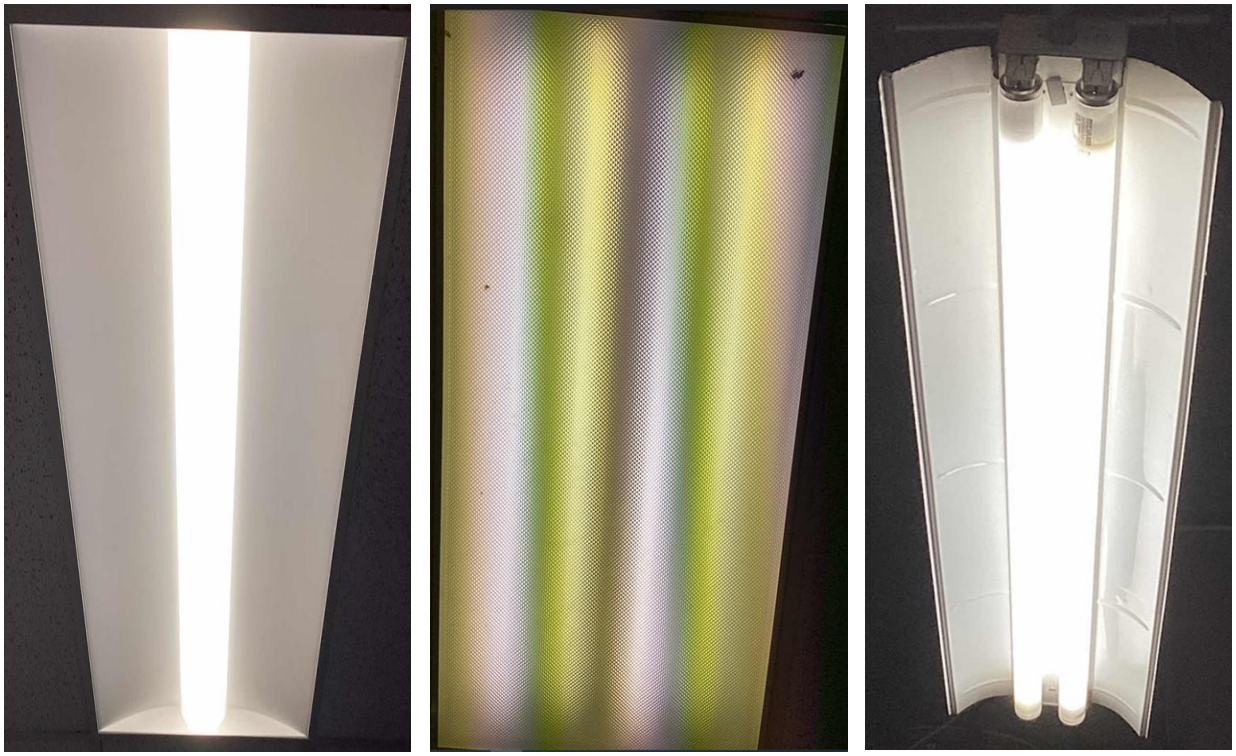
Main Entrance Doors

2.4 Lighting Systems

Lighting systems throughout the building have been replaced with LED fixtures, primarily with 2x2 and 2x4 LED recessed fixtures. Several spaces including electrical and mechanical rooms, penthouse, telephone room, and part of the lobby are still being lit with linear fluorescent T12 fixtures. Also, the lobby has five CFL lamps and two incandescent lamps.

Light fixtures are in good condition. Interior lighting levels were generally sufficient. All exit signs are LED. Light fixtures in workspaces are primarily controlled by ceiling or wall mounted occupancy sensors. Manual wall switches control lighting in the spaces mentioned above that are lit with the non-LED fixtures.

Exterior fixtures include halogen incandescent, CFL, LED lamps, and an LED flood fixture with various mounting types. They are controlled by timers and a photocell.



4 Foot LED Fixture, Linear T8 & T12 Fixtures

2 Foot LED Fixture, CFL Recessed Can & LED Exit Sign

Ceiling & Wall Mounted Occupancy Sensor

Wall Mounted LED & Halogen Recessed Fixtures

2.5 Air Handling Systems

Unitary Electric HVAC Equipment

The penthouse elevator machine room is served by a 2-ton Friedrich ductless split air conditioner (AC). The IT room is using three Liebert condensing units, which are located on the roof. The units are connected to three vertical indoor air handling units. Two condensing units are beyond their useful life and appear to be in poor condition. They have been evaluated for replacement. The units are controlled by programmable thermostats.

Ductless Split AC

Liebert Outdoor Condensing Units & Indoor AHUs

Unitary Heating Equipment

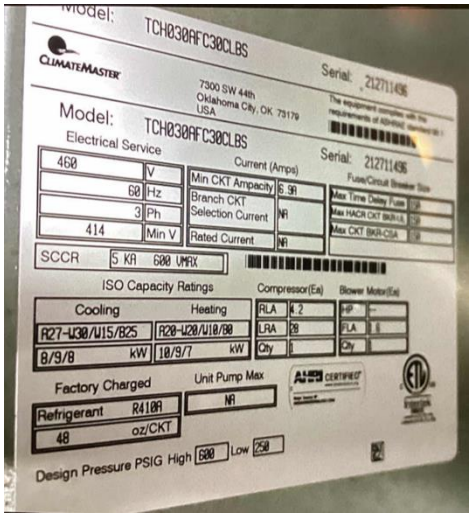
Spaces including the penthouse and stairs are heated by pendant and wall mounted electric resistance heaters that are controlled by local thermostats.

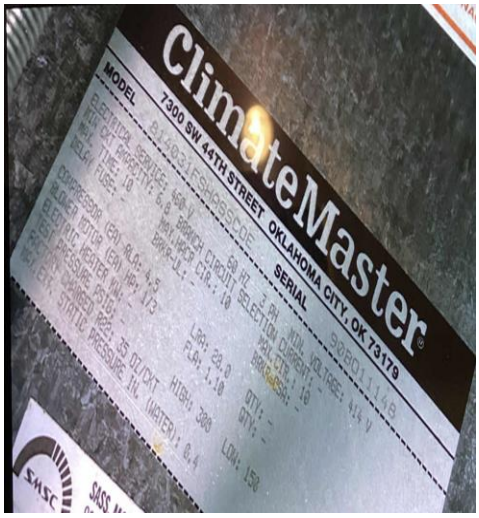

Electric Resistance Heaters

Water Source Heat Pumps (WSHPs)

Building spaces are heated and cooled by 110 Climate Master water source heat pumps (WSHPs) of various sizes. The units are mainly mounted above the ceiling. The WSHPs vary in heating and cooling capacities between 15.96 and 64.47 MBh and 0.75 and 4 tons respectively. The WSHPs have reached the extent of their useful lives. They have been evaluated for replacement.

The distribution system is a standard closed loop where the loop piping runs inside the building and includes a heat adder (electric boiler), a cooling tower (heat rejecter), pumps, heat exchangers, and controls. The WSHPs are equipped with fractional hp supply fans to condition the respective spaces. The system is controlled by the building automation system (BAS) that has limited functionality and was not accessible during the audit.





Nameplates - WSHPs

Air Handling Units (AHUs)

The penthouse has one AHU that serves the entire building. The unit was fully accessible during the audit. The unit is controlled by a local thermostat.

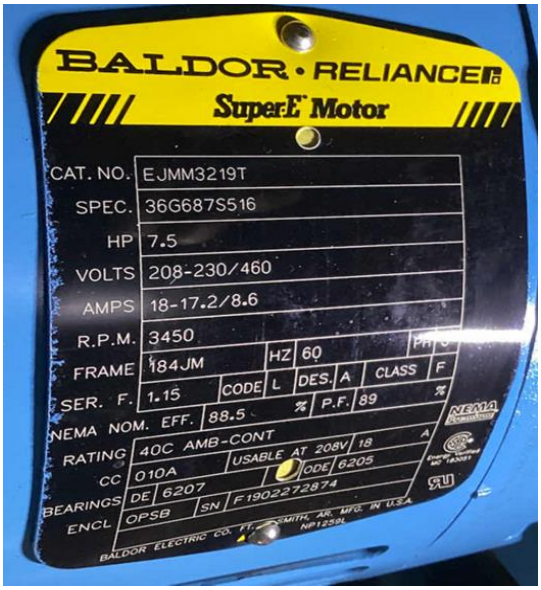
AHU

2.6 Heating Hot Water Systems

A 160-kW electric hot water boiler is used as a heat adder to supplement the WSHP heating loop when the loop temperature approaches the lower limit.

Water source heat pump units are connected to a water distribution loop which circulates water throughout the building to transfer heat from one area to another. This common water loop provides what is essentially a heat-recovery system. Units providing heating extract heat from loop water while units providing cooling reject heat to the loop. The boiler is in good condition. The building conditioning water loop is circulated by two 7.5 hp constant flow pumps that are configured with a lead-lag control scheme.

Electric Boiler

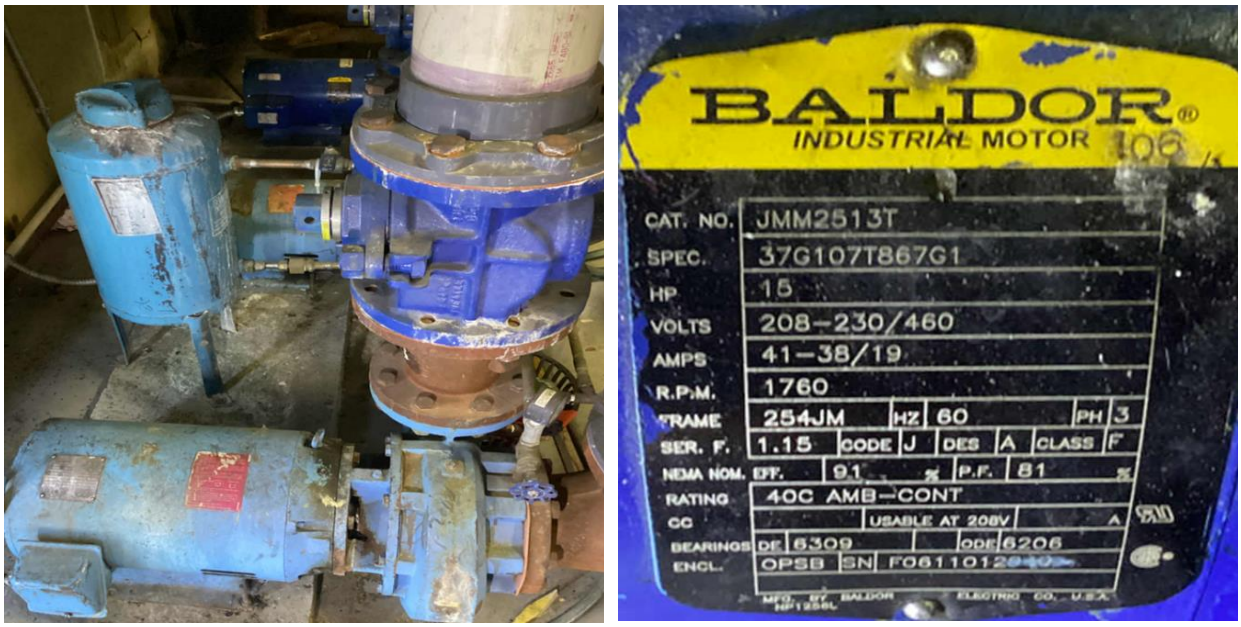


7.5 hp Heating Hot Water Pumps

2.7 Condenser Water Systems

The condenser water system consists of two one-cell cooling towers. Each tower has a 5 hp constant speed fan. There are two 20 hp and a 15 hp constant flow condenser water pumps. The cooling tower was installed about twelve years ago and is in good condition.

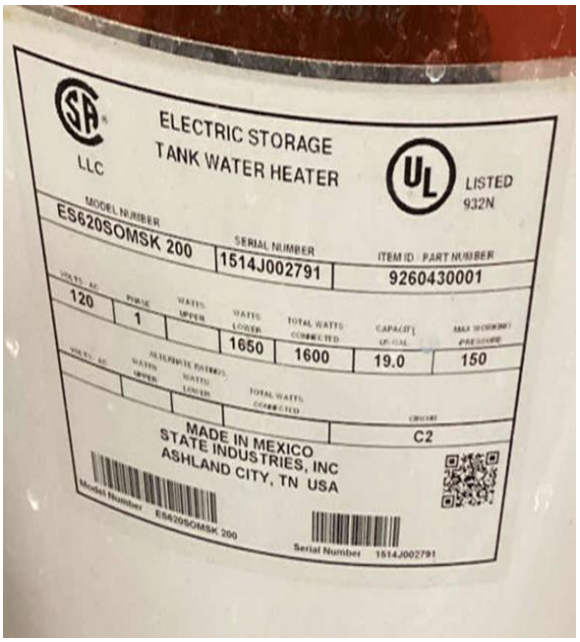
Delta Cooling Tower



Condenser Water Pumps

2.8 Domestic Hot Water

The building first floor is served by a 19-gallon 1.5 kW electric storage tank water heater while each of the remaining floor (2nd through 10th) is served by a dedicated 30-gallon 4.5 kW electric storage tank water heater. The 30-gallon units are located above, in the ceiling and difficult to access. The domestic hot water pipes are insulated, and the insulation is in good condition. A heat pump water heater measure could not be implemented because of the location of the water heaters.



First Floor Electric Domestic Hot Water Heater

2.9 Plug Load and Vending Machines

There are approximately 408 computer workstations throughout the facility. Plug loads include general café and office equipment such as copiers, printers, microwaves, coffee machines, paper shredders, mini refrigerators, televisions, and water coolers. There are approximately fourteen residential style refrigerators throughout the building that are used to store food and beverages. These vary in condition and efficiency.

There are three refrigerated and three non-refrigerated vending machines in various spaces. Vending machines are not equipped with occupancy-based controls.

Copier/Scanner & Residential Refrigerators

Vending Machines

2.10 Water-Using Systems

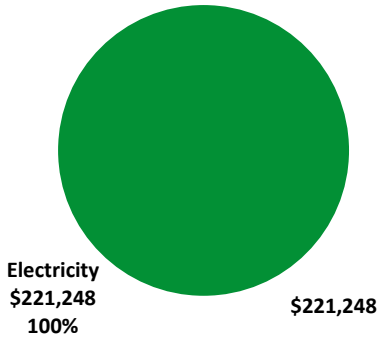
There are several restrooms with toilets, urinals, and sinks. Faucet flows are rated as high. Toilets are rated at 2.5 gallons per flush (gpf) and urinals are rated at 2.5 gpf.

Typical Restroom Sinks

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	1,483,115 kWh	$221,248
Total		**$221,248**



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.

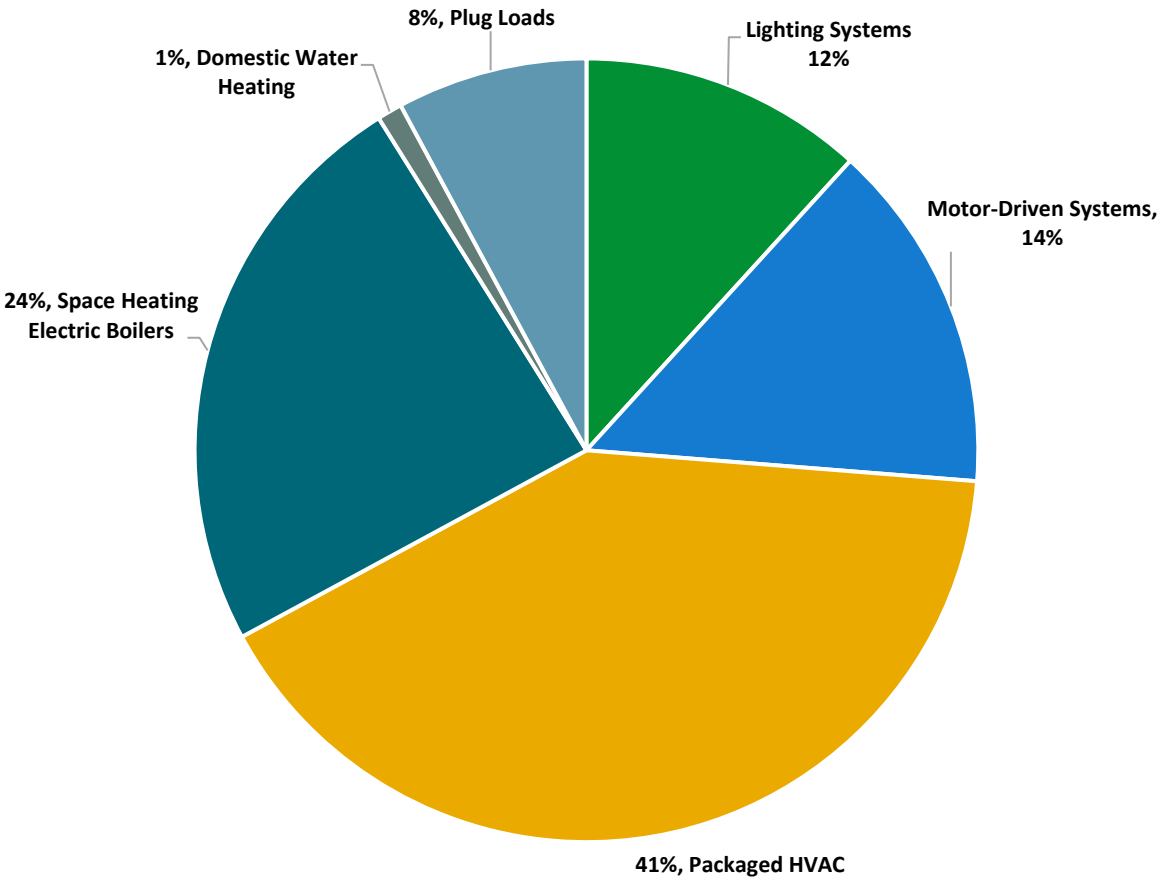
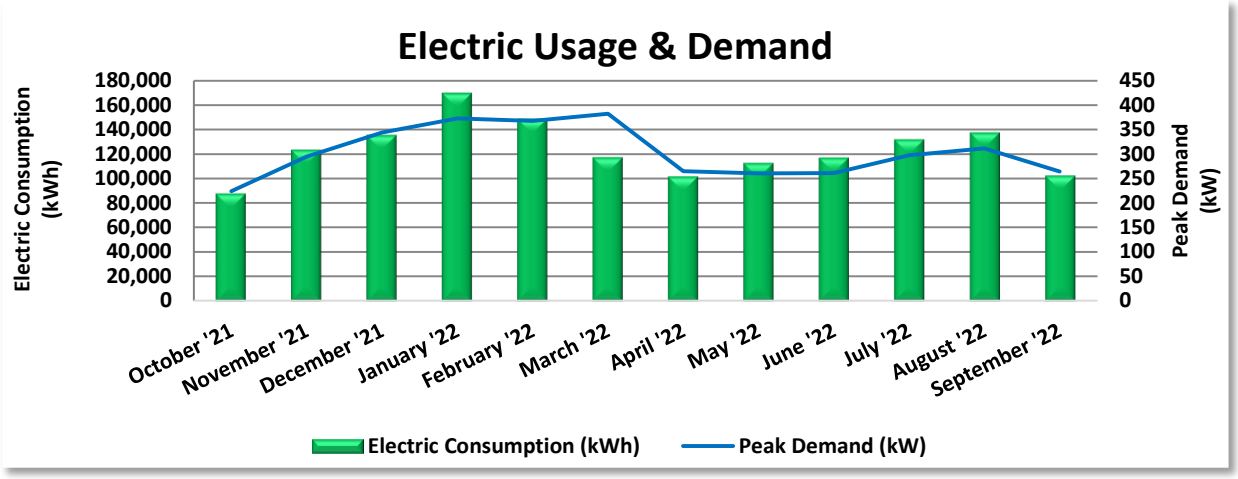


Figure 4 - Energy Balance

3.1 Electricity

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



Electric Billing Data					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
11/3/21	29	87,643	224	$851	$11,322
12/6/21	33	123,249	295	$1,118	$15,692
1/6/22	31	135,252	344	$1,464	$19,581
2/4/22	29	169,450	373	$1,503	$24,105
3/8/22	32	148,456	368	$1,535	$21,378
4/6/22	29	117,117	383	$1,507	$17,240
5/6/22	30	101,485	265	$1,028	$14,712
6/7/22	32	112,576	261	$3,339	$18,485
7/7/22	30	116,731	261	$3,495	$19,239
8/5/22	29	131,713	298	$4,035	$21,771
9/6/22	32	137,154	311	$4,218	$22,671
10/5/22	29	102,289	265	$1,182	$15,051
Totals	**365**	**1,483,115**	**383**	**$25,274**	**$221,248**
Annual	**365**	**1,483,115**	**383**	**$25,274**	**$221,248**

Notes:

- Peak demand of 383 kW occurred in March '22.
- Average demand over the past 12 months was 304 kW.
- The average electric cost over the past 12 months was $0.149/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 Benchmarking

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

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

Benchmarking Score	80

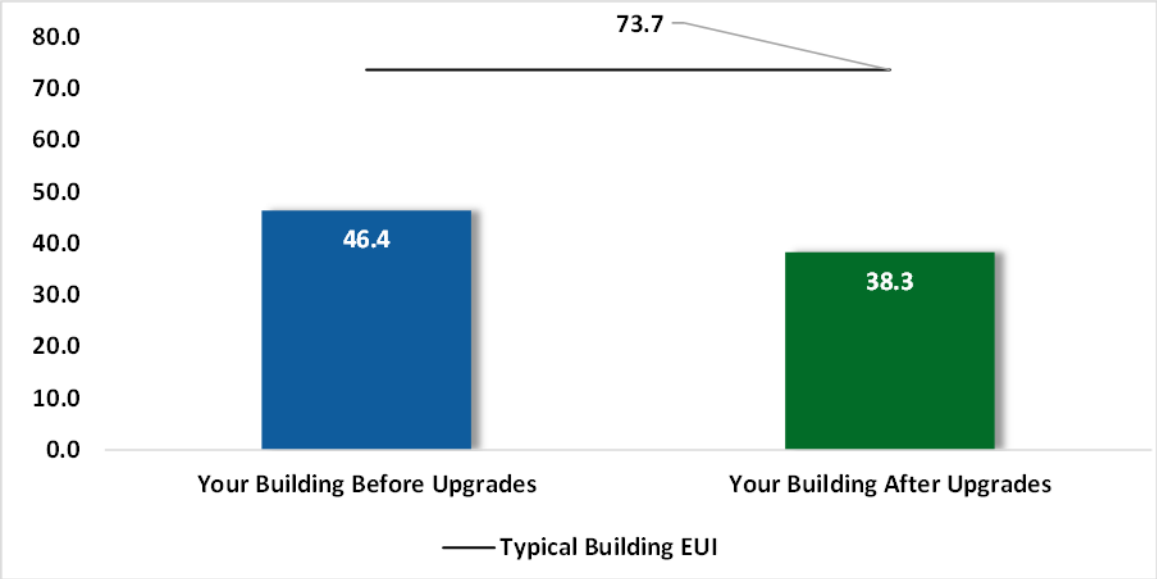


Figure 5 - Energy Use Intensity Comparison[3]

Congratulations, your building performs better than the national average. This report has suggestions about how to keep your building running efficiently, further improve performance, and lower your energy bills even more.

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. Several factors can cause a building to vary from typical energy usage. Local weather conditions, building age and insulation levels, equipment efficiency, daily occupancy hours, changes in occupancy throughout the year, equipment operating hours, and occupant behavior all contribute to a building's energy use and the benchmarking score.

[3] Based on all evaluated ECMs

Tracking Your Energy Performance

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

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

Free online training is available to help you use ENERGY STAR Portfolio Manager to track your building's performance at: https://www.energystar.gov/buildings/training.

For more information on ENERGY STAR and Portfolio Manager, visit their website.

4 Energy Conservation Measures

The goal of this audit report is to identify and evaluate potential energy efficiency improvements and provide information about the cost effectiveness of those improvements. Most energy conservation measures have received preliminary analysis of feasibility, which identifies expected ranges of savings. 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 in this report are based on the previously run state rebate program SmartStart, which has been retired. Now, all investor-owned gas and electric utility companies are offering complementary energy efficiency programs directly to their customers. Some measures and proposed upgrades may be eligible for higher incentives than those shown below. The incentives in the summary tables should be used for high-level planning purposes. To verify incentives, reach out to your utility provider or visit the NJCEP website for more information.

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

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**9,887**	**1.8**	**0**	**$1,475**	**$4,181**	**$385**	**$3,796**	**2.6**	**9,957**
ECM 1	Install LED Fixtures	Yes	1,095	0.3	0	$163	$1,332	$100	$1,232	7.5	1,103
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	5,868	1.3	0	$875	$2,185	$235	$1,950	2.2	5,909
ECM 3	Retrofit Fixtures with LED Lamps	Yes	2,924	0.2	0	$436	$663	$50	$613	1.4	2,945
Lighting Control Measures			**1,305**	**0.3**	**0**	**$195**	**$2,214**	**$390**	**$1,824**	**9.4**	**1,314**
ECM 4	Install Occupancy Sensor Lighting Controls	Yes	1,190	0.3	0	$178	$1,938	$215	$1,723	9.7	1,198
ECM 5	Install High/Low Lighting Controls	Yes	115	0.0	0	$17	$276	$175	$101	5.9	115
Motor Upgrades			**1,456**	**0.6**	**0**	**$217**	**$7,989**	**$0**	**$7,989**	**36.8**	**1,466**
ECM 6	Premium Efficiency Motors	No	1,456	0.6	0	$217	$7,989	$0	$7,989	36.8	1,466
Variable Frequency Drive (VFD) Measures			**16,946**	**3.6**	**0**	**$2,528**	**$32,448**	**$4,800**	**$27,648**	**10.9**	**17,065**
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	4,976	2.2	0	$742	$6,679	$1,000	$5,679	7.7	5,011
ECM 8	Install VFDs on Heating Water Pumps	Yes	8,535	1.4	0	$1,273	$13,347	$2,000	$11,347	8.9	8,594
ECM 9	Install VFDs on Cooling Tower Fans	No	3,436	-0.1	0	$513	$12,422	$1,800	$10,622	20.7	3,460
Unitary HVAC Measures			**134,823**	**81.0**	**0**	**$20,113**	**$744,051**	**$18,569**	**$725,482**	**36.1**	**135,766**
ECM 10	Install High Efficiency Air Conditioning Units	No	2,680	1.9	0	$400	$28,818	$1,258	$27,560	68.9	2,699
ECM 11	Install High Efficiency Heat Pumps	No	132,143	79.1	0	$19,713	$715,233	$17,311	$697,922	35.4	133,067
Domestic Water Heating Upgrade			**5,929**	**0.0**	**0**	**$884**	**$462**	**$200**	**$262**	**0.3**	**5,970**
ECM 12	Install Low-Flow DHW Devices	Yes	5,929	0.0	0	$884	$462	$200	$262	0.3	5,970
Food Service & Refrigeration Measures			**4,654**	**0.5**	**0**	**$694**	**$1,606**	**$150**	**$1,456**	**2.1**	**4,687**
ECM 13	Vending Machine Control	Yes	4,654	0.5	0	$694	$1,606	$150	$1,456	2.1	4,687
Custom Measures			**83,110**	**0.0**	**0**	**$12,398**	**$126,914**	**$0**	**$126,914**	**10.2**	**83,691**
ECM 14	Installation of an Energy Management System	Yes	83,110	0.0	0	$12,398	$126,914	$0	$126,914	10.2	83,691
TOTALS			**258,110**	**87.8**	**0**	**$38,504**	**$919,866**	**$24,494**	**$895,372**	**23.3**	**259,915**

* - All incentives presented in this table are included as placeholders for planning purposes and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

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

Figure 6 – All Evaluated ECMs

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**9,887**	**1.8**	**0**	**$1,475**	**$4,181**	**$385**	**$3,796**	**2.6**	**9,957**
ECM 1	Install LED Fixtures	1,095	0.3	0	$163	$1,332	$100	$1,232	7.5	1,103
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	5,868	1.3	0	$875	$2,185	$235	$1,950	2.2	5,909
ECM 3	Retrofit Fixtures with LED Lamps	2,924	0.2	0	$436	$663	$50	$613	1.4	2,945
Lighting Control Measures		**1,305**	**0.3**	**0**	**$195**	**$2,214**	**$390**	**$1,824**	**9.4**	**1,314**
ECM 4	Install Occupancy Sensor Lighting Controls	1,190	0.3	0	$178	$1,938	$215	$1,723	9.7	1,198
ECM 5	Install High/Low Lighting Controls	115	0.0	0	$17	$276	$175	$101	5.9	115
Variable Frequency Drive (VFD) Measures		**13,511**	**3.7**	**0**	**$2,016**	**$20,026**	**$3,000**	**$17,026**	**8.4**	**13,605**
ECM 7	Install VFDs on Constant Volume (CV) Fans	4,976	2.2	0	$742	$6,679	$1,000	$5,679	7.7	5,011
ECM 8	Install VFDs on Heating Water Pumps	8,535	1.4	0	$1,273	$13,347	$2,000	$11,347	8.9	8,594
Domestic Water Heating Upgrade		**5,929**	**0.0**	**0**	**$884**	**$462**	**$200**	**$262**	**0.3**	**5,970**
ECM 12	Install Low-Flow DHW Devices	5,929	0.0	0	$884	$462	$200	$262	0.3	5,970
Food Service & Refrigeration Measures		**4,654**	**0.5**	**0**	**$694**	**$1,606**	**$150**	**$1,456**	**2.1**	**4,687**
ECM 13	Vending Machine Control	4,654	0.5	0	$694	$1,606	$150	$1,456	2.1	4,687
Custom Measures		**83,110**	**0.0**	**0**	**$12,398**	**$126,914**	**$0**	**$126,914**	**10.2**	**83,691**
ECM 14	Installation of an Energy Management System	83,110	0.0	0	$12,398	$126,914	$0	$126,914	10.2	83,691
TOTALS		**118,395**	**6.3**	**0**	**$17,662**	**$155,403**	**$4,125**	**$151,278**	**8.6**	**119,223**

* - All incentives presented in this table are included as placeholders for planning purposes and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

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

Figure 7 – 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 ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades		**9,887**	**1.8**	**0**	**$1,475**	**$4,181**	**$385**	**$3,796**	**2.6**	**9,957**
ECM 1	Install LED Fixtures	1,095	0.3	0	$163	$1,332	$100	$1,232	7.5	1,103
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	5,868	1.3	0	$875	$2,185	$235	$1,950	2.2	5,909
ECM 3	Retrofit Fixtures with LED Lamps	2,924	0.2	0	$436	$663	$50	$613	1.4	2,945

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 is proposed, we suggest converting all of a specific lighting type (e.g., linear fluorescent) to LED lamps to minimize the number of lamp types in use at the facility, which should help reduce future maintenance costs.

ECM 1: Install LED Fixtures

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

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

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: exterior fixtures

ECM 2: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

Retrofit fluorescent T12 fixtures by removing the fluorescent tubes and ballasts and replacing them with LED tubes and LED drivers (if necessary), which are designed to be used in retrofitted fluorescent fixtures.

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

Affected Building Areas: penthouse, electrical and mechanical rooms, telephone room, and lobby

ECM 3: Retrofit Fixtures with LED Lamps

Replace fluorescent T8, CFL and 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. Be sure to specify replacement lamps that are compatible with existing dimming controls, where applicable. In some circumstances, you may need to upgrade your dimming system for optimum performance.

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: halogen incandescent (exterior), CFL in lobby and exterior recessed, and T8 lamps in the fire control room

4.2 Lighting Controls

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Control Measures		**1,305**	**0.3**	**0**	**$195**	**$2,214**	**$390**	**$1,824**	**9.4**	**1,314**
ECM 4	Install Occupancy Sensor Lighting Controls	1,190	0.3	0	$178	$1,938	$215	$1,723	9.7	1,198
ECM 5	Install High/Low Lighting Controls	115	0.0	0	$17	$276	$175	$101	5.9	115

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 4: 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 that lighting controls use dual technology sensors, which reduce the possibility of lights turning off unexpectedly.

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

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

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

Affected Building Areas: telephone and compactor rooms, 3rd floor ABC open area, electrical and mechanical rooms

ECM 5: Install High/Low Lighting Controls

Install occupancy sensors to provide dual level lighting control for lighting fixtures in spaces that are infrequently occupied but may require some level of continuous lighting for safety or security reasons.

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

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

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 occupants approach the area.

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

Affected Building Areas: lobby

4.3 Motors

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Motor Upgrades		**1,456**	**0.6**	**0**	**$217**	**$7,989**	**$0**	**$7,989**	**36.8**	**1,466**
ECM 6	Premium Efficiency Motors	1,456	0.6	0	$217	$7,989	$0	$7,989	36.8	1,466

ECM 6: Premium Efficiency Motors

We evaluated replacing 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	Additional Motor Description
Roof - Penthouse	Dept. of Law & Public Safety	2	Condenser Water Pump	20.0	Condenser Water Pump
Roof - Penthouse	Dept. of Law & Public Safety	1	Condenser Water Pump	15.0	Condenser Water Pump

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 ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**16,946**	**3.6**	**0**	**$2,528**	**$32,448**	**$4,800**	**$27,648**	**10.9**	**17,065**
ECM 7	Install VFDs on Constant Volume (CV) Fans	4,976	2.2	0	$742	$6,679	$1,000	$5,679	7.7	5,011
ECM 8	Install VFDs on Heating Water Pumps	8,535	1.4	0	$1,273	$13,347	$2,000	$11,347	8.9	8,594
ECM 9	Install VFDs on Cooling Tower Fans	3,436	-0.1	0	$513	$12,422	$1,800	$10,622	20.7	3,460

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

ECM 7: Install VFDs on 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.

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

Affected Air Handlers: penthouse AHU

ECM 8: Install VFDs on Heating Water Pumps

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

Energy savings result from reducing pump motor speed (and power) as hot water valves close. The magnitude of energy savings is based on the estimated amount of time that the system will operate at reduced load.

Affected Pumps: 7.5 hp hot water pumps

ECM 9: Install VFDs on Cooling Tower Fans

We evaluated installing VFD to control the cooling tower fan motors. The VFD will allow the cooling tower fans to operate at the minimum speed necessary to maintain the temperature of the condenser water returning to the chiller.

Energy savings result from reducing fan speed (and power) when there is a reduced load on the chiller and outside air wet bulb temperatures are depressed. The magnitude of energy savings is based on the estimated amount of time that the system will operate at reduced load.

4.5 Unitary HVAC

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Unitary HVAC Measures		**134,823**	**81.0**	**0**	**$20,113**	**$744,051**	**$18,569**	**$725,482**	**36.1**	**135,766**
ECM 10	Install High Efficiency Air Conditioning Units	2,680	1.9	0	$400	$28,818	$1,258	$27,560	68.9	2,699
ECM 11	Install High Efficiency Heat Pumps	132,143	79.1	0	$19,713	$715,233	$17,311	$697,922	35.4	133,067

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 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 unitary HVAC units are eventually replaced, consider purchasing equipment that exceeds the minimum efficiency required by building codes.

ECM 10: Install High Efficiency Air Conditioning Units

We evaluated replacing standard efficiency Liebert condensing units with high efficiency condensing 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 and heating load, and the estimated annual operating hours.

Affected Units: two Liebert Condensing units

ECM 11: Install High Efficiency Heat Pumps

We evaluated replacing standard efficiency water source heat pumps with high efficiency water source heat pumps. A higher EER or SEER rating indicates a more efficient cooling system, and a higher HSPF rating indicates more efficient heating mode. 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 heating and cooling loads, and the estimated annual operating hours.

Affected Units: 110 water source heat pumps

4.6 Domestic Water Heating

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Domestic Water Heating Upgrade		**5,929**	**0.0**	**0**	**$884**	**$462**	**$200**	**$262**	**0.3**	**5,970**
ECM 12	Install Low-Flow DHW Devices	5,929	0.0	0	$884	$462	$200	$262	0.3	5,970

ECM 12: Install Low-Flow DHW Devices

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

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

Low-flow devices reduce the overall water flow from the fixture, while still providing adequate pressure for washing. Additional cost savings may result from reduced water usage.

4.7 Food Service & Refrigeration Measures

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Food Service & Refrigeration Measures		**4,654**	**0.5**	**0**	**$694**	**$1,606**	**$150**	**$1,456**	**2.1**	**4,687**
ECM 13	Vending Machine Control	4,654	0.5	0	$694	$1,606	$150	$1,456	2.1	4,687

ECM 13: 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 a time. Then 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.

4.8 Custom Measures

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Custom Measures		**83,110**	**0.0**	**0**	**$12,398**	**$126,914**	**$0**	**$126,914**	**10.2**	**83,691**
ECM 14	Installation of an Energy Management System	83,110	0.0	0	$12,398	$126,914	$0	$126,914	10.2	83,691

ECM 14: Installation of an Energy Management System

Most larger facilities have some type of building automation system (BAS), which provides for centralized, remote control and monitoring of HVAC equipment, and sometimes lighting or other building systems. A BAS utilizes a system of temperature and pressure sensors that obtain feedback about field conditions and provide signals to control systems that adjust HVAC system operation for optimal functioning. Thirty years ago, most control systems were pneumatic systems driven by compressed air, with pneumatic thermostats and air driven actuators for valves and dampers. Pneumatic controls have largely been replaced by direct digital control (DDC) systems, but many pneumatic systems remain. Contemporary DDC systems afford tighter controls and enhanced monitoring and trending capabilities as compared to the older systems.

Often smaller facilities are not equipped with central controls. For many small sites, it has been less costly to install distributed local controls, such as programmable thermostats and timeclocks, rather than centralized DDC. Local controls do a reasonably good job of scheduling equipment and maintaining operating conditions by relying on controls integral to HVAC units, such as logic for compressor staging, to manage the equipment operating algorithms.

Even for smaller sites, inefficiencies arise when temperature sensors and thermostat schedules are not maintained, when there are separate systems for heating and cooling, and especially when equipment is added, or the facility is reconfigured or repurposed.

Based on our survey, it appears that the installation of a BAS at your site could increase the efficiency of your building HVAC system operation.

A controls upgrade would enable automated equipment to start and stop times, temperature setpoints, lockouts and deadbands to be programmed remotely using a graphic interface. Controls can be configured to optimize ventilation and outside air intake by adjusting economizer position, damper function, and fan speed. Existing chilled and hot water distribution system controls are typically tied in, including associated pumps and valves. Coordinated control of HVAC systems is dependent on a network of sensors and status points. A comprehensive building control system provides monitoring and control for all HVAC systems, so operators can adjust system programming for optimal comfort and energy savings.

It is recommended that an HVAC engineer or contractor who specializes in BAS be contacted for a detailed evaluation and implementation costs. For the purposes of this report, the potential energy savings and measure costs were estimated based on industry standards and previous project experience. Further analysis should be conducted for the feasibility of this measure. This is not an investment grade analysis nor should be used as a basis for design and construction.

A high-level evaluation of potential savings and costs is provided for demonstration purposes only. It is a screening evaluation for the potential in installing a BAS. Based on industry standards and previous project experience, the potential energy savings may be up to 20% of existing HVAC energy use. We estimate the cost for installing a BAS is approximately $1.00 per square foot. Actual savings and costs will need to be outlined by the specific contractor engaged to implement the system. For the purposes of this report, we have conservatively estimated savings to be 7.0% of the HVAC energy consumption baseline.

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.

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

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

Energy Tracking with ENERGY STAR Portfolio Manager

You've heard it before—you cannot manage what you do not 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.

Lighting Maintenance

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

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

Lighting Controls

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

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

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.

Fans to Reduce Cooling Load

Install ceiling fans to supplement your cooling system. Thermostat settings can typically be increased by 4°F with no change in overall occupant comfort due to the wind chill effect of moving air.

AC System Evaporator/Condenser Coil Cleaning

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

HVAC Filter Cleaning and Replacement

Air filters should be checked regularly (often monthly) and cleaned or replaced when appropriate. Air filters reduce indoor air pollution, increase occupant comfort, and help keep equipment operating efficiently. If the building has a building management system, consider installing a differential pressure switch across filters to send an alarm about premature fouling or overdue filter replacement. Over time, filters become less 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.

Optimize HVAC Equipment Schedules

Energy management systems (BAS) typically provide advanced controls for building HVAC systems, including chillers, boilers, air handling units, rooftop units and exhaust fans. The BAS monitors and reports operational status, schedules equipment start and stop times, locks out equipment operation based on outside air or space temperature, and often optimizes damper and valve operation based on complex algorithms. These BAS features, when in proper adjustment, can improve comfort for building occupants and save substantial energy.

Know your BAS scheduling capabilities. Regularly monitor HVAC equipment operating schedules and match them to building operating hours in order to eliminate unnecessary equipment operation and save energy. Monitoring should be performed often at sites with frequently changing usage patterns – daily in some cases. We recommend using the *optimal start* feature of the BAS (if available) to optimize the building warmup sequence. Most BAS scheduling programs provide for holiday schedules, which can be used during reduced use or shutdown periods. Finally, many systems are equipped with a one-time override function, which can be used to provide additional space conditioning due to a one-time, special event. When available this override feature should be used rather than changing the base operating schedule.

Water Heater Maintenance

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

Also, preventative maintenance can extend the life of the system, maintain energy efficiency, and ensure safe operation. At least once a year, follow manufacturer instructions to drain a few gallons out of the water heater using the drain valve. If there is a lot of sediment or debris, then a full flush is recommended. Turn the temperature down and then completely drain the tank. Annual checks should include checks for:

- Leaks or heavy corrosion on the pipes and valves.
- Corrosion or wear on the gas line and on the piping. If you noticed any black residue, soot, or charred metal, this is a sign you may be having combustion issues and you should have the unit serviced by a professional.
- For electric water heaters, look for signs of leaking such as rust streaks or residue around the upper and lower panels covering the electrical components on the tank.
- For water heaters more than three years old, have a technician inspect the sacrificial anode annually.

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

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

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

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 On-site Generation

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

Preliminary screenings were performed to determine if an on-site generation measure could be a cost-effective solution for your facility. Before deciding to install an on-site generation system, we recommend conducting a feasibility study to analyze existing energy profiles, siting, interconnection, and the costs associated with the generation project including interconnection costs, departing load charges, and any additional special facilities charges.

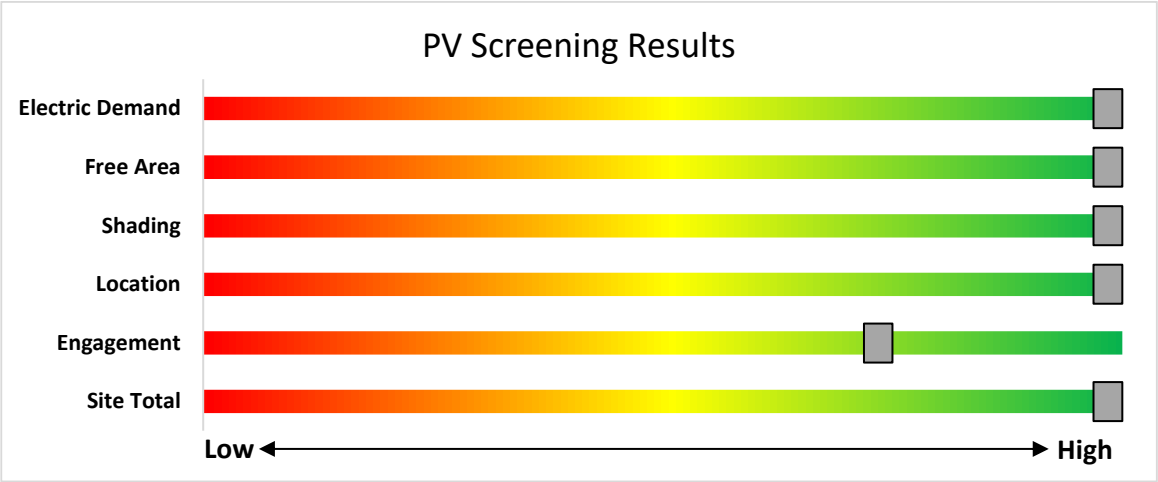
6.1 Solar Photovoltaic

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

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

The amount of free area, ease of installation (roof), 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.



Potential	High	
System Potential	107	kW DC STC
Electric Generation	127,477	kWh/yr
Displaced Cost	$19,020	/yr
Installed Cost	$278,200	

Figure 8 - Photovoltaic Screening

Successor Solar Incentive Program (SuSI)

The SuSI program replaces the SREC Registration Program (SRP) and the Transition Incentive (TI) program. The SuSI program is used to register and certify solar projects in New Jersey. Rebates are not available for solar projects. Solar projects may qualify to earn SREC- IIs (Solar Renewable Energy Certificates-II), however, the project owners *must* register their solar projects prior to the start of construction to establish the project's eligibility.

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:

Successor Solar Incentive Program (SuSI): https://www.njcleanenergy.com/renewable-energy/programs/susi-program

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

6.2 Combined Heat and Power

Combined heat and power (CHP) 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.

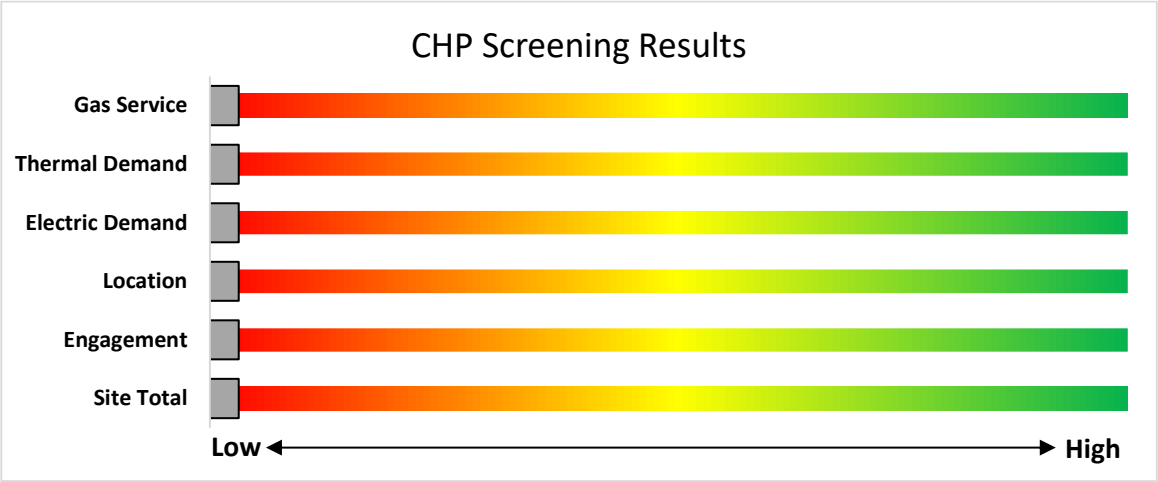


Figure 9 - Combined Heat and Power Screening

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 Electric Vehicles (EV)

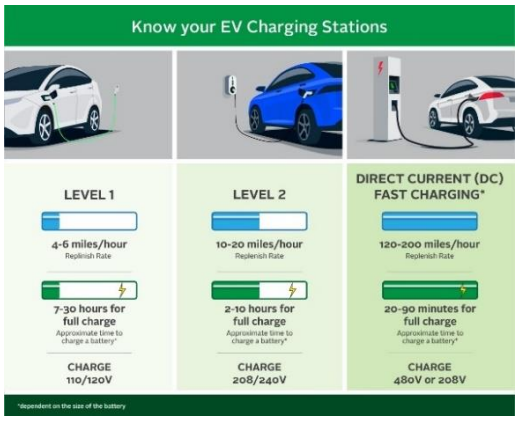
All electric vehicles (EVs) have an electric motor instead of an internal combustion engine. EVs function by plugging into a charge point, taking electricity from the grid, and then storing it in rechargeable batteries. Although electricity production may contribute to air pollution, the U.S. EPA categorizes all-electric vehicles as zero-emission vehicles because they produce no direct exhaust or tailpipe emissions.

EVs are typically more expensive than similar conventional and hybrid vehicles, although some cost can be recovered through fuel savings, federal tax credit, or state incentives.

7.1 Electric Vehicle Charging

EV charging stations provide a means for electric vehicle operators to recharge their batteries at a facility. While many EV drivers charge at home, others do not have access to regular home charging, and the ability to charge at work or in public locations is critical to making EVs practical for more drivers. Charging can also be used for electric fleet vehicles, which can reduce fuel and maintenance costs for fleets that replace gas or diesel vehicles with EVs.

EV charging comes in three main types. For this assessment, the screening considers addition of Level 2 charging, which is most common at workplaces and other public locations. Depending on the site type and usage, other levels of charging power may be more appropriate.



The preliminary assessment of EV charging at the facility shows that there is medium potential for adding EV chargers to the facility's parking, based on potential costs of installation and other site factors.

The primary costs associated with installing EV charging are the charger hardware and the cost to extend power from the facility to parking spaces. This may include upgrades to electric panels to serve increased loads.

The type and size of the parking area impact the costs and feasibility of adding EV charging. Parking structure installations can be less costly than surface lot installations as power may be readily available, and equipment and wiring can be surface mounted. Parking lot installations often require trenching through concrete or asphalt surface. Large parking areas provide greater flexibility in charger siting than smaller lots.

The location and capacity of facility electric panels also impact charger installation costs. A Level 2 charger generally requires a dedicated 208-240V, 40 Amp circuit. The electric panel nearest the planned installation may not have available capacity and may need to be upgraded to serve new EV charging loads. Alternatively, chargers could be powered from a more distant panel. The distance from the panel to the location of charging stations ties directly to costs, as conduits, cables, and potential trenching costs all increase on a per-foot basis. The more charging stations planned, the more likely it is that additional electrical capacity will be needed.

Other factors to consider when planning for EV charging at a facility include who the intended users are, how long they park vehicles at the site, and whether they will need to pay for the electricity they use.

The graphic below displays the results of the EV charging assessment conducted as part of this audit. The position of each slider indicates the impact each factor has on the feasibility of installing EV charging at the site.

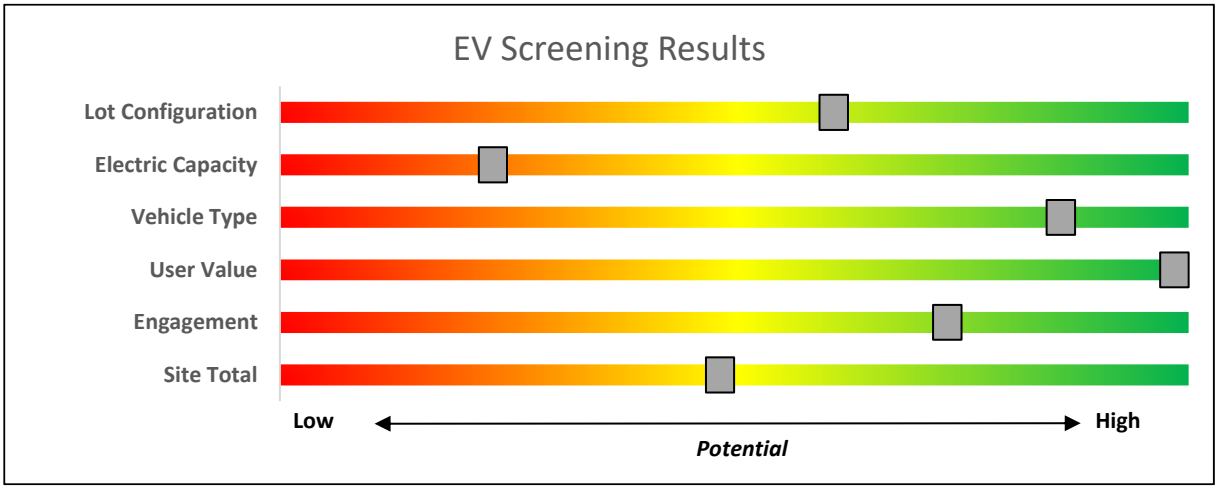


Figure 10 – EV Charger Screening

Electric Vehicle Programs Available

New Jersey is leading the way on electric vehicle (EV) adoption on the East Coast. There are several programs designed to encourage EV adoption in New Jersey, which is crucial to reaching a 100% clean energy future.

NJCEP offers a variety of EV programs for vehicles, charging stations, and fleets. Certain EV charging stations that receive electric utility service from Atlantic City Electric Company (ACE) or Public Service Electric & Gas Company (PSE&G), may be eligible for additional electric vehicle charging incentives directly from the utility. Projects may be eligible for both the incentives offered by this BPU program and incentives offered by ACE or PSE&G, up to 90% of the combined charger purchase and installation costs. Please check ACE or PSE&G program eligibility requirements before purchasing EV charging equipment, as additional conditions on types of eligible chargers may apply for utility incentives.

Both Jersey Central Power & Light (JCP&L) and Rockland Electric (RECO) have filed proposals for EV charging programs. BPU staff is currently reviewing those proposals.

For more information and to keep up to date on all EV programs please visit https://www.njcleanenergy.com/commercial-industrial/programs/electric-vehicle-programs

8 Project Funding and Incentives

Ready to improve your building's performance? New Jersey's Clean Energy Programs and Utility Energy Efficiency Programs can help. Pick the program that works best for you. This section provides an overview of currently available incentive programs in.

8.1 Utility Energy Efficiency Programs

The Clean Energy Act, signed into law by Governor Murphy in 2018, requires New Jersey's investor-owned gas and electric utilities to reduce their customers' use by set percentages over time. To help reach these targets the New Jersey Board of Public Utilities approved a comprehensive suite of energy efficiency programs to be run by the utility companies.

Prescriptive and Custom

The Prescriptive and Custom rebate program through your utility provider 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.

Equipment Examples

Lighting
Lighting Controls
HVAC Equipment
Refrigeration
Gas Heating
Gas Cooling
Commercial Kitchen Equipment
Food Service Equipment
Variable Frequency Drives
Electronically Commutate Motors
Variable Frequency Drives
Plug Loads Controls
Washers and Dryers
Agricultural
Water Heating

The Prescriptive program provides fixed incentives for specific energy efficiency measures. Prescriptive incentives vary by equipment type. The Custom program provides incentives for more unique or specialized technologies or systems that are not addressed through prescriptive incentives.

Direct Install

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

Incentives

The program pays up to 70% of the total installed cost of eligible measures.

How to Participate

To participate in Direct Install, you will work with a participating contractor. The contractor will be paid the measure incentives directly by the program, which will pass on to you in the form of reduced material and implementation costs. This means up to 70% of eligible costs are covered by the Direct Install program, subject to program rules and eligibility, while the remaining percent of the cost is paid to the contractor by the customer.

Engineered Solutions

The Engineered Solutions Program provides tailored energy-efficiency assistance and services to municipalities, universities, schools, hospitals and healthcare facilities (MUSH), non-profit entities, and multifamily buildings. Customers receive expert guided services, including investment-grade energy auditing, engineering design, installation assistance, construction administration, commissioning, and measurement and verification (M&V) services to support the implementation of cost-effective and comprehensive efficiency projects. Engineered Solutions is generally a good option for medium to large sized facilities with a peak demand over 200 kW looking to implement as many measures as possible under a single project to achieve deep energy savings. Engineered Solutions 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 for this program are based on project scope and energy savings achieved.

For more information on any of these programs, contact your local utility provider or visit https://www.njcleanenergy.com/transition.

8.2 New Jersey's Clean Energy Programs

Save money while saving the planet! New Jersey's Clean Energy Program is a statewide program that offers incentives, programs, and services that benefit New Jersey residents, businesses, educational, non-profit, and government entities to help them save energy, money, and the environment.

Large Energy Users

The Large Energy Users Program (LEUP) is designed to foster self-directed investment in energy projects. This program is offered to New Jersey's largest energy customers that annually contribute at least $200,000 to the NJCEP aggregate of all buildings/sites. This equates to roughly $5 million in energy costs in the prior fiscal year.

Incentives

Incentives are based on the specifications below. The maximum incentive per entity is the lesser of:

- $4 million
- 75% of the total project(s) cost
- 90% of total NJCEP fund contribution in previous year
- $0.33 per projected kWh saved; $3.75 per projected Therm saved annually.

How to Participate

To participate in LEUP, you will first need submit an enrollment application. This program requires all qualified and approved applicants to submit an energy plan that outlines the proposed energy efficiency work for review and approval. Applicants may submit a Draft Energy Efficiency Plan (DEEP), or a Final Energy Efficiency Plan (FEEP). Once the FEEP is approved, the proposed work can begin.

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

Combined Heat and Power

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

Incentives

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

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

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

How to Participate

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

Successor Solar Incentive Program (SuSI)

The SuSI program replaces the SREC Registration Program (SRP) and the Transition Incentive (TI) program. The program is used to register and certify 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 SREC-IIs (Solar Renewable Energy Certificates-II). SuSI consists of two sub-programs. The Administratively Determined Incentive (ADI) Program and the Competitive Solar Incentive (CSI) Program.

Administratively Determined Incentive (ADI) Program

The ADI Program provides administratively set incentives for net metered residential projects, net metered non-residential projects 5 MW or less, and all community solar projects.

After the registration is accepted, construction is complete, and a complete final as-built packet has been submitted, the project is issued a New Jersey certification number, which enables it to generate New Jersey SREC- IIs.

Market Segments	Size MW dc	Incentive Value ($/SREC II)	Public Entities Incentive Value - $20 Adder ($/SRECII)
Net Metered Residential	All types and sizes	$90	N/A
Small Net Metered Non-Residential located on Rooftop, Carport, Canopy and Floating Solar	Projects smaller than 1 MW	$100	$120
Large Net Metered Non-Residential located on Rooftop, Carport, Canopy and Floating Solar	Projects 1 MW to 5 MW	$90	$110
Small Net Metered Non-Residential Ground Mount	Projects smaller than 1 MW	$85	$105
Large Net Metered Non-Residential Ground Mount	Projects 1 MW to 5 MW	$80	$100
LMI Community Solar	Up to 5 MW	$90	N/A
Non-LMI Community Solar	Up to 5 MW	$70	N/A
Interim Subsection (t)	All types and sizes	$100	N/A

Eligible projects may generate SREC-IIs for 15 years following the commencement of commercial operations which is defined as permission to operate (PTO) from the Electric Distribution Company. After 15 years, projects may be eligible for a NJ Class I REC.

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

The ADI Program online portal is now open to new registrations.

Competitive Solar Incentive Program

The Competitive Solar Incentive (CSI) Program will provide competitively set incentives for grid supply projects and net metered non-residential projects greater than 5MW (dc). The program is currently under development. For updates, please continue to check the Solar Proceedings page on the New Jersey's Clean Energy Program website.

Solar projects help the State of New Jersey reach renewable energy goals outlined in the state's Energy Master Plan.

If you are considering installing solar photovoltaics on your building, visit the following link for more information: https://njcleanenergy.com/renewable-energy/programs/susi-program.

Energy Savings Improvement Program

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

9 Project Development

Energy conservation measures (ECMs) have been identified for your site, and their energy and economic analyses are provided within this LGEA report. Note that some of the identified projects may be mutually exclusive, such as replacing equipment versus upgrading motors or controls. The next steps with project development are to set goals and create a comprehensive project plan. The graphic below provides an overview of the process flow for a typical energy efficiency or renewable energy project. We recommend implementing as many ECMs as possible prior to undertaking a feasibility study for a renewable project. The cyclical nature of this process flow demonstrates the ongoing work required to continually improve building energy efficiency over time. If your building(s) scope of work is relatively simple to implement or small in scope, the measurement and verification (M&V) step may not be required. It should be noted through a typical project cycle, there will be changes in costs based on specific scopes of work, contractor selections, design considerations, construction, etc. The estimated costs provided throughout this LGEA report demonstrate the unburdened turn-key material and labor cost only. There will be contingencies and additional costs at the time of implementation. We recommend comprehensive project planning that includes the review of multiple bids for project work, incorporates potential operations and maintenance (O&M) cost savings, and maximizes your incentive potential.

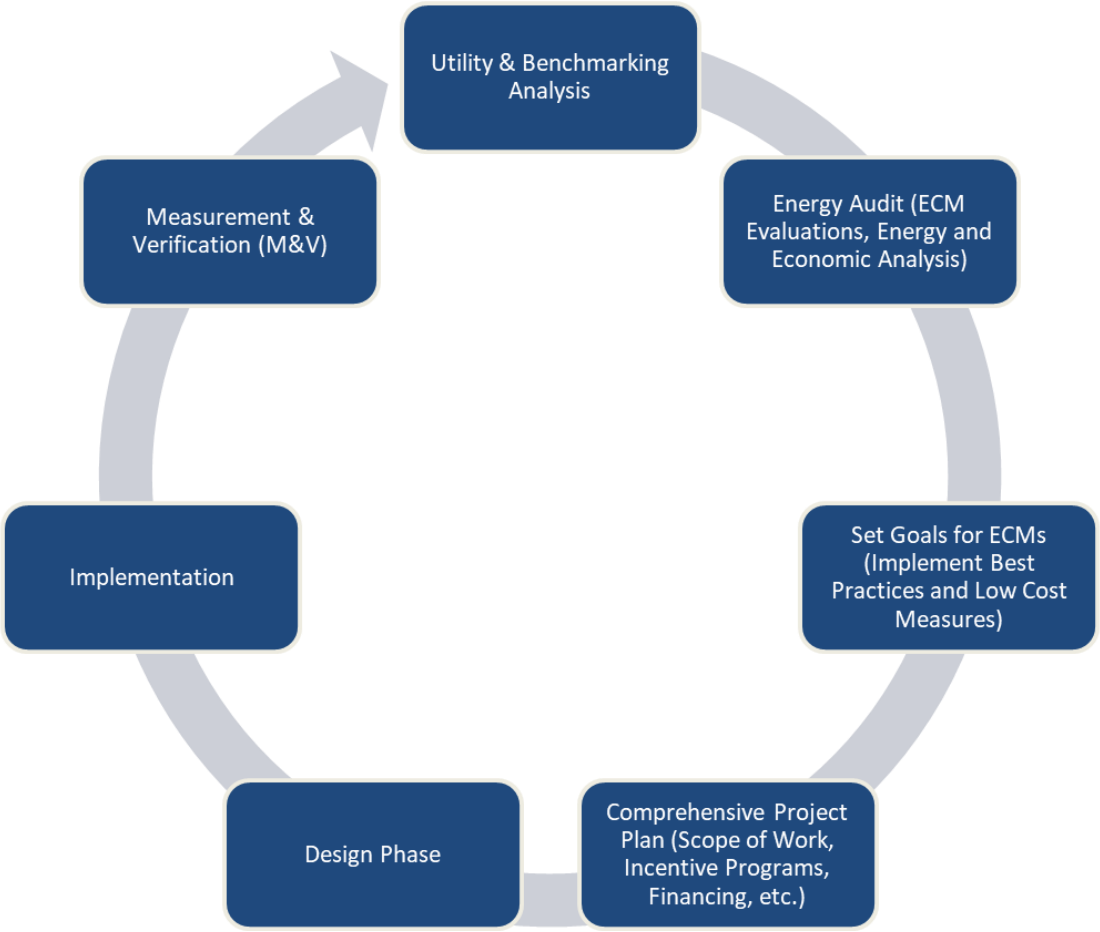


Figure 11 – Project Development Cycle

10 Energy Purchasing and Procurement Strategies

10.1 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. 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[7].

10.2 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 fluctuate monthly. The utility provides basic gas supply service 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[8].

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

[8] 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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
10 Floor - Afshien Lashkari	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - Brian Lee's Office	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - Bruce Wilson's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - Christopher Glaum's Office	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - Director's Office (David Rebuck)	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - Director's Office (David Rebuck)	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - Janitor's Closet	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	S	20	1,000		None	No	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	20	1,000	0.0	0	0	$0	$0	$0	0.0
10 Floor - Joyce Juana's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - Louis Rogacki's Office	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - Mary Carboni's Office	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - Mary Jo Flaherty's Office	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - Men Restroom	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - Men Restroom	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - Michael J. Golub Office	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - Michelle Weeks's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - Pam's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - PC Lab #1	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - PC Lab #2	6	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	6	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - PC Lab Closet	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	1,000		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	1,000	0.0	0	0	$0	$0	$0	0.0
10 Floor - Unlabeled Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - Willie Colon's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - Women Restroom	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
10 Floor - Women Restroom	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10th Floor - Back Area Cubicles	21	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	21	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10th Floor - Conference Room #2	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
10th Floor - Exit Signs	7	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	7	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
10th Floor - Kitchen	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10th Floor - Microfilm	8	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	8	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
10th Floor - Open Area	44	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	44	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Andrew's Office	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Board of Medical Exams Open Area	7	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	7	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Board of Medical Exams Open Area	63	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	63	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Conference Room	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Conference Room #2	10	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	10	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Debra's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Ericka's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Executive Director's Office	5	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	5	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - File Cabinet Closet	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	1,000		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	1,000	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Janitor's Closet	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	S	20	1,000		None	No	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	20	1,000	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Ken's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Kitchen	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Lawrence's Office	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Marylyn's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Mechanical Room	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	S	20	3,014		None	No	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	20	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Men Restroom	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Men Restroom	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Middle Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Scott's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Stanley's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Storage Room	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	1,000		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	1,000	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
2nd Floor - Supply Closet	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	1,000		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	1,000	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Unlabeled Office #1	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Unlabeled Office #2	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Unlabeled Office #3	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Unlabeled Office #4	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Women Restroom	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
2nd Floor - Women Restroom	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - ABC Allen Riley's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - ABC Andrew's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - ABC Back Exit	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - ABC Brian Mc Garry's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - ABC Bureau Chief	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - ABC Cameshia's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - ABC Chino's Office	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - ABC Chris's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - ABC Conference Room	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - ABC Kelly's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - ABC Maxwell's Office	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - ABC Mike's Office	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - ABC Nancy's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - ABC Open Area	3	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	3	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
3rd Floor - ABC Open Area	3	LED - Fixtures: Ambient 2x2 Fixture	None	S	25	4,368	4	None	Yes	3	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	95	0	$14	$331	$35	20.8
3rd Floor - ABC Open Area	22	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	22	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - ABC Patrick's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - ABC Restricted Area A	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
3rd Floor - ABC Restricted Area B	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - ABC Richard's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - ABC Unlabeled Office #1	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - C.A. Alex's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - C.A. Back Area Cubicles	10	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	10	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - C.A. Jonathan Debough's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - C.A. Leslie's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - C.A. Mellisa A. Cech Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - C.A. Pete Lockerson's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - C.A. Thomas Williams Office	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - Catastrophic Illness Open Area	2	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	2	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
3rd Floor - Catastrophic Illness Open Area	21	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	21	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - Consumer Affairs Open Area	3	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	3	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
3rd Floor - Consumer Affairs Open Area	19	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	19	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - Consumer Affairs Supply Closet	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - Janitor's Closet	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	S	20	1,000		None	No	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	20	1,000	0.0	0	0	$0	$0	$0	0.0
3rd Floor - Kitchen Area	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - Mechanical Room	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	S	20	3,014		None	No	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	20	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - Men Restroom	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - Men Restroom	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - Office 001	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - Office 002	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - Office 004	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - Room 003	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
3rd Floor - Women Restroom	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
3rd Floor - Women Restroom	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - B. Lipman	6	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	6	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Bathanny Rocque-Romaine	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Brian Weeks	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Conference Room	8	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	8	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Conference Room #2	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Copy Room	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - David Wand	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Emily Smithman	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Janitor's Closet	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	S	20	1,000		None	No	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	20	1,000	0.0	0	0	$0	$0	$0	0.0
4th Floor - Khartoum Nickson	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Kitchen	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Mamie Parnell	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Maura Caroselli	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Mechanical Room	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	S	20	3,014		None	No	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	20	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Megan Lupo	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Men Restroom	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Men Restroom	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Office Manager	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Open Area	6	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	6	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
4th Floor - Open Area	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Open Area	60	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	60	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Robert M. Glover	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Robyn Roberts	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Sarah Steindel	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
4th Floor - Susan McLure	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Unlabelled Office #1	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Unlabelled Office #2	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Unlabelled Office #3	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Unlabelled Office #4	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Women Restroom	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
4th Floor - Women Restroom	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Bureau Chief	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Bureau Chief	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Conference Room	6	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	6	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Director's Office	6	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	6	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Director's Office Restroom	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	S	20	3,014		None	No	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	20	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Greg Sullivan	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Janitor's Closet	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	S	20	1,000		None	No	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	20	1,000	0.0	0	0	$0	$0	$0	0.0
5th Floor - Jillian Mahoney	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Johnette	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Kevin T Barber	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Kitchen	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Mechanical Room	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	S	20	3,014		None	No	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	20	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Men Restroom	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Men Restroom	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Nick	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Open Area	6	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	6	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
5th Floor - Open Area	67	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	67	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Ray Lamboy	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
5th Floor - Receptionist	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Scott Fagerty	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Tia Johnson	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Todd J Wojcik	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Unlabeled Office #1	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Unlabeled Office #10	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Unlabeled Office #10	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Unlabeled Office #2	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Unlabeled Office #3	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Unlabeled Office #4	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Unlabeled Office #5	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Unlabeled Office #6	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Unlabeled Office #7	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Unlabeled Office #8	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Unlabeled Office #9	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Women Restroom	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor - Women Restroom	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
5th Floor- Jitendar Illendula	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Charles Washington	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Conference Room	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Conference Room #2	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Darren Bloom	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Director's Office	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Division on Civil Rights Open Area #1	3	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	3	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
6th Floor - Division on Civil Rights Open Area #1	29	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	29	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
6th Floor - Division on Civil Rights Open Area #2	4	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	4	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
6th Floor - Division on Civil Rights Open Area #2	20	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	20	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Elise Olgin	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Front Desk	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Hanna Oresky	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Janitor's Closet	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	S	20	1,000		None	No	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	20	1,000	0.0	0	0	$0	$0	$0	0.0
6th Floor - Jessica	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Kai Durant	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Kathleen Doran	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Kitchen	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Lawrence Johnson	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Lubna Qazi -Chowdhry	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Mail Room	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Mark Bator	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Mechanical Room	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	S	20	3,014		None	No	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	20	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Men Restroom	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Men Restroom	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Patricia D. Williamson Office	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Reception Area	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Regional Manager	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Richard Yaskin Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Rosemary Disavino	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Stephen Dekovich Office	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Storage Room	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	1,000		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	1,000	0.0	0	0	$0	$0	$0	0.0
6th Floor - Tim Savage	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
6th Floor - Unlabeled Office #1	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Unlabeled Office #2	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Unlabeled Office #3	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Unlabeled Office #4	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Unlabeled Office #5	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Unlabeled Office #6	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Unlabeled Office #7	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Women Restroom	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor - Women Restroom	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
6th Floor Conference Room #3	5	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	5	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor - Conference Room	1	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	1	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
7th Floor - Conference Room	10	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	10	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor - Division of Alcohol & Beverage Control	8	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	8	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor - DSFC J Flynn Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor - Highway Safety Open Area	2	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	2	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
7th Floor - Highway Safety Open Area	30	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	30	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor - HS Back Open Area	1	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	1	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
7th Floor - HS Back Open Area	17	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	17	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor - HS Bob Gaydosh	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor - HS Conference Room	5	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	5	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor - HS Director's Meeting Room	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor - HS Frank Neary	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor - HS Mariluz Garcia-Diaz	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor - HS Raymond Reeve	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor - HS Suzanne O'hearn	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
7th Floor - HS Unlabeled Office	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor - HS Unlabeled Office #2	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor - HS Unlabeled Office #3	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor - Janitor Closet	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	S	20	1,000		None	No	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	20	1,000	0.0	0	0	$0	$0	$0	0.0
7th Floor - Office #1	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor - State Police Open Area	3	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	3	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
7th Floor - State Police Open Area	32	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	32	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor Kitchen	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor Men Restroom	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor Men Restroom	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor Women Restroom	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
7th Floor Women Restroom	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - COLM Office #1	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	2	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - COLM Office #1	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - COLM Office #2	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - COLM Office #3	1	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	1	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
8th Floor - COLM Office #3	6	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	6	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - Conference Room	6	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	6	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - Council on Local Mandates Open Area	1	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	1	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
8th Floor - Council on Local Mandates Open Area	10	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	10	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - Developmental Disability Open Area	29	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	29	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - Developmental Disability Storag Room	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - File Cabinet	7	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	1,000		None	No	7	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	1,000	0.0	0	0	$0	$0	$0	0.0
8th Floor - Janitor's Closet	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	S	20	1,000		None	No	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	20	1,000	0.0	0	0	$0	$0	$0	0.0
8th Floor - Kitchen	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
8th Floor - Mechanical Room	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	S	20	3,014		None	No	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	20	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - Men Restroom	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - Men Restroom	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - Office #1	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - Office #2	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - Office #3	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - Office #4	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - Office #5	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - Office #6	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - Office #7	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - Office #8	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - Racing Open Area	4	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	4	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
8th Floor - Racing Open Area	22	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	22	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - Storage Room	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	1,000		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	1,000	0.0	0	0	$0	$0	$0	0.0
8th Floor - Women Restroom	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor - Women Restroom	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor DD - Conference Room	5	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	5	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor DD - Office 19	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor DD - Office 20	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor DD - Office 21	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
8th Floor DD - Office 22	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th - Back Area Lieutenant Pete	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - April Kirkpatrick's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - Back Area Cubicle	1	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	1	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
9th Floor - Back Area Cubicle	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	9	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
9th Floor - Cabinet Room	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	1,000		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	1,000	0.0	0	0	$0	$0	$0	0.0
9th Floor - Command Center Open Area	2	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	2	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
9th Floor - Command Center Open Area	13	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	13	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - David M. Iolli's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - DGE Kitchen	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - DGE Office #1	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - DGE Office #2	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - DGE Open Area	5	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	5	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
9th Floor - DGE Open Area	33	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	33	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - Dylan Thompson's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - Ellen Fertakos's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - Field Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - George Clark's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - Janitor's Closet	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	S	20	1,000		None	No	1	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	20	1,000	0.0	0	0	$0	$0	$0	0.0
9th Floor - Jordan Hollander's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - Kelly Morton's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - Kitchen & Conference Room	1	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	1	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
9th Floor - Kitchen & Conference Room	15	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	15	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - Men Restroom	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - Men Restroom	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - Tracy E. Richard son's Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - Unlabeled Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - Unlabeled Office #2	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - Unlabeled Office #3	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
9th Floor - Unlabeled Office #4	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - Unlabeled Office #5	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - Unlabeled Office #6	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - Women Restroom	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	S	25	3,014		None	No	1	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	25	3,014	0.0	0	0	$0	$0	$0	0.0
9th Floor - Women Restroom	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Compactor Room	5	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	40	4,368	4	None	Yes	5	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.1	255	0	$38	$331	$35	7.8
Conference Room	5	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	5	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Corridor - 10th Floor	2	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	2	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor - 10th Floor	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Corridor - 2nd Floor	2	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	2	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor - 2nd Floor	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Corridor - 3rd Floor	4	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	4	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor - 3rd Floor	11	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	11	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Corridor - 4th Floor	2	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	2	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor - 4th Floor	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Corridor - 5th Floor	2	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	2	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor - 5th Floor	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Corridor - 6th Floor	2	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	2	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor - 6th Floor	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Corridor - 7th Floor	3	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	3	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor - 7th Floor	7	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	7	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Corridor - 8th Floor	4	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	4	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor - 8th Floor	7	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	7	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Corridor - 9th Floor	1	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	1	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor - 9th Floor	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Electrical Room	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	4,368	2, 4	Relamp & Reballast	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.1	558	0	$83	$316	$40	3.3
Exterior Entrance	7	Halogen Incandescent: (1) 75W BR38 Screw-In Lamp	Timeclock		75	4,380	3	Relamp	No	7	LED Lamps: LED Lamp	Timeclock	11	4,380	0.0	1,962	0	$293	$311	$7	1.0
Exterior Entrance Flood	1	LED - Fixtures: Flood Fixture	Photocell		45	4,380		None	No	1	LED - Fixtures: Flood Fixture	Photocell	45	4,380	0.0	0	0	$0	$0	$0	0.0
Exterior Screw-In	2	Compact Fluorescent: (1) 23W A19 Screw-In Lamp	Timeclock		23	4,380	3	Relamp	No	2	LED Lamps: A19 Lamps	Timeclock	16	4,380	0.0	61	0	$9	$44	$2	4.5
Exterior Wall Pack	6	LED Lamps: (1) 50W Corn Bulb Screw-In Lamp	Timeclock		50	4,380		None	No	6	LED Lamps: (1) 50W Corn Bulb Screw-In Lamp	Timeclock	50	4,380	0.0	0	0	$0	$0	$0	0.0
Ground Floor - Entrance	1	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	1	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
Ground Floor - Entrance	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Ground Floor - File Cabinet Room	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Ground Floor - Kitchen	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Ground Floor - Office	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Ground Floor - Office #2	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Ground Floor - Open Area	3	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	3	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
Ground Floor - Open Area	17	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	17	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Ground Floor - Restroom	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Ground Floor - Restroom #2	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Ground Floor - Staff Area	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	S	40	3,014		None	No	4	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Loading Area	1	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	1	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
Loading Area	2	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	40	4,368	4	None	Yes	2	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	102	0	$15	$142	$20	8.0
Lobby	5	Compact Fluorescent: (1) 25W BR30 Screw-In Lamp	Wall Switch	S	25	4,368	3, 5	Relamp	Yes	5	LED Lamps: BR30 Lamps	High/Low Control	18	3,014	0.1	258	0	$39	$427	$190	6.1
Lobby	1	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	1	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
Lobby	2	Halogen Incandescent: (1) 75W BR38 Screw-In Lamp	Timeclock	S	75	4,380	3	Relamp	No	2	LED Lamps: LED Lamp	Timeclock	11	4,380	0.1	527	0	$79	$65	$6	0.8
Lobby	3	LED Lamps: (9) 7W A19 Screw-In Lamps	Timeclock	S	63	4,380		None	No	3	LED Lamps: (9) 7W A19 Screw-In Lamps	Timeclock	63	4,380	0.0	0	0	$0	$0	$0	0.0
Lobby	7	Linear Fluorescent - T12: 3' T12 (30W) - 1L	Timeclock	S	46	4,380	2	Relamp & Reballast	No	7	LED - Linear Tubes: (1) 3' Lamp	Timeclock	11	4,380	0.2	1,023	0	$153	$447	$35	2.7
Lobby - Elevator #1	12	LED Lamps: (1) 5W MR16 Plug-In Lamp	Timeclock	S	5	4,380		None	No	12	LED Lamps: (1) 5W MR16 Plug-In Lamp	Timeclock	5	4,380	0.0	0	0	$0	$0	$0	0.0
Lobby - Elevator #2	12	LED Lamps: (1) 5W MR16 Plug-In Lamp	Timeclock	S	5	4,380		None	No	12	LED Lamps: (1) 5W MR16 Plug-In Lamp	Timeclock	5	4,380	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Lobby - Elevator #3	12	LED Lamps: (1) 5W MR16 Plug-In Lamp	Timeclock	S	5	4,380		None	No	12	LED Lamps: (1) 5W MR16 Plug-In Lamp	Timeclock	5	4,380	0.0	0	0	$0	$0	$0	0.0
Lobby - Fire Control Room	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	4,368	3	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	4,368	0.1	230	0	$34	$92	$20	2.1
Mechanical Room	5	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	4,368	2, 4	Relamp & Reballast	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.3	1,396	0	$208	$765	$85	3.3
Roof	2	Metal Halide: (1) 150W Lamp	Photocell	S	190	4,380	1	Fixture Replacement	No	2	LED - Fixtures: High-Bay	Photocell	57	4,380	0.3	1,095	0	$163	$1,332	$100	7.5
Roof - Penthouse	2	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	2	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
Roof - Penthouse	10	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	4,368	2, 4	Relamp & Reballast	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.6	2,792	0	$416	$1,200	$135	2.6
Stair A	1	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	1	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
Stair A	21	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor		20	3,014		None	No	21	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	20	3,014	0.0	0	0	$0	$0	$0	0.0
Stair A	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor		40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Stair B	1	Exit Signs: LED - 2W Lamp	None		2	8,760		None	No	1	Exit Signs: LED - 2W Lamp	None	2	8,760	0.0	0	0	$0	$0	$0	0.0
Stair B	19	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor		20	3,014		None	No	19	LED - Fixtures: Ambient 1x4 Fixture	Occupancy Sensor	20	3,014	0.0	0	0	$0	$0	$0	0.0
Stair B	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor		40	3,014		None	No	1	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	40	3,014	0.0	0	0	$0	$0	$0	0.0
Telephone Room	3	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	4,368	2, 4	Relamp & Reballast	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	3,014	0.2	837	0	$125	$592	$65	4.2

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?	Manufacturer	Model	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Roof - Penthouse	Dept. of Law & Public Safety	2	Condenser Water Pump	20.0	91.0%	No	Magnetek Century Electric		W	1,800	6	Yes	93.0%	No		0.4	952	0	$142	$5,717	$0	40.3
Roof - Penthouse	Dept. of Law & Public Safety	1	Condenser Water Pump	15.0	90.2%	No	Baldor	JMM2513T	W	1,800	6	Yes	93.0%	No		0.2	504	0	$75	$2,272	$0	30.2
Roof	Director's Restroom	1	Exhaust Fan	0.2	65.0%	No			W	2,745		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof - Penthouse	Penthouse	2	Exhaust Fan	0.2	65.0%	No			W	2,745		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical Room	Dept. of Law & Public Safety	2	Heating Hot Water Pump	7.5	88.5%	No			W	1,800	8	No	88.5%	Yes	2	1.4	8,535	0	$1,273	$13,347	$2,000	8.9
Roof - Penthouse	Elevators 1,2, & 3	3	Other	30.0	92.4%	No	Schindler Elevator Corp.	0300E-1AAN-0052	W	350		No	92.4%	No		0.0	0	0	$0	$0	$0	0.0
Various Spaces	Various Spaces - WSHP	12	Supply Fan	0.1	65.0%	No	ClimateMaster	814009ESH	B	2,745		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Spaces	Various Spaces - WSHP	10	Supply Fan	0.1	65.0%	No	ClimateMaster	814013ESH	B	2,745		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Spaces	Various Spaces - WSHP	18	Supply Fan	0.2	65.0%	No	ClimateMaster	814023ESH	B	2,745		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Spaces	Various Spaces - WSHP	40	Supply Fan	0.3	65.0%	No	ClimateMaster	814030ESH	B	2,745		No	65.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Spaces	Various Spaces - WSHP	9	Supply Fan	0.5	70.0%	No	ClimateMaster	814036ESH	B	2,745		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Spaces	Various Spaces - WSHP	10	Supply Fan	0.5	70.0%	No	ClimateMaster	814042ESH	B	2,745		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Various Spaces	Various Spaces	11	Supply Fan	0.8	70.0%	No	ClimateMaster	814048ESH	B	2,745		No	70.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	Cooling Tower Fans	2	Cooling Tower Fan	5.0	86.5%	No	Baldor		B	2,745	9	No	89.5%	Yes	2	-0.1	3,436	0	$513	$12,422	$1,800	20.7
Penthouse	Various Spaces	1	Supply Fan	7.5	88.5%	No			B	2,000	7	No	91.0%	Yes	1	2.2	4,976	0	$742	$6,679	$1,000	7.7
Roof	Lab #2 - Vertiv Liebert	1	Supply Fan	1.5	84.0%	No			B	2,745		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof	PC - Li3bert Condensing Units #1 & 2	2	Supply Fan	1.5	84.0%	No			B	2,745		No	84.0%	No		0.0	0	0	$0	$0	$0	0.0

Packaged 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)	Cooling Mode Efficiency (SEER/IEER/ EER)	Heating Mode Efficiency	Manufacturer	Model	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/IEER/ EER)	Heating Mode Efficiency	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Roof	Lab #2 - Vertiv Liebert	1	Split-System	7.96		12.50		Liebert	MCS028E1AD03HA	W		No							0.0	0	0	$0	$0	$0	0.0
Roof	PC - Libert Condensing Units #1 & 2	2	Split-System	7.96		11.00		Liebert		B	10	Yes	2	Split-System	7.96		14.00		1.9	2,680	0	$400	$28,818	$1,258	68.9
Roof	Penthouse	1	Electric Resistance Heat		17.08		1 COP			W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Penthouse	1	Electric Resistance Heat		17.08		1 COP			W		No							0.0	0	0	$0	$0	$0	0.0
Stair A	Stair A	1	Electric Resistance Heat		34.16		1 COP			W		No							0.0	0	0	$0	$0	$0	0.0
Stair B	Stair B	1	Electric Resistance Heat		34.16		1 COP			W		No							0.0	0	0	$0	$0	$0	0.0
Roof	Elevator Room	1	Ductless Mini-Split AC	2.00		20.00		FRIEDRICH	MR24C3J	W		No							0.0	0	0	$0	$0	$0	0.0
Various Spaces	Various Spaces	12	Water Source HP	0.75	10.80	11.30	3.1 COP	ClimateMaster	814009ESH	B	11	Yes	12	Water Source HP	0.75	10.80	14.00	4.8 COP	2.3	5,667	0	$845	$39,469	$405	46.2
Various Spaces	Various Spaces	10	Water Source HP	1.00	15.96	10.90	3.2 COP	ClimateMaster	814013ESH	B	11	Yes	10	Water Source HP	1.00	15.96	14.00	4.8 COP	3.0	6,628	0	$989	$36,301	$450	36.3
Various Spaces	Various Spaces	18	Water Source HP	2.00	28.60	11.60	3.4 COP	ClimateMaster	814023ESH	B	11	Yes	18	Water Source HP	2.00	28.60	15.00	4.5 COP	7.8	16,925	0	$2,525	$89,900	$2,448	34.6
Various Spaces	Various Spaces	32	Water Source HP	2.50	44.50	11.70	3.4 COP	ClimateMaster	814030ESH	B	11	Yes	32	Water Source HP	2.50	44.50	15.00	4.5 COP	29.4	43,003	0	$6,415	$229,396	$5,440	34.9
Various Spaces	Various Spaces	9	Water Source HP	3.00	47.97	11.20	3.5 COP	ClimateMaster	814036ESH	B	11	Yes	9	Water Source HP	3.00	47.97	15.00	4.5 COP	7.3	13,311	0	$1,986	$72,296	$1,836	35.5
Various Spaces	Various Spaces	10	Water Source HP	3.50	61.07	11.60	3.5 COP	ClimateMaster	814042ESH	B	11	Yes	10	Water Source HP	3.50	61.07	15.00	4.5 COP	11.6	17,274	0	$2,577	$87,151	$2,380	32.9
Various Spaces	Various Spaces	11	Water Source HP	4.00	64.47	11.20	3.7 COP	ClimateMaster	814048ESH	B	11	Yes	11	Water Source HP	4.00	64.47	15.00	4.5 COP	10.5	18,585	0	$2,773	$103,370	$2,992	36.2
Various Spaces	Various Spaces	8	Water Source HP	2.50	44.50	11.70	3.4 COP	ClimateMaster	TCH030AFC	B	11	Yes	8	Water Source HP	2.50	44.50	15.00	4.5 COP	7.3	10,751	0	$1,604	$57,349	$1,360	34.9

DHW Inventory & Recommendations

		Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Manufacturer	Model	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
10 through 2nd Floor Restroom Ceilings	10 Through 2nd Floor	9	Storage Tank Water Heater (≤ 50 Gal)	A.O. SMITH	DEL 30 110	W		No						0.0	0	0	$0	$0	$0	0.0
Compactor Room	Compactor Room	1	Storage Tank Water Heater (≤ 50 Gal)	STATE SELECT	ES620SOMSK	W		No						0.0	0	0	$0	$0	$0	0.0

Low-Flow Device Recommendations

	Recommedation Inputs					Energy Impact & Financial Analysis						
Location	ECM #	Device Quantity	Device Type	Existing Flow Rate (gpm)	Proposed Flow Rate (gpm)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Various Restrooms	12	45	Faucet Aerator (Lavatory)	2.00	0.50	0.0	5,520	0	$823	$378	$180	0.2
Various Restrooms	12	10	Faucet Aerator (Kitchen)	2.00	1.50	0.0	409	0	$61	$84	$20	1.1

Plug Load Inventory

	Existing Conditions					
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?	Manufacturer	Model
Various Spaces	12	Coffee Machine	900	No		
Various Spaces	408	Desktop	150	No		
Various Spaces	19	Microwave	1,000	No		
Various Spaces	1	Paper Shredder	150	No		
Various Spaces	16	Paper Shredder	144	No		
Various Spaces	115	Printer (Medium/Small)	240	No		
Various Spaces	30	Printer / Copier (Large)	600	No		
6th Floor - Conference Room #3	1	Projector	244	No		
7th Floor - Conference Room	1	Projector	244	No		
Various Spaces	6	Refrigerator (Mini)	145	No		
Various Spaces	14	Refrigerator (Residential)	175	No		
Various Spaces	9	Television	155	No		
9th Floor - Command Center	16	Television	124	No		
Various Spaces	12	Toaster Oven	1,000	No		
Various Spaces	14	Water Cooler	92	No		

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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Various Spaces	3	Glass Fronted Refrigerated	13	Yes	0.4	3,627	0	$541	$803	$150	1.2
Various Spaces	3	Non-Refrigerated	13	Yes	0.1	1,028	0	$153	$803	$0	5.2

Miscellaneous Fuel Inventory

	Existing Conditions					
Location	Quantity	Equipment Description	Input Capacity per Unit (MBh)	ENERGY STAR Qualified?	Manufacturer	Model
Mechanical Room	1	Space Heating Electric Boiler	1,230.0	No	Precision Corporation	U-1

Custom (High Level) Measure Analysis

Installation of an Energy Management System

Building Square Footage	109,025	**Fuel Utility Rate**	$0.149	MMBtu
Percent of Conditioned Area Impacted	100%	**Blended Electric Utility Rate**	$0.149	kWh

Existing Conditions						Proposed Conditions					Energy Impact & Financial Analysis										
Description	Area(s)/System(s) Served	Remaining Useful Life	Total HVAC Motor Usage kWh	Total HVAC Electric Usage kWh	Total HVAC Fuel Usage MMBtu	Description	% Savings HVAC Motor Usage kWh	% Savings HVAC Electric Usage kWh	% Savings HVAC Fuel Usage MMBtu	Estimated Cost per Sqft	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Base Incentives	Enhanced Incentives	Total Incentives	Total Net Cost	Payback w/o Incentives in Years	Simple Payback w/ Incentives in Years
Limited/No HVAC Controls	HVAC Equipment & Systems	15	217,723	613,372	1,230	Installation of an Energy Management System	10%	10%	0%	$1.00	0.00	83,110	0	$12,398	$126,914	$0	$0	$0	$126,914	10.24	10.24

APPENDIX B: ENERGY STAR STATEMENT OF ENERGY PERFORMANCE

Energy use intensity (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

80

ENERGY STAR® Score[1]

LPS - 140 East Front Street Office Building

Primary Property Type: Office
Gross Floor Area (ft²): 109,025
Built: 1991

For Year Ending: October 31, 2022
Date Generated: November 10, 2023

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
140 East Front Street Office Building 140 East Front Street Trenton, New Jersey 08625	The Fruscione Company, LLC P.O. Box 3245 Hamilton, NJ 08619 (609) 586-3324	

Property ID: 26935646

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
46.4 kBtu/ft²

Source EUI
130 kBtu/ft²

Annual Energy by Fuel		
Electric - Grid (kBtu)	5,062,341	(100%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	73.9
National Median Source EUI (kBtu/ft²)	207
% Diff from National Median Source EUI	-37%
Annual Emissions	
Total (Location-Based) GHG Emissions (Metric Tons CO2e/year)	455

Signature & Stamp of Verifying Professional

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

LP Signature: _____Date: _____

Licensed Professional

____ _____
,
(____)____-_____
_____

Professional Engineer or Registered Architect Stamp (if applicable)

APPENDIX C: GLOSSARY

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

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

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