Local Government Energy Audit Report

Atlantic County Office Building and Library

April 30, 2024

Prepared for:

Atlantic County

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Atlantic City, New Jersey 08404

Prepared by:

TRC

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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.

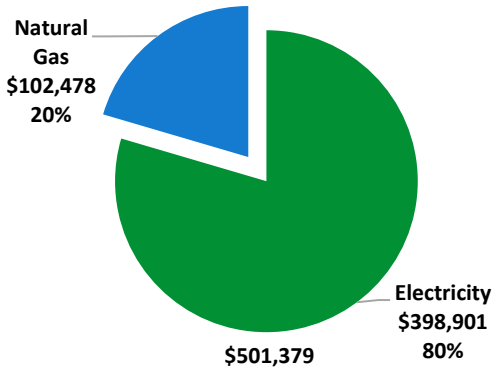
The customer and their respective contractor(s) are responsible to implement energy conservation measures in complete conformance with all applicable local, state, and federal requirements.

Table of Contents

1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Atlantic County Office Building and Library. 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: $501,379 Electricity: 2,881,216 kWh Natural Gas: 75,333 Therms	
ENERGY STAR® Benchmarking Score	45 *(1-100 scale)*	This building performs at or below the national average. This report contains suggestions about how to improve building performance and reduce energy costs.

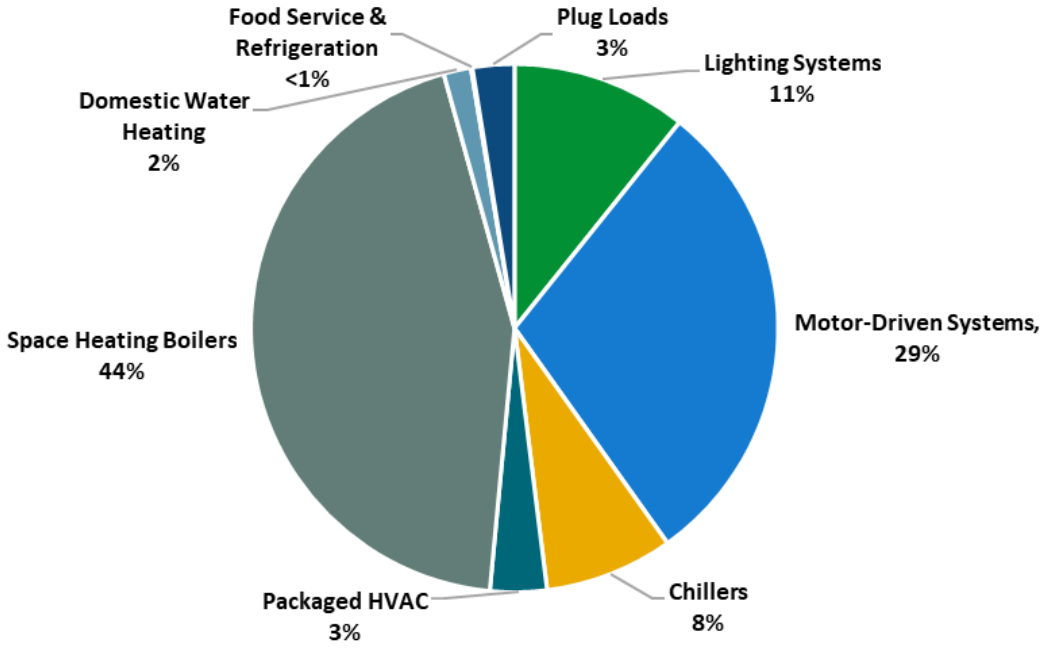


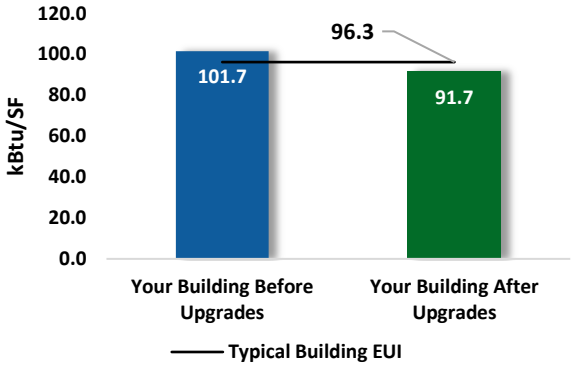
Figure 1 - Energy Use by System

POTENTIAL IMPROVEMENTS

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

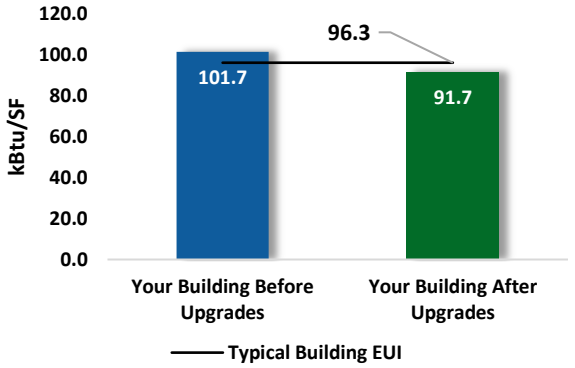
Scenario 1: Full Package (All Evaluated Measures)

Installation Cost	$264,470
Potential Rebates & Incentives[1]	$60,087
Annual Cost Savings	$71,222
Annual Energy Savings	Electricity: 522,676 kWh Natural Gas: -840 Therms
Greenhouse Gas Emission Savings	258 Tons
Simple Payback	2.9 Years
Site Energy Savings (All Utilities)	10%



Scenario 2: Cost Effective Package[2]

Installation Cost	$260,324
Potential Rebates & Incentives	$60,087
Annual Cost Savings	$71,156
Annual Energy Savings	Electricity: 522,197 kWh Natural Gas: -840 Therms
Greenhouse Gas Emission Savings	258 Tons
Simple Payback	2.8 Years
Site Energy Savings (all utilities)	10%



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			**325,534**	**88.2**	**-68**	**$44,144**	**$103,913**	**$23,868**	**$80,045**	**1.8**	**319,840**
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	87,957	23.7	-18	$11,927	$30,982	$4,212	$26,770	2.2	86,419
ECM 2	Retrofit Fixtures with LED Lamps	Yes	237,577	64.5	-50	$32,216	$72,931	$19,656	$53,275	1.7	233,422
Lighting Control Measures			**76,318**	**20.1**	**-16**	**$10,349**	**$99,795**	**$28,250**	**$71,545**	**6.9**	**74,983**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	63,569	17.2	-13	$8,620	$76,620	$9,875	$66,745	7.7	62,457
ECM 4	Install High/Low Lighting Controls	Yes	12,749	2.9	-3	$1,729	$23,175	$18,375	$4,800	2.8	12,526
Motor Upgrades			**478**	**0.1**	**0**	**$66**	**$4,145**	**$0**	**$4,145**	**62.6**	**482**
ECM 5	Premium Efficiency Motors	No	478	0.1	0	$66	$4,145	$0	$4,145	62.6	482
Variable Frequency Drive (VFD) Measures			**52,006**	**15.0**	**0**	**$7,200**	**$43,892**	**$7,600**	**$36,292**	**5.0**	**52,369**
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	52,006	15.0	0	$7,200	$43,892	$7,600	$36,292	5.0	52,369
HVAC System Improvements			**7,269**	**0.0**	**0**	**$1,006**	**$652**	**$100**	**$552**	**0.5**	**7,320**
ECM 7	Install Pipe Insulation	Yes	7,269	0.0	0	$1,006	$652	$100	$552	0.5	7,320
Domestic Water Heating Upgrade			**10,426**	**0.0**	**0**	**$1,444**	**$538**	**$269**	**$269**	**0.2**	**10,499**
ECM 8	Install Low-Flow DHW Devices	Yes	10,426	0.0	0	$1,444	$538	$269	$269	0.2	10,499
Custom Measures			**50,645**	**0.0**	**0**	**$7,013**	**$11,535**	**$0**	**$11,535**	**1.6**	**50,999**
ECM 9	Replace Electric Water Heater with Heat Pump Water Heater	Yes	50,645	0.0	0	$7,013	$11,535	$0	$11,535	1.6	50,999
TOTALS (COST EFFECTIVE MEASURES)			**522,197**	**123.3**	**-84**	**$71,156**	**$260,324**	**$60,087**	**$200,237**	**2.8**	**516,010**
TOTALS (ALL MEASURES)			**522,676**	**123.4**	**-84**	**$71,222**	**$264,470**	**$60,087**	**$204,383**	**2.9**	**516,492**

* - 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 Atlantic County Office Building and Library. 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 March 7, 2023, TRC performed an energy audit at Atlantic County Office Building and Library located in Atlantic City, New Jersey. TRC met with Robert Reynolds to review the facility operations and help focus our investigation on specific energy-using systems.

Atlantic County Office Building and Library is an eight-story, 170,791 square foot building built in 1985. Spaces include offices, conference rooms, lounges, courtrooms, library, kitchens, dining area, auditorium, corridors, stairwells, atriums, restrooms, locker rooms, storage rooms, and electrical and mechanical spaces.

Lighting for the facility is provided mainly by linear fluorescent T8 fixtures with electronic ballasts. Two chillers and six boilers provide cooling and heating to most spaces. There are six passenger elevators located in the facility.

2.2 Building Occupancy

The Atlantic County Office Building is occupied year-round from 7:30 AM until 5:30 PM, with limited use on weekends. The Atlantic City Free Public Library is occupied year-round from 9:30 AM until 5:00 PM on Monday through Wednesday and Saturdays, from 9:30 AM until 8:00 PM on Thursday through Friday, and is closed on Sundays. The facility has a typical occupancy of 311 staff.

Building Name	Weekday/Weekend	Operating Schedule
Atlantic County Office Building	Weekday	7:30 AM - 5:30 PM
	Weekend	Limited Use
Atlantic City Free Public Library	Monday - Wednesday	9:30 AM- 5:00 PM
	Thursday - Friday	9:30 AM - 8:00 PM
	Saturday	9:30 AM- 5:00 PM
	Sunday	Closed

Figure 3 - Building Occupancy Schedule

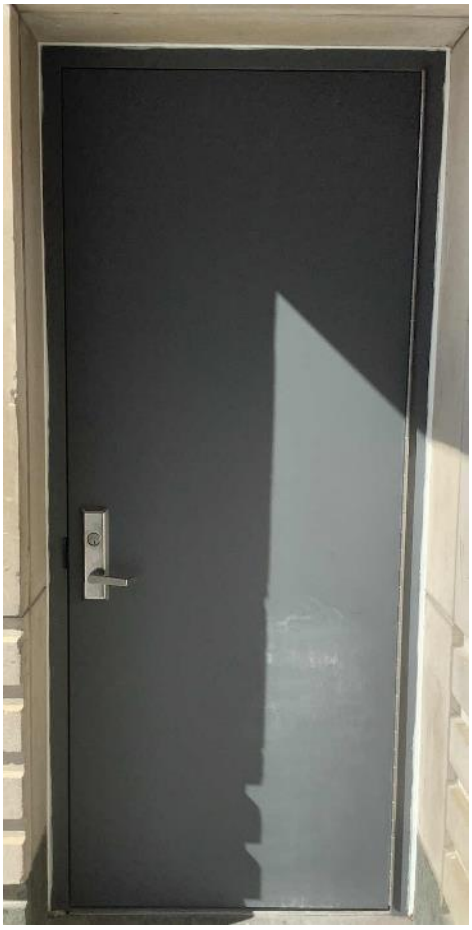
2.3 Building Envelope

Much of this building is a glass panel façade over a structural steel frame. The remaining walls are concrete block over structural steel with a block façade. The roof is flat, covered with stone ballast over a rubber membrane, and in fair condition. The windows are double glazed and have aluminum frames with thermal breaks. The glass-to-frame seals are in fair condition. Exterior doors are metal and glass with metal frames and are in good condition with undamaged door seals. Overall, the building envelope appears in fair condition.

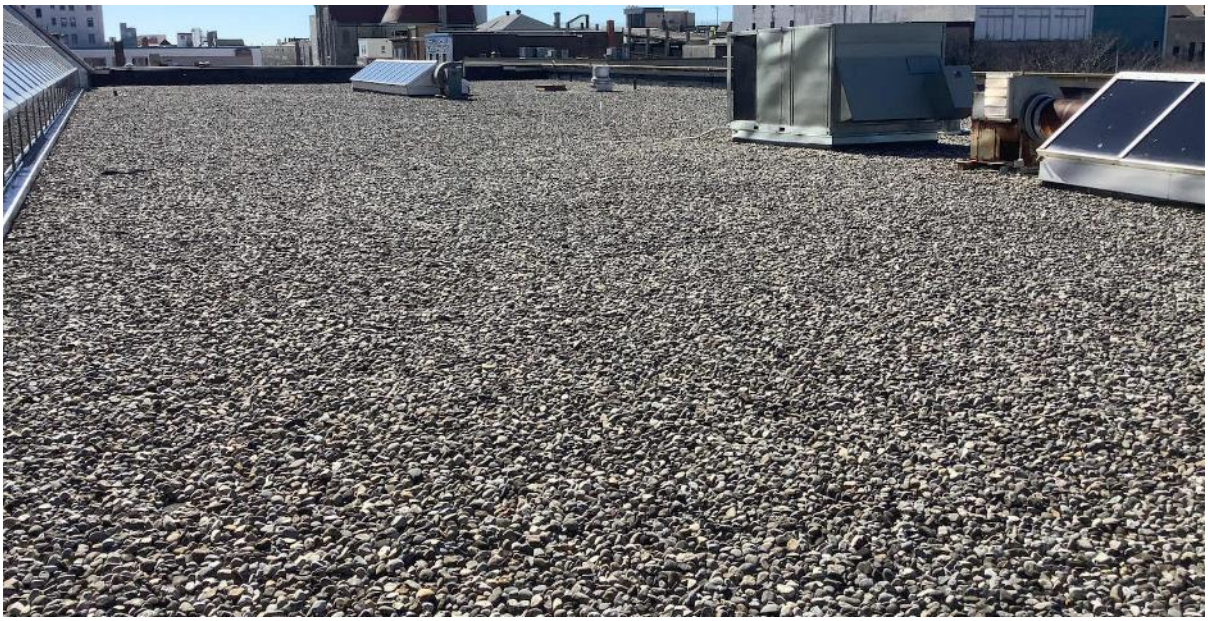
Building Walls and Windows

Building Walls

Entrance Doors



Exit Door



Roof

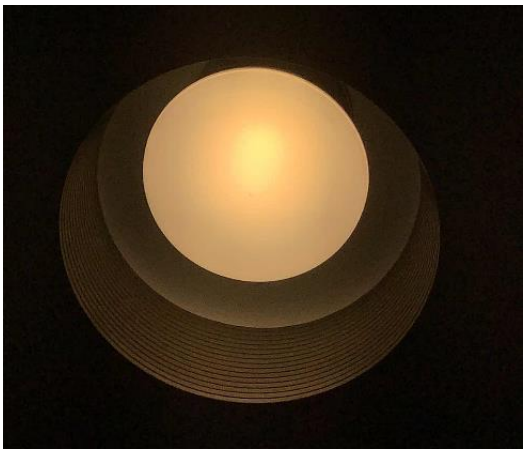
2.4 Lighting Systems

The primary interior lighting system uses 32-Watt fluorescent T8 lamps. Fixture types include 1-lamp, 2-lamp, 3-lamp, and 4-lamp, 2-foot, 3-foot, and 4-foot long recessed, surface mounted, and pendant fixtures with linear tube lamps. Typically, T8 fluorescent lamps use electronic ballasts and T12 fluorescent lamps use magnetic ballasts.

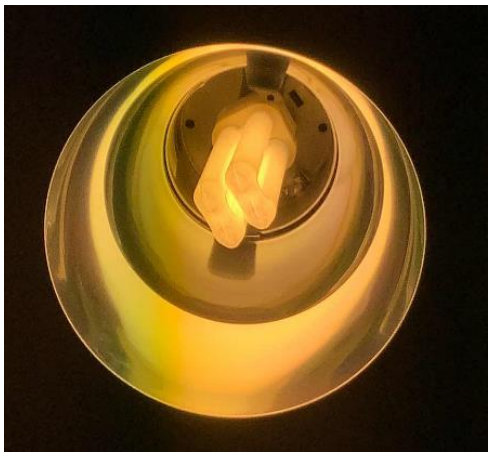
Additionally, lighting in some areas throughout the facility have been replaced over time with LED lamps. Compact fluorescent lamps (CFL), incandescent, and fluorescent T12 lamps are also used in some spaces. Typically, CFLs at this site use 26-Watt and 42-Watts, incandescent lamps draw 60-Watts to 75-Watts, and fluorescent T12 lamps require 40-Watts. Exit signs use LED sources.

Interior light fixtures are controlled by manual wall switches. All light fixtures are in good condition. Interior lighting levels were generally sufficient. Exterior fixtures use LED lamps. Exterior fixtures are photocell and timer controlled.

Fluorescent T8 Fixtures



Incandescent Lamp



CFL Lamp

Exterior LED Fixtures

2.5 Air Handling Systems

Unitary Electric HVAC Equipment

Areas of the facility are supplementally cooled using one mini split air conditioning (AC) unit and one split system serving the computer room air handler. The mini-split AC unit has a 1-ton cooling capacity with an efficiency of 16 EER, while the split system has an estimated 14.5-ton cooling capacity with an efficiency of 10 EER. Installed in 2010 and 2008, the units are in fair condition and are thermostatically controlled.

Mini-split AC System

Split System

Unitary Heating Equipment

Mechanical rooms throughout the facility are supplementally heated using electric resistance heaters. The unit's range in heating capacity from 3 kW to 10 kW. Equipment is thermostatically controlled and in good condition.

Electric Resistance Heaters

Packaged Rooftop Units

Areas of the library are conditioned by a packaged rooftop unit (RTU-1) equipped with a 7.5 hp constant speed supply fan. The unit has a cooling capacity of 20 tons with an efficiency of 11 EER. Installed in 2019, the unit is in good condition and is thermostatically controlled.

Packaged Rooftop Unit

Air Handling Units (AHUs)

The facility is conditioned using seven air handling units (AHUs) equipped with hot water heating coils and chilled water-cooling coils.

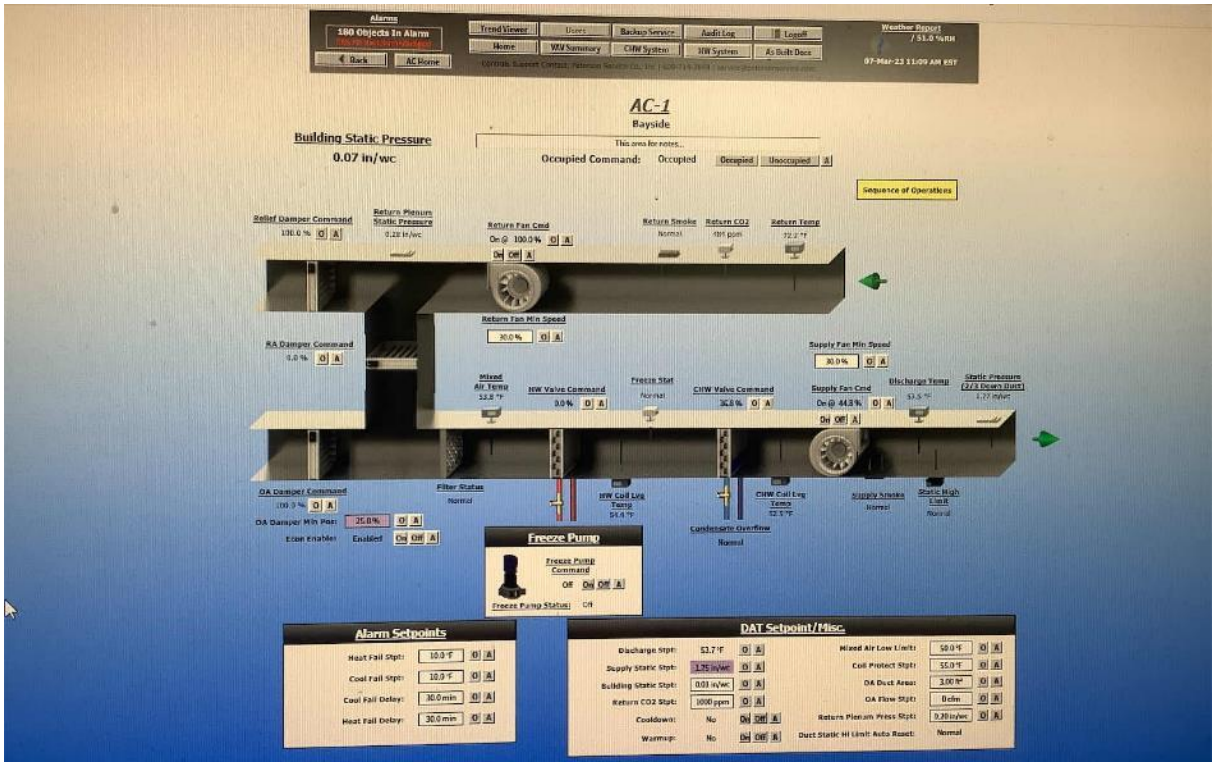
AC-1 and AC-2 serve the office area bay-side and ocean-side and are each equipped with a 125 hp VFD controlled supply fan, 40 hp VFD controlled return fan, and 1 hp constant speed hot water heating pump.

AC-3 serves the auditorium while AC-4 and AC-5 serve the atrium, and each unit is equipped with a 7.5 hp constant speed supply fan and 5 hp constant speed return fan.

AC-6 and AC-7 serve the library area and are equipped with a 7.5 hp and 5 hp constant speed supply fan, respectively.

The units are in fair to good condition and are monitored and controlled using the facility BAS.

AC-1 Air Handling Unit



Air Handling Unit EMS Diagram View

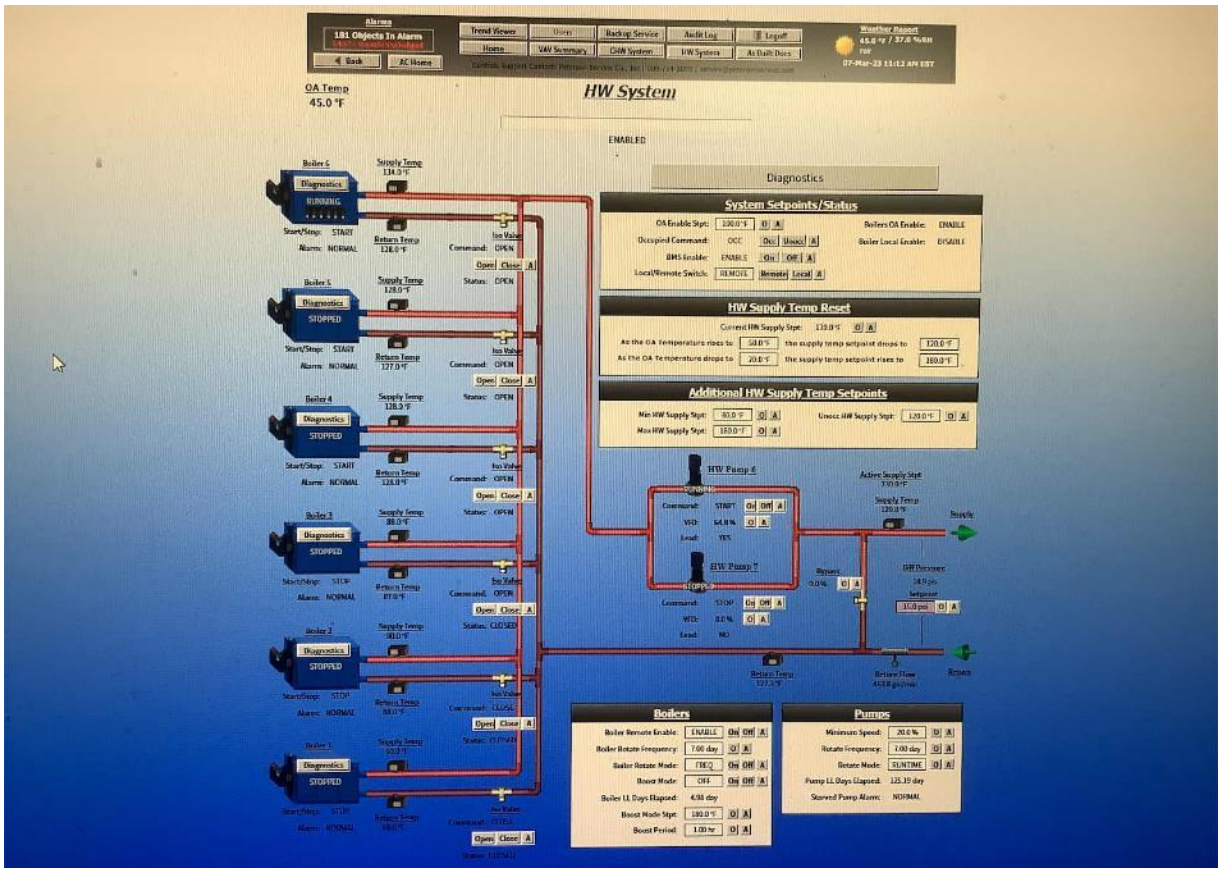
2.6 Heating Hot Water Systems

The building heating system consists of six ATH gas-fired condensing hot water boilers, each with an output capacity of 2,700 MBh. The burners are fully modulating with a nominal efficiency of 90%. The boilers are configured in an automated control scheme and controlled by the facility's BAS. Multiple boilers are need under high load conditions. Installed in 2022, the boilers are in good condition. There is a service contract in place.

The boilers are configured in a variable flow primary distribution with two, 40 hp VFD controlled hot water pumps (HWP-6 and HWP-7) operating with a lead-lag control scheme. The boilers provide hot water to air handling units, radiators, and unit heaters throughout the building.

Hot Water Boilers

Heating Hot Water Pumps



Heating Hot Water System EMS Diagram View

2.7 Chilled Water Systems

The chiller plant consists of two, 200-ton Trane variable speed, water-cooled centrifugal chillers. The chillers are configured in a primary distribution loop with two, 15 hp VFD controlled chilled water pumps (CHWP-4 and CHWP-5) operating with a lead-lag control scheme with one pump on standby (CHWP-3).

The condenser water system consists of two, one-cell cooling towers (CT-1 and CT-2), each equipped with a 15 hp VFD controlled fan. Condenser water is supplied to the chillers by two, 15 hp VFD controlled pumps (CTP-1 and CTP-2).

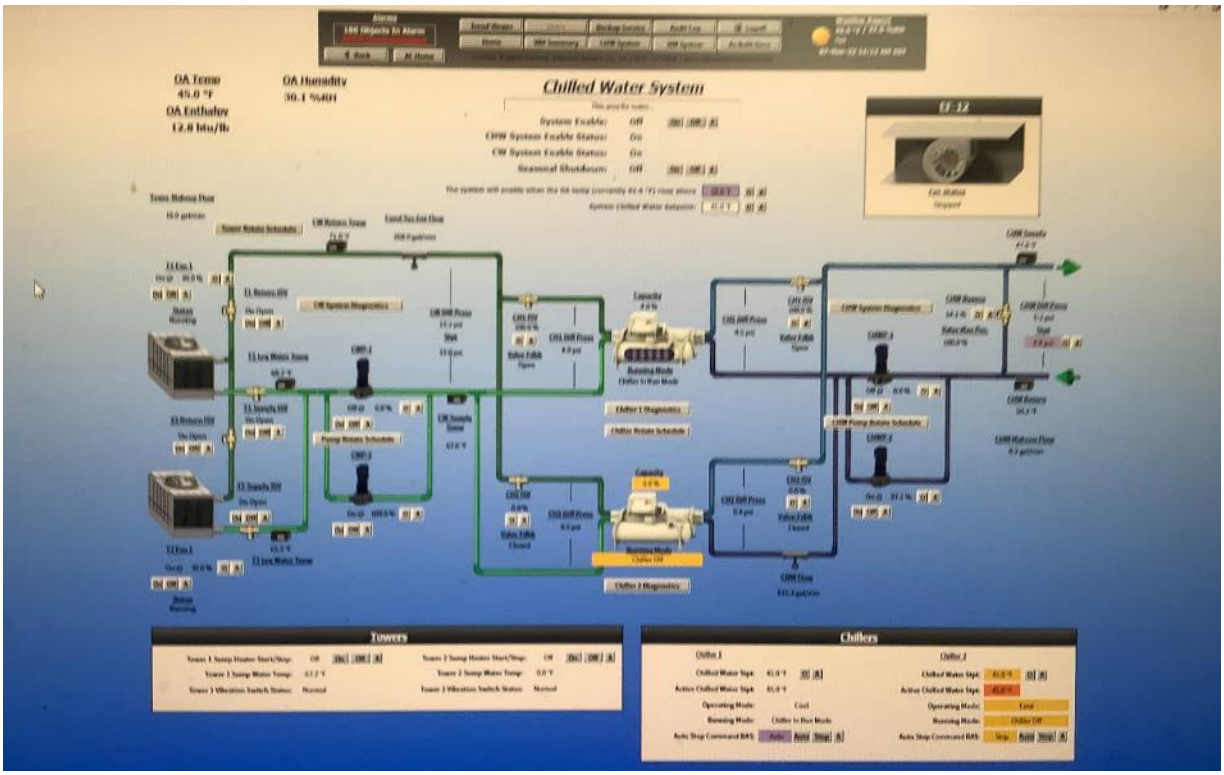
The chillers supply chilled water to the air handling units throughout the building. The chilled water temperatures and chiller operating schedules are controlled by the facility BAS. Installed in 2022, the chillers are in good condition.

Water-cooled Chiller

Chilled Water Pumps

Condenser Water Pumps

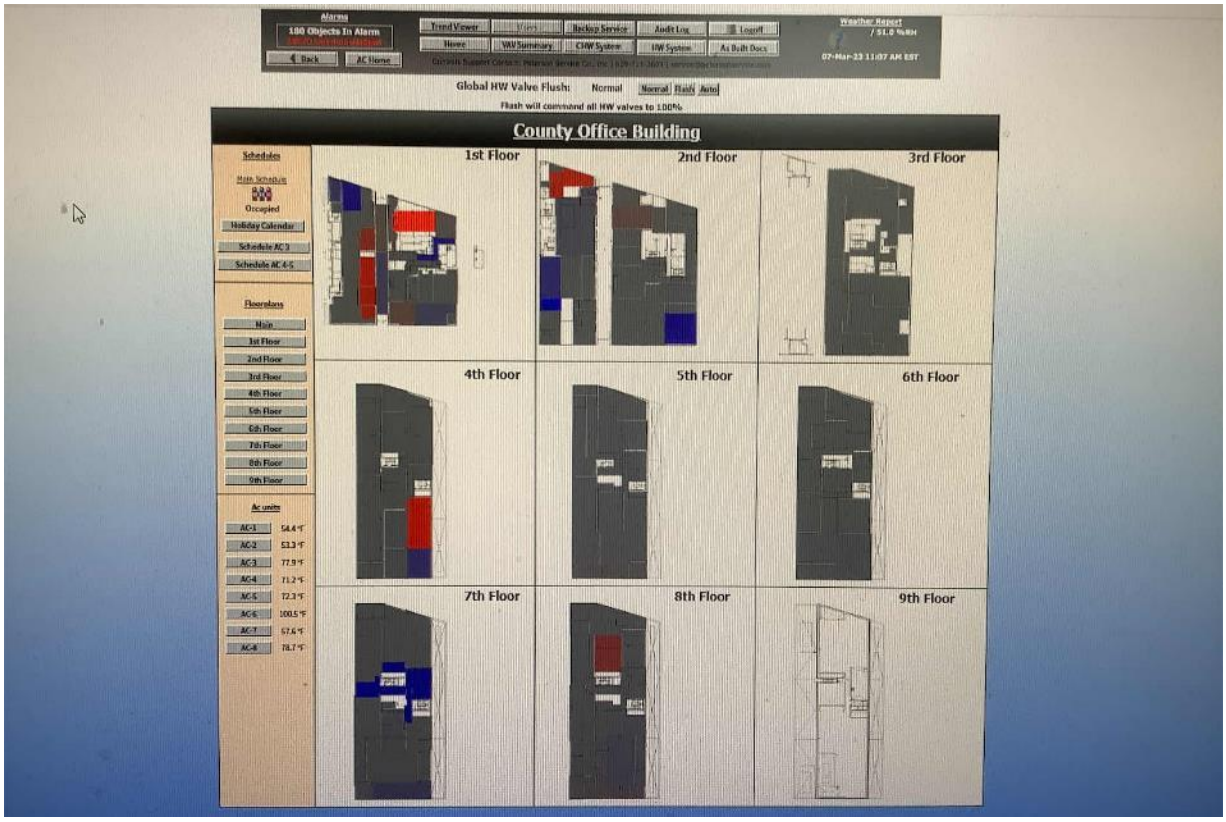
Cooling Towers



Chilled Water System EMS Diagram View

2.8 Building Automation System (BAS)

A Johnson Controls BAS controls the HVAC equipment, boilers, chillers, and air handlers. The BAS provides equipment scheduling control and monitors and controls space temperatures, supply air temperatures, and humidity, heating water loop temperatures, and chilled water loop temperatures.



Building Energy Management System for Atlantic County Office Building and Library

2.9 Domestic Hot Water

Hot water for the facility is produced by three electric storage water heaters. The electric storage water heaters range in capacity from 4.5 kW to 18 kW, with storage capacities between 50 gallons and 120 gallons. Two fractional hp circulation pumps distributes water to end uses. The circulation pumps operate continuously.

The units are in fair to good condition. The domestic hot water pipes are partially insulated, and the insulation is in good condition. Section 4 includes a discussion about replacing the electric storage water heaters with heat pump water heaters. Refer to Appendix A for detailed information about each unit.

Water Heaters

2.10 Refrigeration

The fourth-floor dining area has two stand-up refrigerators with glass doors. One refrigerator is ENERGY STAR rated while the other is standard, and both are in good condition.

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

Stand-up Refrigerators

2.11 Plug Load and Vending Machines

The location is doing a great job managing the electrical plug loads. This report makes additional suggestions for ECMs in this area as well as energy efficient best practices.

There are 445 computer workstations throughout the facility. Plug loads throughout the building include general café and office equipment. There are typical classroom loads such as smartboards and projectors, and typical office loads such as copiers, printers, microwaves, coffee machines, and mini fridges.

There are 20 residential-style refrigerators that are used by staff to store food and drinks. These vary in condition and efficiency.

Residential-style Refrigerator

Copy Machine

2.12 Water-Using Systems

There are 31 restrooms with toilets, urinals, and sinks. Some restrooms contained low-flowing fixtures, while others had faucet flow rates of 2.2 gallons per minute (gpm) or higher.

Typical Restroom Sinks

2.13 On-Site Generation

Atlantic County Office Building and library has a rooftop photovoltaic (PV) array with approximately 276 panels. The total array size and install date were not provided by the applicant.

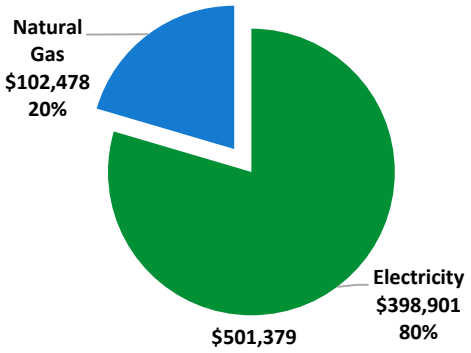
Atlantic County Office Building and library has one natural gas emergency generator and one diesel emergency generator that, in the event of a power outage, serve the entire building and are only used for emergency needs.

Rooftop Solar Panels

3 Energy Use and Costs

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

Utility Summary		
Fuel	**Usage**	**Cost**
Electricity	2,881,216 kWh	$398,901
Natural Gas	75,333 Therms	$102,478
Total		**$501,379**



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.

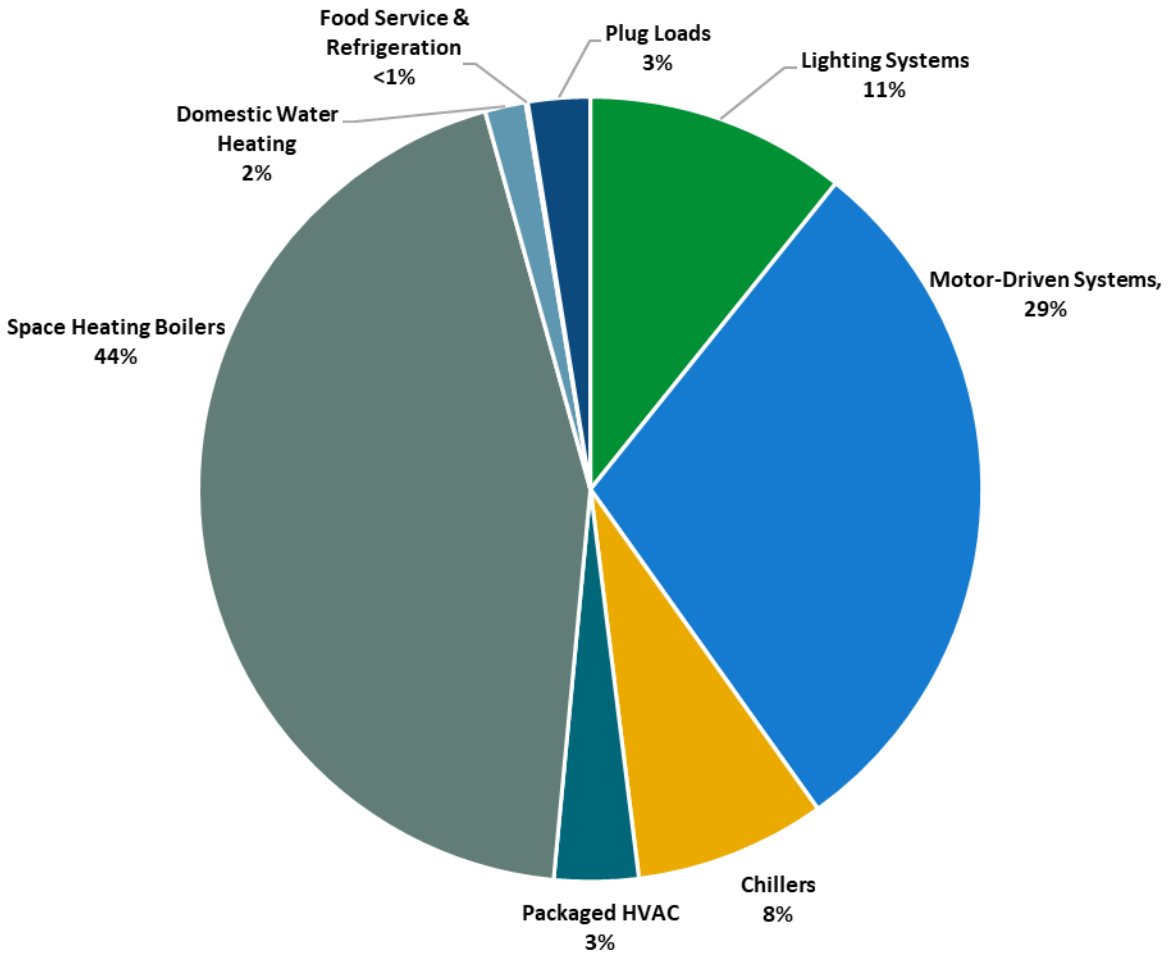
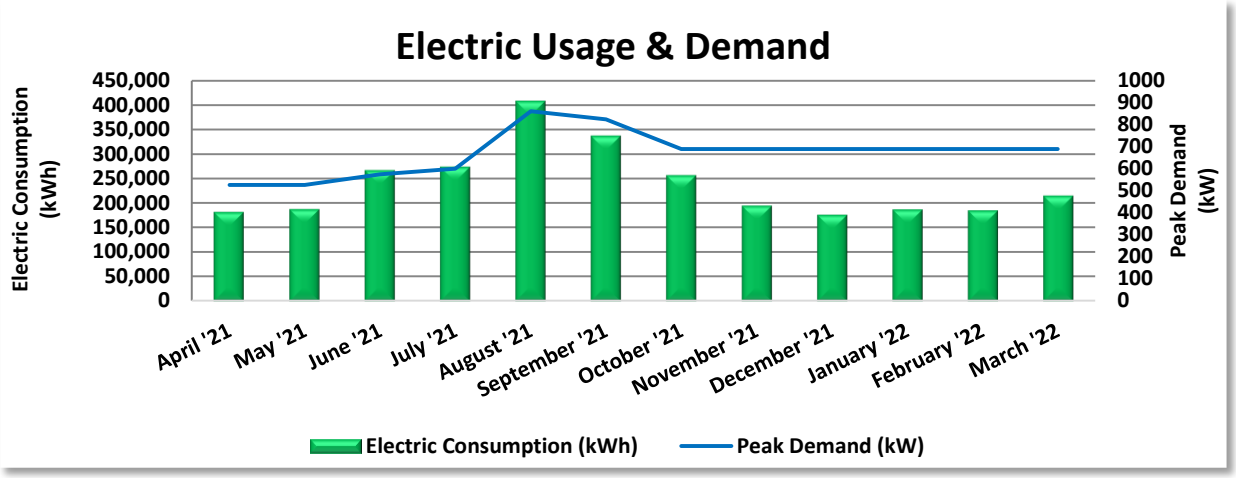


Figure 4 - Energy Balance

3.1 Electricity

Atlantic City Electric delivers electricity under rate class Annual General Service Secondary (GSS), with electric production provided by Constellation, a third-party supplier.



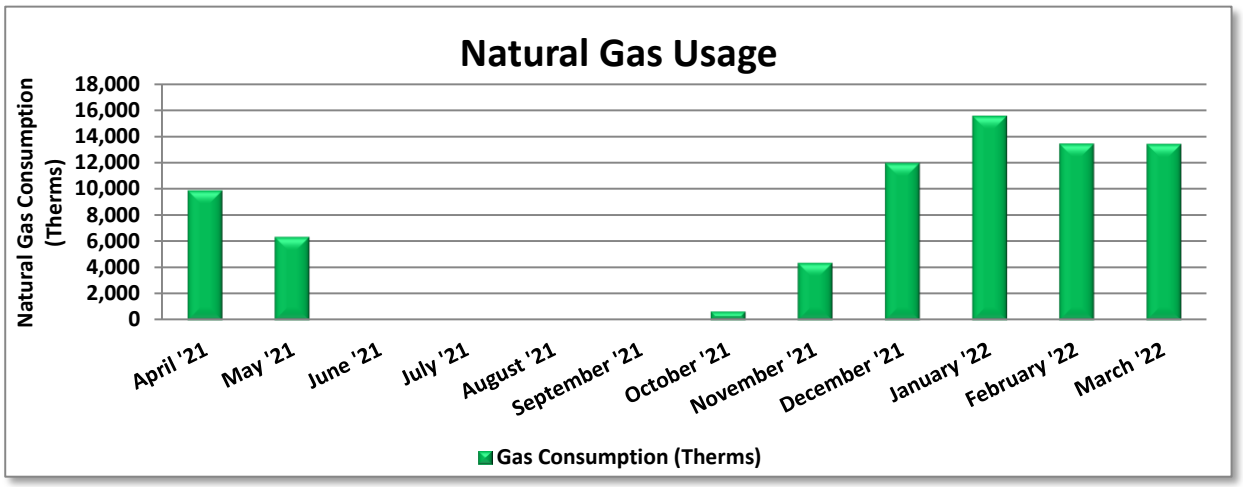
Electric Billing Data					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
4/29/21	29	182,118	527	$5,975	$24,474
5/27/21	28	187,985	527	$5,578	$24,613
6/29/21	33	267,066	575	$7,178	$34,304
7/29/21	30	274,504	600	$6,809	$36,099
8/31/21	33	408,336	861	$10,430	$53,699
9/29/21	29	337,318	825	$9,364	$44,960
10/28/21	29	256,956	689	$7,571	$34,356
11/29/21	32	194,975	689	$8,366	$29,199
12/29/21	30	176,132	689	$7,843	$26,670
1/30/22	32	187,417	689	$9,158	$29,483
2/27/22	28	185,108	689	$8,060	$27,946
3/30/22	31	215,407	689	$8,923	$32,004
Totals	**364**	**2,873,322**	**861**	**$95,255**	**$397,808**
Annual	**365**	**2,881,216**	**861**	**$95,517**	**$398,901**

Notes:

- Peak demand of 861 kW occurred in August '21.
- Average demand over the past 12 months was 671 kW.
- The average electric cost over the past 12 months was $0.138/kWh, which is the blended rate that includes energy supply, distribution, demand, and other charges. This report uses this blended rate to estimate energy cost savings.

3.2 Natural Gas

South Jersey Gas delivers natural gas under rate class General Service Gas FT (GSGFT), with natural gas supply provided by UGI Energy Services, a third-party supplier.



Gas Billing Data			
Period Ending	**Days in Period**	**Natural Gas Usage (Therms)**	**Natural Gas Cost**
4/16/21	32	9,867	$13,074
5/15/21	29	6,339	$8,410
6/15/21	31	0	$211
7/15/21	30	0	$211
8/15/21	31	0	$211
9/15/21	31	0	$211
10/19/21	34	679	$956
11/15/21	27	4,366	$6,112
12/14/21	29	11,952	$16,124
1/17/22	34	15,526	$20,918
2/10/22	24	13,421	$18,176
3/16/22	34	13,390	$18,147
Totals	**366**	**75,540**	**$102,759**
Annual	**365**	**75,333**	**$102,478**

Notes:

- The average gas cost for the past 12 months is $1.360/therm, which is the blended rate used throughout the analysis.

3.3 Benchmarking

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

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

Benchmarking Score	45

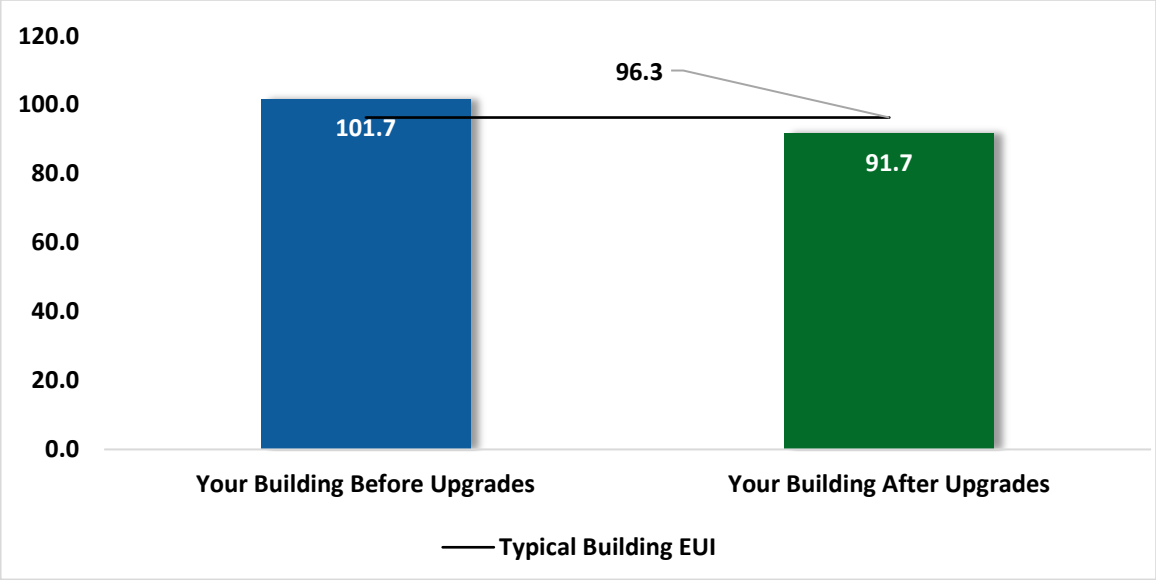


Figure 5 - Energy Use Intensity Comparison[3]

This building performs at, or below the national average. This report contains suggestions about how to improve building performance and reduce energy costs.

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			**325,534**	**88.2**	**-68**	**$44,144**	**$103,913**	**$23,868**	**$80,045**	**1.8**	**319,840**
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	87,957	23.7	-18	$11,927	$30,982	$4,212	$26,770	2.2	86,419
ECM 2	Retrofit Fixtures with LED Lamps	Yes	237,577	64.5	-50	$32,216	$72,931	$19,656	$53,275	1.7	233,422
Lighting Control Measures			**76,318**	**20.1**	**-16**	**$10,349**	**$99,795**	**$28,250**	**$71,545**	**6.9**	**74,983**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	63,569	17.2	-13	$8,620	$76,620	$9,875	$66,745	7.7	62,457
ECM 4	Install High/Low Lighting Controls	Yes	12,749	2.9	-3	$1,729	$23,175	$18,375	$4,800	2.8	12,526
Motor Upgrades			**478**	**0.1**	**0**	**$66**	**$4,145**	**$0**	**$4,145**	**62.6**	**482**
ECM 5	Premium Efficiency Motors	No	478	0.1	0	$66	$4,145	$0	$4,145	62.6	482
Variable Frequency Drive (VFD) Measures			**52,006**	**15.0**	**0**	**$7,200**	**$43,892**	**$7,600**	**$36,292**	**5.0**	**52,369**
ECM 6	Install VFDs on Constant Volume (CV) Fans	Yes	52,006	15.0	0	$7,200	$43,892	$7,600	$36,292	5.0	52,369
HVAC System Improvements			**7,269**	**0.0**	**0**	**$1,006**	**$652**	**$100**	**$552**	**0.5**	**7,320**
ECM 7	Install Pipe Insulation	Yes	7,269	0.0	0	$1,006	$652	$100	$552	0.5	7,320
Domestic Water Heating Upgrade			**10,426**	**0.0**	**0**	**$1,444**	**$538**	**$269**	**$269**	**0.2**	**10,499**
ECM 8	Install Low-Flow DHW Devices	Yes	10,426	0.0	0	$1,444	$538	$269	$269	0.2	10,499
Custom Measures			**50,645**	**0.0**	**0**	**$7,013**	**$11,535**	**$0**	**$11,535**	**1.6**	**50,999**
ECM 9	Replace Electric Water Heater with Heat Pump Water Heater	Yes	50,645	0.0	0	$7,013	$11,535	$0	$11,535	1.6	50,999
TOTALS			**522,676**	**123.4**	**-84**	**$71,222**	**$264,470**	**$60,087**	**$204,383**	**2.9**	**516,492**

* - 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		**325,534**	**88.2**	**-68**	**$44,144**	**$103,913**	**$23,868**	**$80,045**	**1.8**	**319,840**
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	87,957	23.7	-18	$11,927	$30,982	$4,212	$26,770	2.2	86,419
ECM 2	Retrofit Fixtures with LED Lamps	237,577	64.5	-50	$32,216	$72,931	$19,656	$53,275	1.7	233,422
Lighting Control Measures		**76,318**	**20.1**	**-16**	**$10,349**	**$99,795**	**$28,250**	**$71,545**	**6.9**	**74,983**
ECM 3	Install Occupancy Sensor Lighting Controls	63,569	17.2	-13	$8,620	$76,620	$9,875	$66,745	7.7	62,457
ECM 4	Install High/Low Lighting Controls	12,749	2.9	-3	$1,729	$23,175	$18,375	$4,800	2.8	12,526
Variable Frequency Drive (VFD) Measures		**52,006**	**15.0**	**0**	**$7,200**	**$43,892**	**$7,600**	**$36,292**	**5.0**	**52,369**
ECM 6	Install VFDs on Constant Volume (CV) Fans	52,006	15.0	0	$7,200	$43,892	$7,600	$36,292	5.0	52,369
HVAC System Improvements		**7,269**	**0.0**	**0**	**$1,006**	**$652**	**$100**	**$552**	**0.5**	**7,320**
ECM 7	Install Pipe Insulation	7,269	0.0	0	$1,006	$652	$100	$552	0.5	7,320
Domestic Water Heating Upgrade		**10,426**	**0.0**	**0**	**$1,444**	**$538**	**$269**	**$269**	**0.2**	**10,499**
ECM 8	Install Low-Flow DHW Devices	10,426	0.0	0	$1,444	$538	$269	$269	0.2	10,499
Custom Measures		**50,645**	**0.0**	**0**	**$7,013**	**$11,535**	**$0**	**$11,535**	**1.6**	**50,999**
ECM 9	Replace Electric Water Heater with Heat Pump Water Heater	50,645	0.0	0	$7,013	$11,535	$0	$11,535	1.6	50,999
TOTALS		**522,197**	**123.3**	**-84**	**$71,156**	**$260,324**	**$60,087**	**$200,237**	**2.8**	**516,010**

* - 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		**325,534**	**88.2**	**-68**	**$44,144**	**$103,913**	**$23,868**	**$80,045**	**1.8**	**319,840**
ECM 1	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	87,957	23.7	-18	$11,927	$30,982	$4,212	$26,770	2.2	86,419
ECM 2	Retrofit Fixtures with LED Lamps	237,577	64.5	-50	$32,216	$72,931	$19,656	$53,275	1.7	233,422

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: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

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

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

Affected Building Areas: all areas with fluorescent fixtures with T12 tubes

ECM 2: Retrofit Fixtures with LED Lamps

Replace fluorescent, 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: all areas with fluorescent fixtures with T8 tubes, CFLs, and incandescent lamps

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		**76,318**	**20.1**	**-16**	**$10,349**	**$99,795**	**$28,250**	**$71,545**	**6.9**	**74,983**
ECM 3	Install Occupancy Sensor Lighting Controls	63,569	17.2	-13	$8,620	$76,620	$9,875	$66,745	7.7	62,457
ECM 4	Install High/Low Lighting Controls	12,749	2.9	-3	$1,729	$23,175	$18,375	$4,800	2.8	12,526

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 3: 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: offices, conference rooms, lounges, computer labs, kitchens, dining area, libraries, auditorium, restrooms, locker rooms, and storage rooms

ECM 4: Install High/Low Lighting Controls

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

Lighting fixtures with these controls operate at default low levels when the area is unoccupied to provide minimal lighting to meet security or safety 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 appropriate.

Affected Building Areas: hallways, lobbies, and stairwells

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		**478**	**0.1**	**0**	**$66**	**$4,145**	**$0**	**$4,145**	**62.6**	**482**
ECM 5	Premium Efficiency Motors	478	0.1	0	$66	$4,145	$0	$4,145	62.6	482

ECM 5: 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
Mechanical - Penthouse	Freeze Pump 2	1	Heating Hot Water Pump	1.0	Freeze Pump 2
Mechanical - Pump Room	Exhaust System	1	Exhaust Fan	0.3	Exhaust Fan
Roof - Library	Exhaust System	4	Exhaust Fan	0.3	Exhaust Fan
Roof - Office	Exhaust System	1	Exhaust Fan	0.3	Exhaust Fan
Roof - Office	Exhaust System	1	Exhaust Fan	0.5	Exhaust Fan

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

4.4 Variable Frequency Drives (VFD)

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Variable Frequency Drive (VFD) Measures		**52,006**	**15.0**	**0**	**$7,200**	**$43,892**	**$7,600**	**$36,292**	**5.0**	**52,369**
ECM 6	Install VFDs on Constant Volume (CV) Fans	52,006	15.0	0	$7,200	$43,892	$7,600	$36,292	5.0	52,369

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 6: Install VFDs on Constant Volume (CV) Fans

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

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

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

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

Affected Air Handlers: supply and return fans for AC-3 through AC-7

4.5 HVAC Improvements

#	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)
HVAC System Improvements		**7,269**	**0.0**	**0**	**$1,006**	**$652**	**$100**	**$552**	**0.5**	**7,320**
ECM 7	Install Pipe Insulation	7,269	0.0	0	$1,006	$652	$100	$552	0.5	7,320

ECM 7: Install Pipe Insulation

Install insulation on domestic hot water system piping. Distribution system losses are dependent on system fluid temperature, the size of the distribution system, and the level of insulation of the piping. Significant energy savings can be achieved when insulation has not been well maintained. When the insulation is exposed to water, when the insulation has been removed from some areas of the pipe, or when valves have not been properly insulated system efficiency can be significantly reduced. This measure saves energy by reducing heat transfer in the distribution system.

Affected Systems: domestic hot water piping

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		**10,426**	**0.0**	**0**	**$1,444**	**$538**	**$269**	**$269**	**0.2**	**10,499**
ECM 8	Install Low-Flow DHW Devices	10,426	0.0	0	$1,444	$538	$269	$269	0.2	10,499

ECM 8: Install Low-Flow DHW Devices

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

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

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

4.7 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		**50,645**	**0.0**	**0**	**$7,013**	**$11,535**	**$0**	**$11,535**	**1.6**	**50,999**
ECM 9	Replace Electric Water Heater with Heat Pump Water Heater	50,645	0.0	0	$7,013	$11,535	$0	$11,535	1.6	50,999

ECM 9: Replace Electric Water Heater with Heat Pump Water Heater

A typical electric water heater uses electric resistance coils to heat water at a coefficient of performance (COP) of 1. Air source heat pump water heaters (HPWH) use a refrigeration cycle to transfer heat from the surrounding air to the domestic water. The typical average COP for a HPWH is about 2.5, so they require significantly less electricity to produce the same amount of hot water as a traditional electric water heater. There are two types of HPWH, those integrated with the heat pump and storage tank in the same unit, and those that are split into two sections (with the storage tank separate from the heat pump). The following addresses integrated HPWH.

HPWH reject cold air. As such, they need to be installed in an unconditioned space of about 750 cubic feet with good ventilation. Ideal locations are garages, large enclosed, unconditioned storage areas, or areas

with excess heat such as a furnace or boiler room.[4] The HPWH will also produce condensate so accommodations for draining the condensate need to be provided.

Most HPWH operate effectively down to an air temperature of 40 °F. Below that temperature, an electric resistance booster heater is typically required to achieve full heating capacity. It is critical that the HPWH controls are set up so that the electric resistance heat only engages when the air temperature is too cold for the HPWH to extract heat from it. HPWHs have a slow recovery. During periods of high demand, the electric resistance heating element, if enabled, may be energized to maintain set point, thus reducing the overall efficiency of the unit. It is recommended that a careful analysis of the hot water demand be conducted to determine if the application makes economic sense, and the HPWH heating capacity and storage are properly sized.

HPWH operate most effectively when the temperature difference between the incoming and outgoing water is high. Generally, this means that cold make-up water should be piped to the bottom of the tank and return water should be piped to the top of the tank in order to maintain stratification within the storage tank. Water should be drawn from the bottom of the tank to be heated. If there is a DHW recirculation pump, it should only be operated during high hot water demand periods.

4.8 Measures for Future Consideration

There are additional opportunities for improvement that Atlantic County may wish to consider. These potential upgrades typically require further analysis, involve substantial capital investment, and/or include significant system reconfiguration. These measures are therefore beyond the scope of this energy audit. These measures are described here to support a whole building approach to energy efficiency and sustainability.

Atlantic County may wish to consider the Energy Savings Improvement Program (ESIP) or other whole building approach. With interest in implementing comprehensive, largescale and/or complex system wide projects, these measures may be pursued during development of a future energy savings plan. We recommend that you work with your energy service company (ESCO) and/or design team to:

- Evaluate these measures further.
- Develop firm costs.
- Determine measure savings.
- Prepare detailed implementation plans.

Other modernization or capital improvement funds may be leveraged for these types of refurbishments. As you plan for capital upgrades, be sure to consider the energy impact of the building systems and controls being specified.

[4] https://basc.pnnl.gov/code-compliance/heat-pump-water-heaters-code-compliance-brief#:~:text=HPWH%20must%20have%20unrestricted%20airflow,depending%20on%20size%20of%20system

Revolving Doors

Revolving doors are much more energy efficient than traditional doors. The installation of revolving doors increase comfort, improve traffic flow, and increase security. This allows for a significant amount of uncontrolled air exchange between the outside and inside of the building. The installation of revolving doors would greatly reduce this and thus reduce the load on the HVAC system, which serves these lobby/corridor spaces. However, the design and installation of vestibule doors involve an architectural element and would potentially require a high cost for implementation. The measure would require more evaluation to determine feasibility.

Install High Efficiency Energy Recovery Units (ERUs)

HVAC energy consumption in typical commercial buildings may account for 40% – 60% of the facility's energy use. Areas with high outdoor air requirements are even more energy intensive. Some of the facility types that require a higher amount of outdoor air for ventilation, which then needs to be conditioned, include swimming pools, laboratories, commercial kitchens, hospitals, and wood/metal shops. These facilities have the potential for significant energy savings by installing energy recovery units (ERU). Other applications that may have significant potential include theaters, fitness centers, and gymnasiums.

An ERU is a type of air-to-air heat exchanger that recovers energy from the exhaust air. An ERU heat exchanger transfers both sensible and latent heat[5]. One common type is a rotary enthalpy wheel. An enthalpy wheel improves the heating and cooling efficiency of an air handler or package unit by transferring energy from the exhaust air to the incoming outside air to precondition the outdoor air before it reaches the heating/cooling coil. Additional benefits for installing ERUs include reduced summer peak electrical demand, enhanced humidity control, continued operating savings, and the potential to downsize the heating and cooling capacity in comparison to traditional HVAC units. ERUs are the most cost effective on systems that use 100% outside air.

[5] Sensible heat refers to the amount of energy needed to increase or decrease the temperature of a substance. like air, independent of phase changes, Latent heat is the heat that results from an increase or decrease in the amount of moisture held by the air. Specifically, it's the amount of energy needed to cause a phase change.

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[6]. Your account has already been established. Now you can continue to keep tabs on your energy performance every month.

Weatherization

Caulk or weather strip leaky doors and windows to reduce drafts and loss of heated or cooled air. Sealing cracks and openings can reduce heating and cooling costs, improve building durability, and create a healthier indoor environment. Materials used may include caulk, polyurethane foam, and other weather-stripping materials. There is an energy savings opportunity by reducing the uncontrolled air exchange between the outside and inside of the building. Blower door assisted comprehensive building air sealing will reduce the amount of air exchange, which will in turn reduce the load on the buildings heating and cooling equipment, providing energy savings and increased occupant comfort.

Doors and Windows

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

Window Treatments/Coverings

Use high-reflectivity films or cover windows with shades or shutters to reduce solar heat gain and reduce the load on cooling and heating systems. Older, single-pane windows and east- or west-facing windows

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

are especially prone to solar heat gain. In addition, use shades or shutters at night during cold weather to reduce heat loss.

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.

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.

Destratification Fans

For areas with high ceilings such as the atrium, destratification fans balance the air temperature from floor to ceiling. They help reduce the recovery time needed to warm the space after nightly temperature setbacks, and they will increase occupants' the comfort level.

Areas with high ceilings require the heating system to heat a larger volume of space than that which is occupied. As the warm air rises, the warmest space is at the ceiling level, rather than floor level. Higher temperatures at the ceiling accelerate heat loss through the roof, which requires additional energy consumption by the heating equipment to compensate for this accelerated heat transfer.

Thermostat Schedules and Temperature Resets

Use thermostat setback temperatures and schedules to reduce heating and cooling energy use during periods of low or no occupancy. Thermostats should be programmed for a setback of 5°F-10°F during low occupancy hours (reduce heating setpoints and increase cooling setpoints). Cooling load can be reduced by increasing the facility's occupied setpoint temperature. In general, during the cooling season, thermostats should be set as high as possible without sacrificing occupant comfort.

Economizer Maintenance

Economizers can significantly reduce cooling system load. A malfunctioning economizer can increase the amount of heating and mechanical cooling required by introducing excess amounts of cold or hot outside air. Common economizer malfunctions include broken outdoor thermostat or enthalpy control or dampers that are stuck or improperly adjusted.

Periodic inspection and maintenance will keep economizers working in sync with the heating and cooling system. This maintenance should be part of annual system maintenance, and it should include proper setting of the outdoor thermostat/enthalpy control, inspection of control and damper operation, lubrication of damper connections, and adjustment of minimum damper position.

Chiller Maintenance

Service chillers regularly to keep them operating properly. Chillers are responsible for a substantial portion of a commercial building's overall energy usage, and when they do not work well, there is usually a noticeable increase in energy bills and increased occupant complaints. Regular diagnostics and service can save five to ten percent of the cost of operating your chiller. If you already have a maintenance contract in place, your existing service company should be able to provide these services.

AC System Evaporator/Condenser Coil Cleaning

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

HVAC Filter Cleaning and Replacement

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

Ductwork Maintenance

Duct maintenance has two primary goals: keep the ducts clean to avoid air quality problems and seal leaks to save energy. Check for cleanliness, obstructions that block airflow, water damage, and leaks. Ducts should be inspected at least every two years.

The biggest symptoms of clogged air ducts are differing temperatures throughout the building and areas with limited airflow from supply registers. If a particular air duct is clogged, then air flow will only be cut off to some rooms in the building—not all of them. The reduced airflow will make it more difficult for

those areas to reach the temperature setpoint, which will cause the HVAC system to run longer to cool or heat that area properly. If you suspect clogged air ducts, ensure that all areas in front of supply registers are clear of items that may block or restrict air flow, and you should check for fire dampers or balancing dampers that have failed closed.

Duct leakage in commercial buildings can account for 5%–25% of the supply airflow. In the case of rooftop air handlers, duct leakage can occur to the outside of the building wasting conditioned air. Check ductwork for leakage. Eliminating duct leaks can improve ventilation system performance and reduce heating and cooling system operation.

Distribution system losses are dependent on-air system temperature, the size of the distribution system, and the level of insulation of the ductwork. Significant energy savings can be achieved when insulation has not been well maintained. When the insulation is missing or worn, the system efficiency can be significantly reduced. This measure saves energy by reducing heat transfer in the distribution system.

Boiler Maintenance

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

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

Water conservation devices that do not reduce hot water consumption will not provide energy savings at the site level, but they may significantly affect your water and sewer usage costs. Any reduction in water use does however ultimately reduce grid-level electricity use since a significant amount of electricity is used to deliver water from reservoirs to end users.

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

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

Procurement Strategies

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

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

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

6 On-site Generation

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

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

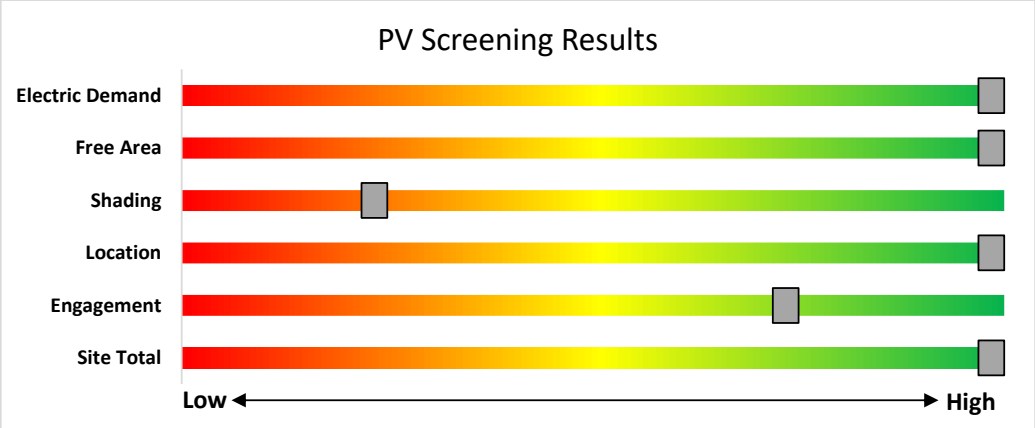
6.1 Solar Photovoltaic

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

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

The amount of free area, ease of installation (location), and the lack of shading elements contribute to the high potential. An additional 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	80,512	kWh/yr
Displaced Cost	$11,150	/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.

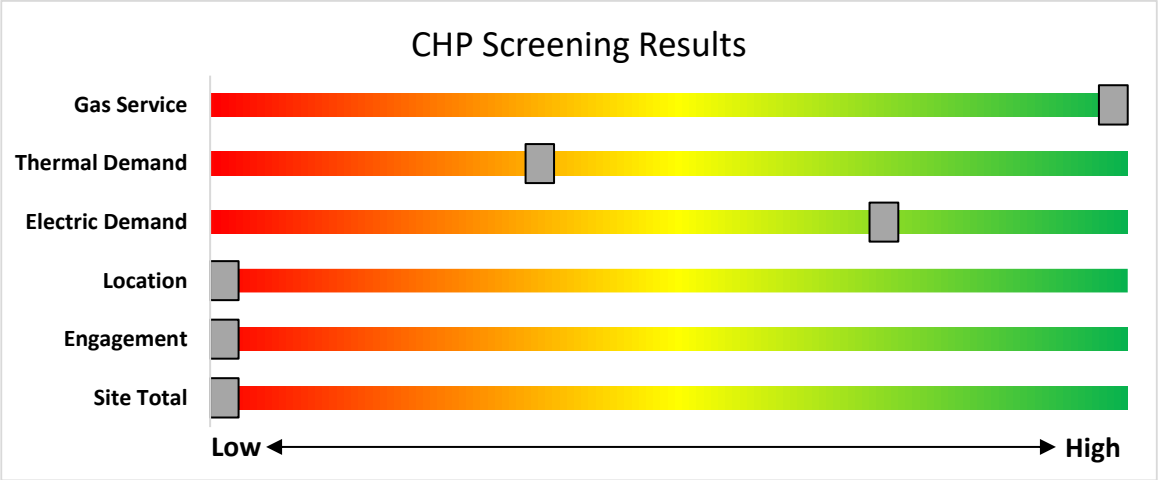


Figure 9 - Combined Heat and Power Screening

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)

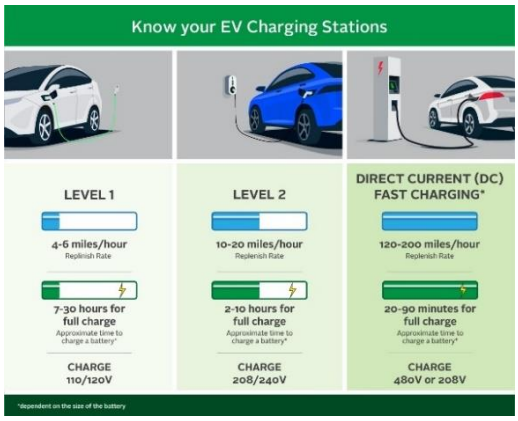
All electric vehicles (EVs) have an electric motor instead of an internal combustion engine. EVs function by plugging into a charge point, taking electricity from the grid, and then storing it in rechargeable batteries. Although electricity production may contribute to air pollution, the U.S. EPA categorizes 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 no 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.

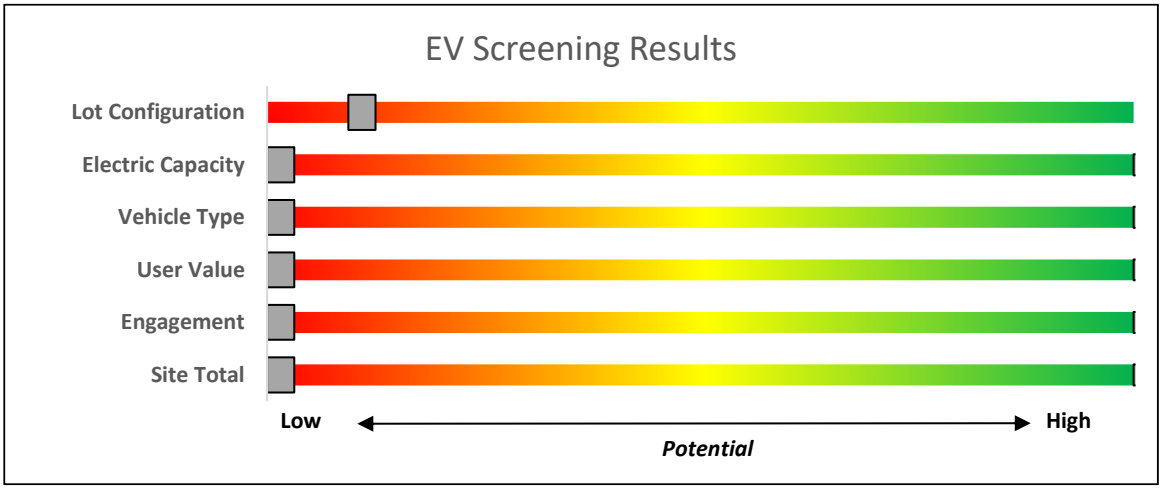


Figure 10 – EV Charger Screening

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.

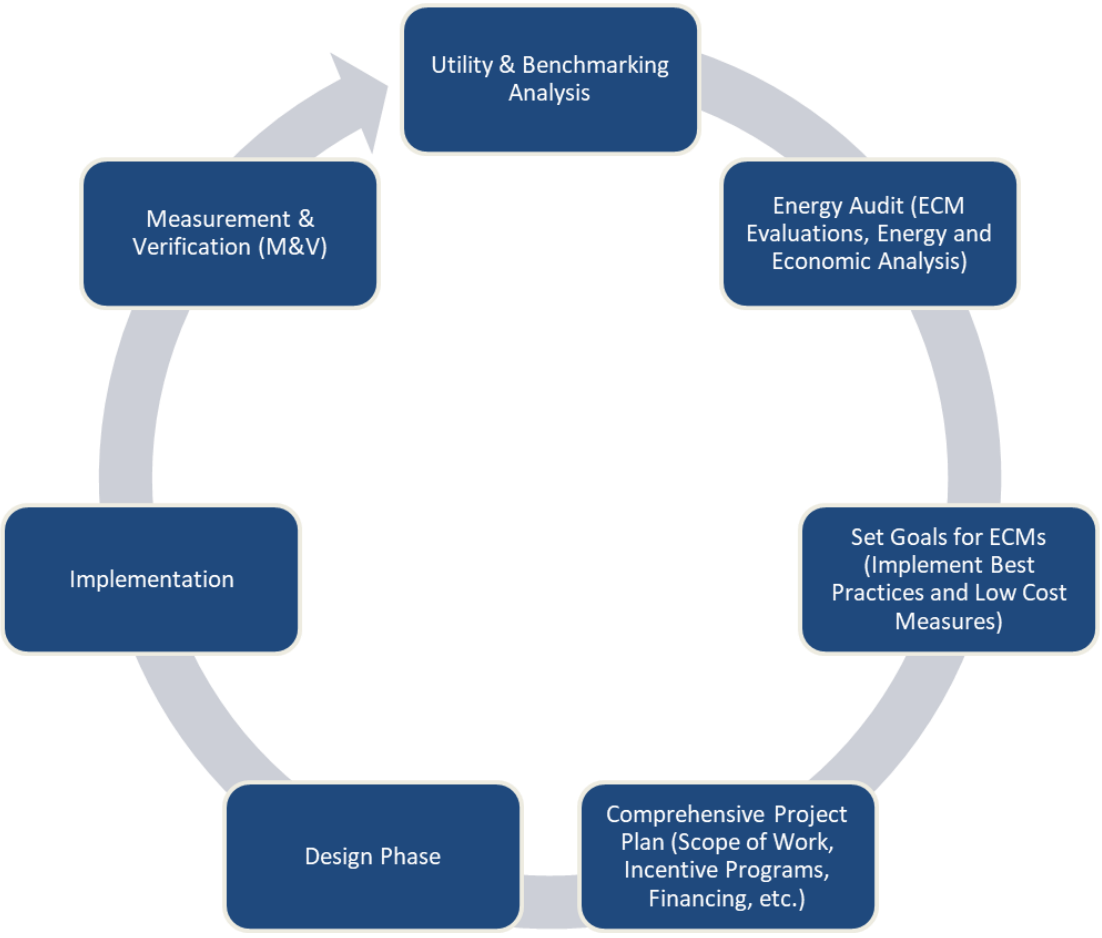


Figure 11 – Project Development Cycle

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[9].

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[10].

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

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

APPENDIX A: EQUIPMENT INVENTORY & RECOMMENDATIONS

Lighting Inventory & Recommendations

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Atrium - COB	8	LED Lamps: (1) 17W PAR30 Screw-In Lamp	Timeclock	S	17	4,380		None	No	8	LED Lamps: (1) 17W PAR30 Screw-In Lamp	Timeclock	17	4,380	0.0	0	0	$0	$0	$0	0.0
Atrium - COB	38	LED Lamps: (1) 17W PAR30 Screw-In Lamp	Timeclock	S	17	4,380		None	No	38	LED Lamps: (1) 17W PAR30 Screw-In Lamp	Timeclock	17	4,380	0.0	0	0	$0	$0	$0	0.0
Atrium - COB	10	LED Lamps: (4) 17W PAR30 Screw-In Lamps	Timeclock	S	68	4,380		None	No	10	LED Lamps: (4) 17W PAR30 Screw-In Lamps	Timeclock	68	4,380	0.0	0	0	$0	$0	$0	0.0
Auditorium - COB	3	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Auditorium - COB	66	LED - Fixtures: Ceiling Mount	Wall Switch	S	17	2,600	3	None	Yes	66	LED - Fixtures: Ceiling Mount	Occupancy Sensor	17	1,794	0.3	995	0	$135	$1,350	$175	8.7
Auditorium - COB	8	LED - Fixtures: Wall Sconces	Wall Switch	S	17	2,600	3	None	Yes	8	LED - Fixtures: Wall Sconces	Occupancy Sensor	17	1,794	0.0	121	0	$16	$270	$35	14.4
Corridor - 1st Clerks - COB	4	Compact Fluorescent: (1) 26W Double Biaxial Plug-In Lamp	Wall Switch	S	26	3,770	2, 4	Relamp	Yes	4	LED Lamps: GX23 (Plug-In) Lamps	High/Low Control	19	2,601	0.0	214	0	$29	$275	$144	4.5
Corridor - 1st Clerks - COB	4	Incandescent: (1) 60W A19 Screw-In Lamp	Wall Switch	S	60	3,770	2, 4	Relamp	Yes	4	LED Lamps: A19 Lamps	High/Low Control	9	2,601	0.2	892	0	$121	$294	$144	1.2
Corridor - 1st Employees - COB	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor - 1st Employees - COB	13	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,770	2, 4	Relamp	Yes	13	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,601	0.3	1,186	0	$161	$912	$520	2.4
Corridor - 1st Employees - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,770	2, 4	Relamp	Yes	1	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,601	0.0	174	0	$24	$37	$10	1.1
Corridor - AHA Supervisors - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,770	2	Relamp	No	1	LED - Linear Tubes: (4) 4' Lamps	Wall Switch	58	3,770	0.1	232	0	$31	$73	$20	1.7
Corridor - Receiving - COB	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor - Receiving - COB	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,770	2, 4	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,601	0.3	1,219	0	$165	$706	$315	2.4
Electrical Room - Main - COB	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.2	165	0	$22	$183	$50	5.9
Electrical Room 1st - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Electrical Room 1st - IT - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Janitorial 1st - COB	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	910	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	910	0.0	16	0	$2	$33	$6	12.2
Lobby - Auditorium - COB	6	Compact Fluorescent: (1) 26W Double Biaxial Plug-In Lamp	Wall Switch	S	26	3,770	2, 4	Relamp	Yes	6	LED Lamps: GX23 (Plug-In) Lamps	High/Low Control	19	2,601	0.1	321	0	$43	$300	$216	1.9
Lobby - Auditorium - COB	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Lobby - Auditorium - COB	5	Incandescent: (1) 60W A19 Screw-In Lamp	Wall Switch	S	60	3,770	2, 4	Relamp	Yes	5	LED Lamps: A19 Lamps	High/Low Control	9	2,601	0.3	1,115	0	$151	$311	$180	0.9
Lobby - Elevator 3 & 4 - COB	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Lobby - Elevator 3 & 4 - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,770	2, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,601	0.1	522	0	$71	$335	$135	2.8
Lobby - Elevator 3 & 4 - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,770	2, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,601	0.2	784	0	$106	$389	$150	2.3
Locker Room - Mens - COB	3	Incandescent: (1) 60W A19 Screw-In Lamp	Wall Switch	S	60	3,250	2, 3	Relamp	Yes	3	LED Lamps: A19 Lamps	Occupancy Sensor	9	2,243	0.2	577	0	$78	$322	$38	3.6

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Locker Room - Mens - COB	4	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	282	0	$38	$343	$55	7.5
Locker Room - Mens - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.0	157	0	$21	$153	$30	5.7
Locker Room - Mens - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Locker Room - Womens - COB	3	Incandescent: (1) 60W A19 Screw-In Lamp	Wall Switch	S	60	3,250	2, 3	Relamp	Yes	3	LED Lamps: A19 Lamps	Occupancy Sensor	9	2,243	0.2	577	0	$78	$322	$38	3.6
Locker Room - Womens - COB	4	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	282	0	$38	$343	$55	7.5
Locker Room - Womens - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.0	157	0	$21	$153	$30	5.7
Locker Room - Womens - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Main Lobby - COB	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Main Lobby - COB	8	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	3,770	4	None	Yes	8	LED Lamps: (1) 9W A19 Screw-In Lamp	High/Low Control	9	2,601	0.0	93	0	$13	$450	$280	13.5
Main Lobby - COB	3	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,770	2, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	High/Low Control	17	2,601	0.1	265	0	$36	$323	$123	5.6
Main Lobby - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,770	2, 4	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	High/Low Control	58	2,601	0.1	614	0	$83	$371	$110	3.1
Mechanical - Pump Room - COB	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.2	165	0	$22	$183	$50	5.9
Mechanical 1st - AHU 3 - COB	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.2	165	0	$22	$183	$50	5.9
Mechanical 1st - AHU 3 - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	910	2	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	910	0.0	50	0	$7	$55	$15	5.9
Mechanical 1st - Elevators - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.1	66	0	$9	$73	$20	5.9
Office - 1st AHA Supervisor #1 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,243	0.1	529	0	$72	$262	$60	2.8
Office - 1st AHA Supervisor #2 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,243	0.1	529	0	$72	$262	$60	2.8
Office - 1st AHA Supervisor #3 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,243	0.1	529	0	$72	$262	$60	2.8
Office - 1st Clerks #1 - COB	4	Compact Fluorescent: (1) 26W Double Biaxial Plug-In Lamp	Wall Switch	S	26	3,250	2, 3	Relamp	Yes	4	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	19	2,243	0.0	184	0	$25	$320	$39	11.2
Office - 1st Clerks #1 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 1st Clerks #2 - COB	2	Compact Fluorescent: (1) 26W Double Biaxial Plug-In Lamp	Wall Switch	S	26	3,250	2, 3	Relamp	Yes	2	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	19	2,243	0.0	92	0	$12	$141	$22	9.5
Office - 1st Clerks #2 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 1st Facilities - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Office - 1st FCD Supervisor #1 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - 1st FCD Supervisor #2 - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Office - 1st Superintendent of Elections - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - Classroom A - COB	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.5	1,801	0	$244	$708	$155	2.3
Office - Classroom B - COB	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.4	1,351	0	$183	$599	$125	2.6
Office - Open 1st FCD - COB	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Office - Open 1st FCD - COB	69	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	69	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	2.7	10,358	-2	$1,405	$3,870	$865	2.1
Office - Open 1st FCD AHA - COB	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.4	1,651	0	$224	$672	$145	2.4
Office - Open 1st FCD Interview - COB	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.6	2,402	-1	$326	$1,124	$230	2.7
Office - Records Management Files - COB	19	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	19	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.8	2,852	-1	$387	$1,234	$260	2.5
Print Shop - COB	17	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	17	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.7	2,552	-1	$346	$1,161	$240	2.7
Restroom - Female 1st Employees - COB	6	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	424	0	$57	$380	$65	5.5
Restroom - Female 1st Employees - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	236	0	$32	$325	$50	8.6
Restroom - Female 1st Public - COB	6	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	424	0	$57	$380	$65	5.5
Restroom - Female 1st Public - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	236	0	$32	$325	$50	8.6
Restroom - Male 1st Employees - COB	6	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	424	0	$57	$380	$65	5.5
Restroom - Male 1st Employees - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	236	0	$32	$325	$50	8.6
Restroom - Male 1st Public - COB	6	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	424	0	$57	$380	$65	5.5
Restroom - Male 1st Public - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	236	0	$32	$325	$50	8.6
Stairs 1 - COB	34	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch		32	3,770	2, 4	Relamp	Yes	34	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,601	0.7	3,101	-1	$421	$1,971	$1,360	1.5
Stairs 2 - COB	35	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch		32	3,770	2, 4	Relamp	Yes	35	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,601	0.7	3,192	-1	$433	$1,989	$1,400	1.4
Stairs 2 - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch		93	3,770	2, 4	Relamp	Yes	1	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,601	0.1	261	0	$35	$55	$15	1.1
Electrical Room 2nd - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Electrical Room 2nd - IT - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Janitorial 2nd - COB	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	910	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	910	0.0	16	0	$2	$33	$6	12.2
Kitchen 2nd FCD Medicaid - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Lobby 2nd - COB	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0

	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 2nd - COB	1	LED Lamps: (1) 11W A19 Screw-In Lamp	Wall Switch	S	11	3,770	4	None	Yes	1	LED Lamps: (1) 11W A19 Screw-In Lamp	High/Low Control	11	2,601	0.0	14	0	$2	$0	$0	0.0
Lobby 2nd - COB	51	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,770	2, 4	Relamp	Yes	51	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,601	1.1	4,652	-1	$631	$2,956	$2,040	1.5
Lobby 2nd - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,770	2, 4	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,601	0.2	784	0	$106	$389	$150	2.3
Office - 2nd EBT #1 - COB	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.4	1,351	0	$183	$599	$125	2.6
Office - 2nd EBT #2 - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Office - 2nd FCD Snap Files - COB	30	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	30	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	1.2	4,503	-1	$611	$1,635	$370	2.1
Office - Open 2nd EBT - COB	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Office - Open 2nd EBT - COB	44	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	44	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	1.7	6,605	-1	$896	$2,417	$545	2.1
Office - Open 2nd FCD Interviews - COB	25	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	25	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	1.0	3,753	-1	$509	$1,453	$320	2.2
Office - Open 2nd FCD Medicaid - COB	3	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Office - Open 2nd FCD Medicaid - COB	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.4	1,651	0	$224	$672	$145	2.4
Office - Open 2nd FCD Snap - COB	3	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Office - Open 2nd FCD Snap - COB	95	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	95	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	3.8	14,261	-3	$1,934	$5,359	$1,195	2.2
Office - Open 2nd FCD Snap #1 - COB	14	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	14	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.6	2,102	0	$285	$781	$175	2.1
Office - Open 2nd Fraud - COB	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.6	2,402	-1	$326	$1,124	$230	2.7
Restroom - Female 2nd #1 - COB	6	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	424	0	$57	$380	$65	5.5
Restroom - Female 2nd #1 - COB	5	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	5	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	393	0	$53	$361	$60	5.7
Restroom - Female 2nd #2 - COB	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.0	141	0	$19	$153	$30	6.4
Restroom - Female 2nd #2 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.0	157	0	$21	$153	$30	5.7
Restroom - Male 2nd #1 - COB	6	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	424	0	$57	$380	$65	5.5
Restroom - Male 2nd #1 - COB	5	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	5	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	393	0	$53	$361	$60	5.7
Restroom - Male 2nd #2 - COB	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.0	141	0	$19	$153	$30	6.4
Restroom - Male 2nd #2 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.0	157	0	$21	$153	$30	5.7
Storage 2nd EBT - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Conference 3rd A - COB	7	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,250	2, 3	Relamp	Yes	7	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,243	0.4	1,576	0	$214	$653	$140	2.4

	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
Conference 3rd B - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,243	0.1	450	0	$61	$226	$50	2.9
Conference 3rd C - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,243	0.1	450	0	$61	$226	$50	2.9
Conference 3rd D - COB	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,243	0.4	1,351	0	$183	$599	$125	2.6
Conference 3rd E - COB	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,243	0.4	1,351	0	$183	$599	$125	2.6
Electrical Room 3rd - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Electrical Room 3rd - IT - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Janitorial 3rd - COB	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	910	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	910	0.0	16	0	$2	$33	$6	12.2
Lobby - Conference Center - COB	13	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,770	2, 4	Relamp	Yes	13	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,601	0.8	3,396	-1	$460	$1,387	$650	1.6
Lobby 3rd - COB	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Lobby 3rd - COB	52	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,770	2, 4	Relamp	Yes	52	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,601	1.1	4,743	-1	$643	$2,974	$2,080	1.4
Lobby 3rd - COB	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,770	2, 4	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,601	0.3	1,393	0	$189	$742	$360	2.0
Office - 3rd Emergency Assistance #1 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - 3rd Emergency Assistance #2 - COB	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.3	1,051	0	$142	$526	$105	3.0
Office - 3rd FCD Department Head #1 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 3rd FCD Department Head #2 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - 3rd FCD Department Head #3 - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Office - 3rd FCD Training #1 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 3rd FCD Training #2 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 3rd Medical Care #1 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - 3rd Medical Care #2 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - Open 3rd Emergency Assistance - COB	54	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	54	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	2.1	8,106	-2	$1,099	$3,052	$680	2.2
Office - Open 3rd FCD Department Head - COB	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.9	3,303	-1	$448	$1,343	$290	2.4
Office - Open 3rd FCD Housing - COB	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.8	3,152	-1	$427	$1,307	$280	2.4
Office - Open 3rd FCD Training - COB	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	472	0	$64	$380	$65	4.9
Office - Open 3rd FCD Training - COB	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	901	0	$122	$489	$95	3.2

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Office - Open 3rd Medical Care - COB	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.3	1,051	0	$142	$526	$105	3.0
Restroom - Female 3rd #1 - COB	6	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	424	0	$57	$380	$65	5.5
Restroom - Female 3rd #1 - COB	5	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	5	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	393	0	$53	$361	$60	5.7
Restroom - Female 3rd #2 - COB	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.0	141	0	$19	$153	$30	6.4
Restroom - Female 3rd #2 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.0	157	0	$21	$153	$30	5.7
Restroom - Male 3rd #1 - COB	6	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	424	0	$57	$380	$65	5.5
Restroom - Male 3rd #1 - COB	5	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	5	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	393	0	$53	$361	$60	5.7
Restroom - Male 3rd #2 - COB	2	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.0	141	0	$19	$153	$30	6.4
Restroom - Male 3rd #2 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.0	157	0	$21	$153	$30	5.7
Storage - 3rd Conference Rooms #1 - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Storage - 3rd Conference Rooms #2 - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Storage - 3rd FCD Housing - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	628	0.1	84	0	$11	$189	$20	14.8
Storage 3rd Emergency Assistance - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Storage 3rd Medical Care - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	628	0.1	84	0	$11	$189	$20	14.8
Conference - 4th WC #1 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,243	0.2	901	0	$122	$489	$95	3.2
Conference - 4th WC #2 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,243	0.2	901	0	$122	$489	$95	3.2
Conference - 4th WC #3 - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,243	0.2	676	0	$92	$434	$80	3.9
Corridor - 4th Courtrooms - COB	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor - 4th Courtrooms - COB	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,770	2, 4	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,601	0.4	1,567	0	$213	$554	$300	1.2
Corridor - 4th Judges - COB	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor - 4th Judges - COB	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,770	2, 4	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,601	0.5	2,090	0	$283	$888	$400	1.7
Courtroom - 4th WC #1 - COB	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,250	2, 3	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,243	0.5	1,801	0	$244	$708	$155	2.3
Courtroom - 4th WC #2 - COB	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,250	2, 3	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,243	0.5	1,801	0	$244	$708	$155	2.3
Courtroom - 4th WC #3 - COB	8	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,250	2, 3	Relamp	Yes	8	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,243	0.5	1,801	0	$244	$708	$155	2.3
Dining Area 4th - COB	8	Compact Fluorescent: (1) 26W Double Biaxial Plug-In Lamp	Wall Switch	S	26	3,250	2, 3	Relamp	Yes	8	LED Lamps: GX23 (Plug-In) Lamps	Occupancy Sensor	19	2,243	0.1	369	0	$50	$370	$43	6.5

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Dining Area 4th - COB	2	Compact Fluorescent: (1) 42W Spiral Plug-In Lamp	Wall Switch	S	42	3,250	2, 3	Relamp	Yes	2	LED Lamps: A19 Lamps	Occupancy Sensor	30	2,243	0.0	152	0	$21	$150	$22	6.2
Dining Area 4th - COB	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Dining Area 4th - COB	10	LED Lamps: (1) 11W A19 Screw-In Lamp	Wall Switch	S	11	3,250	3	None	Yes	10	LED Lamps: (1) 11W A19 Screw-In Lamp	Occupancy Sensor	11	2,243	0.0	122	0	$17	$270	$35	14.2
Dining Area 4th - COB	34	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	34	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.7	2,673	-1	$363	$1,431	$275	3.2
Dining Area 4th - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Electrical Room 4th - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Electrical Room 4th - IT - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Lobby 4th - COB	3	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Lobby 4th - COB	31	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,770	2, 4	Relamp	Yes	31	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,601	0.6	2,828	-1	$383	$1,916	$1,240	1.8
Lobby 4th - COB	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,770	2, 4	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	High/Low Control	44	2,601	0.4	1,567	0	$213	$554	$300	1.2
Office - 4th Court Reporter - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,243	0.1	450	0	$61	$226	$50	2.9
Office - 4th FCD IT - COB	15	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	15	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.6	2,252	0	$305	$818	$185	2.1
Office - 4th Judge #1 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,243	0.2	901	0	$122	$489	$95	3.2
Office - 4th Judge #2 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,243	0.2	901	0	$122	$489	$95	3.2
Office - 4th Judge #3 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,243	0.2	901	0	$122	$489	$95	3.2
Office - 4th Secretary WC - COB	12	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,250	2, 3	Relamp	Yes	12	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,243	0.7	2,702	-1	$366	$927	$215	1.9
Office - 4th TANF #1 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 4th TANF 401 - COB	27	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	27	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	1.1	4,053	-1	$550	$1,526	$340	2.2
Office - Open 4th Elections 400 - COB	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.9	3,303	-1	$448	$1,343	$290	2.4
Restroom - 4th Unisex - COB	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	3,250	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	3,250	0.0	57	0	$8	$33	$6	3.4
Restroom - Female 4th - COB	6	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	424	0	$57	$380	$65	5.5
Restroom - Female 4th - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	236	0	$32	$325	$50	8.6
Restroom - Male 4th - COB	6	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	424	0	$57	$380	$65	5.5
Restroom - Male 4th - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	236	0	$32	$325	$50	8.6
Conference 5th HR - COB	6	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	472	0	$64	$380	$65	4.9

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Conference 5th HR - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,243	0.1	529	0	$72	$262	$60	2.8
Electrical Room 5th - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Electrical Room 5th - IT - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Janitorial 5th - COB	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	910	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	910	0.0	16	0	$2	$33	$6	12.2
Kitchen 5th Quick Copy - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Lobby 5th - COB	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Lobby 5th - COB	25	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,770	2, 4	Relamp	Yes	25	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,601	0.5	2,280	0	$309	$1,581	$1,000	1.9
Lobby 5th - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,770	2, 4	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,601	0.1	522	0	$71	$335	$135	2.8
Office - 5th Admin #1 - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Office - 5th Admin #2 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - 5th Admin #3 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 5th Admin #4 - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Office - 5th HR #1 - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Office - 5th HR #2 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - Open 5th Administration / IT - COB	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Office - Open 5th Administration / IT - COB	80	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	80	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	3.2	12,009	-3	$1,628	$4,541	$1,010	2.2
Office - Open 5th HR - COB	21	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	21	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.8	3,152	-1	$427	$1,307	$280	2.4
Office - Open 5th Quick Copy - COB	29	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	29	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	1.2	4,353	-1	$590	$1,599	$360	2.1
Restroom - Female 5th - COB	6	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	424	0	$57	$380	$65	5.5
Restroom - Female 5th - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	236	0	$32	$325	$50	8.6
Restroom - Male 5th - COB	6	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	424	0	$57	$380	$65	5.5
Restroom - Male 5th - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	236	0	$32	$325	$50	8.6
Server Room - 5th - COB	22	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	22	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.9	3,303	-1	$448	$1,343	$290	2.4
Storage 5th Central Files - COB	11	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2, 3	Relamp	Yes	11	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	628	0.4	462	0	$63	$672	$110	9.0
Storage 5th Security - COB	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	628	0.2	252	0	$34	$489	$60	12.5

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Conference 6th FCD - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Electrical Room 6th - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Electrical Room 6th - IT - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Janitorial 6th - COB	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	910	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	910	0.0	16	0	$2	$33	$6	12.2
Kitchen 6th Finance - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Lobby 6th - COB	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Lobby 6th - COB	54	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,770	2, 4	Relamp	Yes	54	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,601	1.1	4,926	-1	$668	$3,011	$2,160	1.3
Office - 6th FCD #1 - COB	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	751	0	$102	$453	$85	3.6
Office - 6th FCD #2 - COB	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	901	0	$122	$489	$95	3.2
Office - 6th FCD #3 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - 6th FCD #4 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 6th FCD #5 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - 6th FCD Files - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 6th Finance #1 - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Office - 6th Finance #2 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 6th Finance #3 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - 6th Finance #4 - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Office - 6th Purchasing - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Office - Open 6th FCD 601 - COB	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Office - Open 6th FCD 601 - COB	25	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	25	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	1.0	3,753	-1	$509	$1,453	$320	2.2
Office - Open 6th FCD 602 - COB	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	13	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.5	1,951	0	$265	$745	$165	2.2
Office - Open 6th FCD 603 - COB	9	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.4	1,351	0	$183	$599	$125	2.6
Office - Open 6th Finance - COB	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Office - Open 6th Finance - COB	27	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	27	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	1.1	4,053	-1	$550	$1,526	$340	2.2
Office - Open 6th Purchasing - COB	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0

	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
Office - Open 6th Purchasing - COB	20	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.8	3,002	-1	$407	$1,270	$270	2.5
Restroom - Female 6th - COB	6	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	424	0	$57	$380	$65	5.5
Restroom - Female 6th - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	236	0	$32	$325	$50	8.6
Restroom - Male 6th - COB	6	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	424	0	$57	$380	$65	5.5
Restroom - Male 6th - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	236	0	$32	$325	$50	8.6
Storage - 6th FCD Office #5 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	628	0.1	84	0	$11	$189	$20	14.8
Storage - 6th Purchasing Files - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	628	0.1	126	0	$17	$380	$30	20.4
Storage - 6th Vault Finance - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	628	0.1	84	0	$11	$189	$20	14.8
Conference - 7th ACIA - COB	8	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.3	1,201	0	$163	$562	$115	2.7
Conference - 7th Prosecutor - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Electrical Room 7th - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Electrical Room 7th - IT - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Janitorial 7th - COB	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	910	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	910	0.0	16	0	$2	$33	$6	12.2
Kitchen 7th ACIA - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Kitchen 7th Juvenile - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Lobby 7th - COB	25	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,770	2, 4	Relamp	Yes	25	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,601	0.5	2,280	0	$309	$1,581	$1,000	1.9
Lobby 7th - COB	7	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,770	2, 4	Relamp	Yes	7	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,601	0.3	1,219	0	$165	$706	$315	2.4
Office - 7th ACIA #1 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 7th ACIA #2 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 7th ACIA #3 - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Office - 7th ACIA #4 - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Office - 7th ACIA #5 - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Office - 7th ACIA #6 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - 7th ACIA #7 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 7th ACIA #8 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Office - 7th Juvenile - COB	13	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	13	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.5	1,951	0	$265	$745	$165	2.2
Office - 7th Prosecuter #1 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - 7th Prosecuter #2 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 7th Prosecuter #3 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - 7th Prosecuter #4 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 7th Prosecuter #5 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - 7th Prosecuter #6 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - 7th Prosecuter #7 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 7th Prosecuter #8 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 7th Prosecutors Files - COB	4	LED - Fixtures: Ambient 2x2 Fixture	Wall Switch	S	40	3,250	3	None	Yes	4	LED - Fixtures: Ambient 2x2 Fixture	Occupancy Sensor	40	2,243	0.0	177	0	$24	$270	$35	9.8
Office - Open 7th ACIA - COB	3	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	3	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Office - Open 7th ACIA - COB	49	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	49	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	1.9	7,356	-2	$997	$2,869	$630	2.2
Restroom - Female 7th - COB	6	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	424	0	$57	$380	$65	5.5
Restroom - Female 7th - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	236	0	$32	$325	$50	8.6
Restroom - Male 7th - COB	6	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	424	0	$57	$380	$65	5.5
Restroom - Male 7th - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	236	0	$32	$325	$50	8.6
Storage - 7th RTK/Law - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	628	0.1	84	0	$11	$189	$20	14.8
Storage - 7th Vault ACIA - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	628	0.1	84	0	$11	$189	$20	14.8
Conference - 8th Law - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Conference 8th Large Executive - COB	16	Incandescent: (1) 60W A19 Screw-In Lamp	Wall Switch	S	60	3,250	2, 3	Relamp	Yes	16	LED Lamps: A19 Lamps	Occupancy Sensor	9	2,243	0.8	3,077	-1	$417	$816	$86	1.7
Conference 8th Large Executive - COB	16	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	16	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.3	1,258	0	$171	$832	$150	4.0
Conference 8th Small Executive - COB	8	Incandescent: (1) 60W A19 Screw-In Lamp	Wall Switch	S	60	3,250	2, 3	Relamp	Yes	8	LED Lamps: A19 Lamps	Occupancy Sensor	9	2,243	0.4	1,538	0	$209	$408	$43	1.7
Conference 8th Small Executive - COB	12	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	12	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.2	944	0	$128	$489	$95	3.1
Corridor - 8th Executive Offices - COB	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor - 8th Executive Offices - COB	22	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,770	2, 4	Relamp	Yes	22	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,601	0.5	2,007	0	$272	$1,302	$880	1.5

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Corridor - 8th Executive Offices - COB	16	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,770	2, 4	Relamp	Yes	16	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,601	0.6	2,786	-1	$378	$1,259	$720	1.4
Corridor - 8th Law Department Offices - COB	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Corridor - 8th Law Department Offices - COB	28	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,770	2, 4	Relamp	Yes	28	LED - Linear Tubes: (2) 4' Lamps	High/Low Control	29	2,601	1.1	4,876	-1	$661	$2,147	$1,260	1.3
Electrical Room 8th - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Electrical Room 8th - IT - COB	1	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.0	33	0	$4	$37	$10	5.9
Janitorial 8th - COB	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	S	33	910	2	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	910	0.0	16	0	$2	$33	$6	12.2
Kitchen 8th Executive - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Kitchen 8th Law Department - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Lobby 8th - COB	24	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,770	2, 4	Relamp	Yes	24	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,601	0.5	2,189	0	$297	$1,338	$960	1.3
Office - 8th Executive #1 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 8th Executive #2 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - 8th Executive #3 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - 8th Executive #4 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - 8th Executive #5 - COB	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	751	0	$102	$453	$85	3.6
Office - 8th Executive #6 - COB	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	901	0	$122	$489	$95	3.2
Office - 8th Executive #7 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - 8th Executive #8 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 8th Law #1 - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Office - 8th Law #10 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 8th Law #11 - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Office - 8th Law #2 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 8th Law #3 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 8th Law #4 - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Office - 8th Law #5 - COB	4	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	600	0	$81	$416	$75	4.2
Office - 8th Law #6 - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Office - 8th Law #7 - COB	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	901	0	$122	$489	$95	3.2
Office - 8th Law #8 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 8th Law #9 - COB	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Office - 8th Law Files - COB	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	5	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	751	0	$102	$453	$85	3.6
Office - Open 8th Law - COB	1	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	1	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Office - Open 8th Law - COB	38	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	38	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	1.5	5,704	-1	$774	$2,198	$485	2.2
Restroom - Female 8th - COB	6	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	424	0	$57	$380	$65	5.5
Restroom - Female 8th - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	236	0	$32	$325	$50	8.6
Restroom - Male 8th - COB	6	Linear Fluorescent - T8: 3' T8 (25W) - 1L	Wall Switch	S	27	3,250	2, 3	Relamp	Yes	6	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	424	0	$57	$380	$65	5.5
Restroom - Male 8th - COB	3	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	236	0	$32	$325	$50	8.6
Mechanical - Generators - COB	5	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	5	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.2	165	0	$22	$183	$50	5.9
Mechanical - Penthouse - COB	45	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	45	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	1.4	1,486	0	$202	$1,643	$450	5.9
Mechanical 9th - Elevators - COB	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.2	198	0	$27	$219	$60	5.9
Exterior - COB	7	LED - Fixtures: Wall Pack	Photocell		50	4,380		None	No	7	LED - Fixtures: Wall Pack	Photocell	50	4,380	0.0	0	0	$0	$0	$0	0.0
Mechanical 9th - Elevators - COB	6	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	6	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.2	198	0	$27	$219	$60	5.9
Exterior - COB	7	LED - Fixtures: Wall Pack	Photocell		50	4,380		None	No	7	LED - Fixtures: Wall Pack	Photocell	50	4,380	0.0	0	0	$0	$0	$0	0.0
Computer Lab - Learning Center - Library	21	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	3,250	1, 3	Relamp & Reballast	Yes	21	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.7	2,702	-1	$366	$1,601	$175	3.9
Computer Lab - Next STEP - Library	15	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	3,250	1, 3	Relamp & Reballast	Yes	15	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.5	1,930	0	$262	$1,028	$110	3.5
Electrical Room - Server - Library	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	910	1, 3	Relamp & Reballast	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	628	0.1	136	0	$18	$254	$40	11.6
Electrical Room 1st - Library	1	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	910		None	No	1	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	910	0.0	0	0	$0	$0	$0	0.0
Library 1st - Library	2	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	2	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Library 1st - Library	30	LED - Fixtures: Ceiling Mount	Wall Switch	S	17	3,250	3	None	Yes	30	LED - Fixtures: Ceiling Mount	Occupancy Sensor	17	2,243	0.1	565	0	$77	$540	$70	6.1
Library 1st - Library	166	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	3,250	1, 3	Relamp & Reballast	Yes	166	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	10.7	40,349	-8	$5,471	$14,656	$2,080	2.3
Mechanical 1st - Library	3	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	910	1	Relamp & Reballast	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.2	177	0	$24	$206	$30	7.3
Office - Adult Services - Library	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Office - Circulation - Library	4	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	3,250	1, 3	Relamp & Reballast	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.3	972	0	$132	$545	$75	3.6
Office - Fresh Start - Library	1	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	3,250	1	Relamp & Reballast	No	1	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	3,250	0.1	211	0	$29	$69	$10	2.1
Restroom - Female 1st Public - Library	3	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	50	3,250	3	None	Yes	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	50	2,243	0.0	166	0	$23	$270	$35	10.4
Restroom - Male 1st Public - Library	3	LED - Fixtures: Ambient 2x4 Fixture	Wall Switch	S	50	3,250	3	None	Yes	3	LED - Fixtures: Ambient 2x4 Fixture	Occupancy Sensor	50	2,243	0.0	166	0	$23	$270	$35	10.4
Stairs #1 - Library	8	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch		46	3,770	1, 4	Relamp & Reballast	Yes	8	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,601	0.3	1,194	0	$162	$854	$320	3.3
Stairs #2 - Library	8	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch		46	3,770	1, 4	Relamp & Reballast	Yes	8	LED - Linear Tubes: (1) 4' Lamp	High/Low Control	15	2,601	0.3	1,194	0	$162	$854	$320	3.3
Conference - Board Room - Library	8	Incandescent: (1) 60W A19 Screw-In Lamp	Wall Switch	S	60	3,250	2, 3	Relamp	Yes	8	LED Lamps: A19 Lamps	Occupancy Sensor	9	2,243	0.4	1,538	0	$209	$408	$43	1.7
Conference - Board Room - Library	8	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	3,250	1, 3	Relamp & Reballast	Yes	8	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.3	1,029	0	$140	$674	$75	4.3
Conference - Meeting Room - Library	13	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	3,250	1, 3	Relamp & Reballast	Yes	13	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.4	1,673	0	$227	$927	$100	3.6
Conference - Meeting Room - Library	12	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.5	1,801	0	$244	$708	$155	2.3
Janitorial 2nd - Library	1	Incandescent: (1) 75W A19 Screw-In Lamp	Wall Switch	S	75	910	2	Relamp	No	1	LED Lamps: A19 Lamps	Wall Switch	12	910	0.1	63	0	$9	$17	$1	1.9
Kitchen - Director - Library	1	Linear Fluorescent - T12: 2' T12 (20W) - 1L	Wall Switch	S	25	3,250	1	Relamp & Reballast	No	1	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	3,250	0.0	59	0	$8	$49	$3	5.7
Kitchen - Director - Library	1	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	3,250	1	Relamp & Reballast	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,250	0.0	113	0	$15	$51	$5	3.0
Kitchen - Meeting Room - Library	2	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	300	0	$41	$189	$40	3.7
Library 2nd - Library	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Library 2nd - Library	148	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	3,250	1, 3	Relamp & Reballast	Yes	148	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	9.5	35,974	-8	$4,878	$12,878	$1,830	2.3
Locker Room 2nd - Library	3	LED Lamps: (1) 11W A19 Screw-In Lamp	Wall Switch	S	11	3,250	3	None	Yes	3	LED Lamps: (1) 11W A19 Screw-In Lamp	Occupancy Sensor	11	2,243	0.0	37	0	$5	$270	$35	47.4
Locker Room 2nd - Library	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,250	2, 3	Relamp	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.1	450	0	$61	$380	$65	5.2
Lounge 2nd Staff - Library	5	Incandescent: (1) 60W A19 Screw-In Lamp	Wall Switch	S	60	3,250	2, 3	Relamp	Yes	5	LED Lamps: A19 Lamps	Occupancy Sensor	9	2,243	0.3	961	0	$130	$356	$40	2.4
Mechanical 2nd - Library	3	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	910	2	Relamp	No	3	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	910	0.1	99	0	$13	$110	$30	5.9
Office - Administration Office - Library	9	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	3,250	1, 3	Relamp & Reballast	Yes	9	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.6	2,188	0	$297	$889	$125	2.6
Office - Business Manager - Library	3	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	3,250	1, 3	Relamp & Reballast	Yes	3	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.2	729	0	$99	$476	$65	4.2
Office - Director - Library	4	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	3,250	1, 3	Relamp & Reballast	Yes	4	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	0.3	972	0	$132	$545	$75	3.6
Office - IT - Library	1	Incandescent: (1) 75W A19 Screw-In Lamp	Wall Switch	S	75	3,250	2	Relamp	No	1	LED Lamps: A19 Lamps	Wall Switch	12	3,250	0.1	225	0	$31	$17	$1	0.5
Office - IT - Library	5	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	3,250	1, 3	Relamp & Reballast	Yes	5	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.2	643	0	$87	$523	$60	5.3

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Storage - IT - Library	1	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	910	1	Relamp & Reballast	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	910	0.0	32	0	$4	$51	$5	10.6
Office - Public Relations - Library	4	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	3,250	1, 3	Relamp & Reballast	Yes	4	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	515	0	$70	$472	$55	6.0
Office - Public Relations - Library	7	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	3,250	2, 3	Relamp	Yes	7	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.1	550	0	$75	$398	$70	4.4
Office - Technical Services - Library	21	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	S	88	3,250	1, 3	Relamp & Reballast	Yes	21	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,243	1.3	5,104	-1	$692	$1,984	$280	2.5
Office - Youth Services - Library	6	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	3,250	1, 3	Relamp & Reballast	Yes	6	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.2	772	0	$105	$573	$65	4.9
Restroom - Children - Library	1	Linear Fluorescent - T12: 3' T12 (30W) - 1L	Wall Switch	S	46	3,250	1	Relamp & Reballast	No	1	LED - Linear Tubes: (1) 3' Lamp	Wall Switch	11	3,250	0.0	127	0	$17	$51	$5	2.6
Restroom - Children - Library	1	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	3,250	1	Relamp & Reballast	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,250	0.0	113	0	$15	$51	$5	3.0
Restroom - Director - Library	1	Linear Fluorescent - T12: 3' T12 (30W) - 1L	Wall Switch	S	46	3,250	1	Relamp & Reballast	No	1	LED - Linear Tubes: (1) 3' Lamp	Wall Switch	11	3,250	0.0	127	0	$17	$51	$5	2.6
Restroom - Director - Library	1	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	3,250	1	Relamp & Reballast	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,250	0.0	113	0	$15	$51	$5	3.0
Restroom - Family 2nd - Library	5	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	3,250	1, 3	Relamp & Reballast	Yes	5	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	2,243	0.2	643	0	$87	$523	$60	5.3
Restroom - Locker Staff #1 - Library	1	Linear Fluorescent - T12: 2' T12 (20W) - 1L	Wall Switch	S	25	3,250	1	Relamp & Reballast	No	1	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	3,250	0.0	59	0	$8	$49	$3	5.7
Restroom - Locker Staff #1 - Library	2	Linear Fluorescent - T12: 3' T12 (30W) - 1L	Wall Switch	S	46	3,250	1, 3	Relamp & Reballast	Yes	2	LED - Linear Tubes: (1) 3' Lamp	Occupancy Sensor	11	2,243	0.1	277	0	$38	$217	$30	5.0
Restroom - Locker Staff #2 - Library	1	Linear Fluorescent - T12: 2' T12 (20W) - 1L	Wall Switch	S	25	3,250	1	Relamp & Reballast	No	1	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	3,250	0.0	59	0	$8	$49	$3	5.7
Restroom - Locker Staff #2 - Library	1	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	3,250	1	Relamp & Reballast	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,250	0.0	113	0	$15	$51	$5	3.0
Restroom - Locker Staff #3 - Library	1	Linear Fluorescent - T12: 2' T12 (20W) - 1L	Wall Switch	S	25	3,250	1	Relamp & Reballast	No	1	LED - Linear Tubes: (1) 2' Lamp	Wall Switch	9	3,250	0.0	59	0	$8	$49	$3	5.7
Restroom - Locker Staff #3 - Library	1	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	3,250	1	Relamp & Reballast	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	3,250	0.0	113	0	$15	$51	$5	3.0
Storage - Admin Office #1 - Library	1	Incandescent: (1) 75W A19 Screw-In Lamp	Wall Switch	S	75	910	2	Relamp	No	1	LED Lamps: A19 Lamps	Wall Switch	12	910	0.1	63	0	$9	$17	$1	1.9
Storage - Admin Office #2 - Library	2	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	910	1, 3	Relamp & Reballast	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	628	0.1	72	0	$10	$217	$10	21.2
Storage - Meeting Room - Library	2	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	910	1, 3	Relamp & Reballast	Yes	2	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	628	0.1	72	0	$10	$217	$10	21.2
Storage - Projection Room - Library	2	Incandescent: (2) 75W A19 Screw-In Lamps	Wall Switch	S	150	910	2, 3	Relamp	Yes	2	LED Lamps: A19 Lamps	Occupancy Sensor	23	628	0.3	269	0	$36	$185	$4	5.0
Storage - Public Relations - Library	10	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	910	1, 3	Relamp & Reballast	Yes	10	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	628	0.3	360	0	$49	$775	$50	14.8
Storage - Public Relations - Library	5	Linear Fluorescent - T8: 4' T8 (32W) - 1L	Wall Switch	S	32	910	2, 3	Relamp	Yes	5	LED - Linear Tubes: (1) 4' Lamp	Occupancy Sensor	15	628	0.1	110	0	$15	$361	$25	22.5
Storage - Staff 2nd - Library	1	Linear Fluorescent - T12: 4' T12 (40W) - 1L	Wall Switch	S	46	910	1	Relamp & Reballast	No	1	LED - Linear Tubes: (1) 4' Lamp	Wall Switch	15	910	0.0	32	0	$4	$51	$5	10.6
Storage - Youth Services - Library	1	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	S	9	910		None	No	1	LED Lamps: (1) 9W A19 Screw-In Lamp	Wall Switch	9	910	0.0	0	0	$0	$0	$0	0.0
Exterior - Library	16	LED - Fixtures: Ambient 2x2 Fixture	Timeclock		40	4,380		None	No	16	LED - Fixtures: Ambient 2x2 Fixture	Timeclock	40	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
Exterior - Library	18	LED - Fixtures: Ceiling Mount	Timeclock		20	4,380		None	No	18	LED - Fixtures: Ceiling Mount	Timeclock	20	4,380	0.0	0	0	$0	$0	$0	0.0

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
Various	Fan Powered VAVs	54	Supply Fan	1.0	85.5%	No	Trane		W	2,745		No	85.5%	No		0.0	0	0	$0	$0	$0	0.0
Various	Fan Powered VAVs	32	Supply Fan	0.5	78.2%	No	Trane		W	2,745		No	78.2%	No		0.0	0	0	$0	$0	$0	0.0
Various	Fan Powered VAVs	3	Supply Fan	0.3	73.4%	No	Trane		W	2,745		No	73.4%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Penthouse	AC-1 Office Building - Bayside	1	Supply Fan	125.0	94.5%	Yes			W	5,200		No	94.5%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Penthouse	AC-2 Office Building - Oceanside	1	Supply Fan	125.0	94.5%	Yes			W	5,200		No	94.5%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical 1st - AHU 3	AC-3 Auditorium	1	Supply Fan	7.5	88.5%	No			B	3,391	6	No	91.0%	Yes	1	2.2	8,437	0	$1,168	$5,945	$1,000	4.2
Mechanical 2nd - AHU 4	AC-4 Atrium	1	Supply Fan	7.5	88.5%	No			B	3,391	6	No	91.0%	Yes	1	2.2	8,437	0	$1,168	$5,945	$1,000	4.2
Mechanical 2nd - AHU 5	AC-5 Atrium	1	Supply Fan	7.5	88.5%	0			B	3,391	6	No	91.0%	Yes	1	2.2	8,437	0	$1,168	$5,945	$1,000	4.2
Mechanical - Penthouse	AC-1 Office Building - Bayside	1	Return Fan	40.0	93.0%	Yes			W	4,067		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Penthouse	AC-2 Office Building - Oceanside	1	Return Fan	40.0	93.0%	Yes			W	4,067		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical 1st - AHU 3	AC-3 Auditorium	1	Return Fan	5.0	87.5%	No			B	2,745	6	No	89.5%	Yes	1	1.5	4,565	0	$632	$5,028	$900	6.5
Mechanical 2nd - AHU 4	AC-4 Atrium	1	Return Fan	5.0	87.5%	No			B	2,745	6	No	89.5%	Yes	1	1.5	4,565	0	$632	$5,028	$900	6.5
Mechanical 2nd - AHU 5	AC-5 Atrium	1	Return Fan	5.0	87.5%	No			B	2,745	6	No	89.5%	Yes	1	1.5	4,565	0	$632	$5,028	$900	6.5
Roof - Office	Cooling Tower	2	Cooling Tower Fan	15.0	91.7%	Yes			W	3,391		No	91.7%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Penthouse	Unit Heaters	4	Supply Fan	0.1	60.0%	No			W	2,745		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Server Room - 5th	Computer Room AHU	1	Supply Fan	0.5	75.0%	No			W	2,745		No	75.0%	No		0.0	0	0	$0	$0	$0	0.0
Roof - Library	RTU-1 Library	1	Supply Fan	7.5	91.0%	No			W	3,391		No	91.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical 1st - Library	AC-6 Library	1	Supply Fan	7.5	88.5%	No	Carrier		B	3,391	6	No	91.0%	Yes	1	2.2	8,437	0	$1,168	$5,945	$1,000	4.2
Mechanical 2nd - Library	AC-7 Library	1	Supply Fan	5.0	87.5%	No	Carrier		B	2,745	6	No	89.5%	Yes	1	1.5	4,565	0	$632	$5,028	$900	6.5
Mechanical - Penthouse	Air Compressor	2	Air Compressor	3.0	87.5%	No	Marathon		W	2,190		No	87.5%	No		0.0	0	0	$0	$0	$0	0.0

		Existing Conditions									Proposed Conditions					Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	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
Mechanical - Penthouse	Air Compressor	1	Air Compressor	3.0	82.0%	No	Baldor		B	2,190		No	82.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Penthouse	Air Compressor	1	Air Compressor	3.0	86.5%	No	Vanguard		B	2,190		No	86.5%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Penthouse	Condenser Water System	2	Condenser Water Pump	15.0	93.0%	Yes	Baldor		W	3,391		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Penthouse	Chilled Water System	3	Chilled Water Pump	15.0	93.0%	Yes	Baldor		W	3,391		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Penthouse	Heating Water System	2	Heating Hot Water Pump	40.0	94.1%	Yes	Baldor		W	4,067		No	94.1%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Penthouse	Freeze Pump 1	1	Heating Hot Water Pump	1.0	85.5%	No	US Motors		W	2,745		No	85.5%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Penthouse	Freeze Pump 2	1	Heating Hot Water Pump	1.0	82.5%	No	WorldWide		B	2,745	5	Yes	85.5%	No		0.0	65	0	$9	$987	$0	109.1
Mechanical - Penthouse	Domestic Hot Water	1	DHW Circulation Pump	0.1	60.0%	No			W	8,760		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Pump Room	Exhaust System	1	Exhaust Fan	0.3	62.5%	No	GE		B	2,745	5	Yes	69.5%	No		0.0	62	0	$9	$448	$0	52.3
Mechanical - Generators	Exhaust System	1	Exhaust Fan	0.3	62.5%	No	Baldor		W	2,745		No	62.5%	No		0.0	0	0	$0	$0	$0	0.0
Roof - Library	Exhaust System	4	Exhaust Fan	0.3	62.5%	No			B	2,745	5	Yes	69.5%	No		0.1	248	0	$34	$1,793	$0	52.3
Roof - Office	Exhaust System	1	Exhaust Fan	0.3	62.5%	No	Greenheck		B	2,745	5	Yes	69.5%	No		0.0	62	0	$9	$448	$0	52.3
Roof - Office	Exhaust System	1	Exhaust Fan	0.5	75.0%	No	Greenheck		B	2,745	5	Yes	78.2%	No		0.0	42	0	$6	$469	$0	80.8
Mechanical 9th - Elevators	Elevator 1	1	Other	40.0	93.0%	No			B	548		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical 9th - Elevators	Elevator 2	1	Other	40.0	93.0%	No			B	548		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical 1st - Elevators	Elevator 3	1	Other	30.0	92.4%	No			W	548		No	92.4%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical 1st - Elevators	Elevator 4	1	Other	30.0	92.4%	No			W	548		No	92.4%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical 9th - Elevators	Elevator 5	1	Other	50.0	93.0%	No			B	548		No	93.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Pump Room	Sump Pumps	2	Process Pump	0.5	75.0%	No			W	730		No	75.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Pump Room	Sump Pumps	1	Process Pump	0.3	62.5%	No			W	800		No	62.5%	No		0.0	0	0	$0	$0	$0	0.0

		Existing Conditions									Proposed Conditions					Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	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
Mechanical - Penthouse	Glycol Pumps	3	Process Pump	0.1	60.0%	No			W	2,745		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Pump Room	Fire Pumps	2	Water Supply Pump	7.5	91.0%	Yes	Grundfos		W	3,391		No	91.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical 2nd - Library	Air Compressor	2	Air Compressor	1.5	78.0%	No	Baldor		B	2,190		No	78.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical 2nd - Library	Domestic Hot Water	1	DHW Circulation Pump	0.1	60.0%	No	Taco		W	8,760		No	60.0%	No		0.0	0	0	$0	$0	$0	0.0
Mechanical - Elevator - Library	Elevator	1	Other	15.0	91.0%	No			W	548		No	91.0%	No		0.0	0	0	$0	$0	$0	0.0
Library 2nd - Library	Motorized Overhead Door	2	Other	0.3	62.5%	No			W	200		No	62.5%	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
Mechanical - Pump Room	Mechanical - Pump Room	1	Electric Resistance Heat		10.24		1 COP	Qmark	MUH0341	W		No							0.0	0	0	$0	$0	$0	0.0
Mechanical - Generators	Mechanical - Generators	1	Electric Resistance Heat		17.06		1 COP	Trane		W		No							0.0	0	0	$0	$0	$0	0.0
Roof - Office	Atlantic County Office Building	1	Ductless Mini-Split AC	1.00		16.00		Sanyo	CL1271	W		No							0.0	0	0	$0	$0	$0	0.0
Roof - Office	Computer Room AHU	1	Split-System	14.50		10.00		Liebert	DDO174A	W		No							0.0	0	0	$0	$0	$0	0.0
Roof Library	Library - RTU1	1	Package Unit	20.00	122.83	11.00	1 COP	Trane	THD240G4RNB	W		No							0.0	0	0	$0	$0	$0	0.0
Mechanical - Elevator - Library	Mechanical - Elevator - Library	1	Electric Resistance Heat		17.06		1 COP	Trane		W		No							0.0	0	0	$0	$0	$0	0.0
Mechanical 1st - Library	Mechanical 1st - Library	1	Electric Resistance Heat		34.12		1 COP	Dayton		W		No							0.0	0	0	$0	$0	$0	0.0
Mechanical 2nd - Library	Mechanical 2nd - Library	1	Electric Resistance Heat		34.12		1 COP	Dayton		W		No							0.0	0	0	$0	$0	$0	0.0

Electric Chiller Inventory & Recommendations

		Existing Conditions						Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Chiller Quantity	System Type	Cooling Capacity per Unit (Tons)	Manufacturer	Model	Remaining Useful Life	ECM #	Install High Efficiency Chillers?	Chiller Quantity	System Type	Constant/ Variable Speed	Cooling Capacity (Tons)	Full Load Efficiency (kW/Ton)	IPLV Efficiency (kW/Ton)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Mechanical - Penthouse	Cooling System	2	Water-Cooled Centrifugal Chiller	200.00	Trane	HDWA200	N		No							0.0	0	0	$0	$0	$0	0.0

Space Heating Boiler Inventory & Recommendations

		Existing Conditions						Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Manufacturer	Model	Remaining Useful Life	ECM #	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Mechanical - Penthouse	Heating System	6	Condensing Hot Water Boiler	2,700	ATH	KN-30	N		No						0.0	0	0	$0	$0	$0	0.0

Pipe Insulation Recommendations

		Recommendation Inputs			Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Affected	ECM #	Length of Uninsulated Pipe (ft)	Pipe Diameter (in)	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 1st	Domestic Hot Water - Office	7	15	1.50	0.0	2,328	0	$322	$200	$30	0.5
Mechanical 2nd - Library	Domestic Hot Water - Library	7	25	1.50	0.0	3,880	0	$537	$333	$50	0.5
Mechanical 2nd - Library	Domestic Hot Water - Library	7	10	1.00	0.0	1,061	0	$147	$119	$20	0.7

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
Electrical Room 1st	Domestic Hot Water - Office	1	Storage Tank Water Heater (> 50 Gal)	Bradford White	M-I-120-18-3CF-42	B		No						0.0	0	0	$0	$0	$0	0.0
Mechanical - Penthouse	Domestic Hot Water - Office	1	Storage Tank Water Heater (> 50 Gal)	Bradford White	LD120R3-3H090	W		No						0.0	0	0	$0	$0	$0	0.0
Mechanical 2nd - Library	Domestic Hot Water - Library	1	Storage Tank Water Heater (≤ 50 Gal)	Bradford White	RE350S6-1NCWW	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
Atlantic County Office Building	8	69	Faucet Aerator (Lavatory)	2.20	0.50	0.0	9,592	0	$1,328	$495	$247	0.2
Atlantic City Free Public Library	8	6	Faucet Aerator (Lavatory)	2.20	0.50	0.0	834	0	$115	$43	$22	0.2

Commercial Refrigerator/Freezer Inventory & Recommendations

	Existing Conditions					Proposed Conditions		Energy Impact & Financial Analysis						
Location	Quantity	Refrigerator/ Freezer Type	Manufacturer	Model	ENERGY STAR Qualified?	ECM #	Install ENERGY STAR Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Dining Area 4th	1	Stand-Up Refrigerator, Glass Door (16 - 30 cu. ft.)	Imbera	G319 C02	Yes		No	0.0	0	0	$0	$0	$0	0.0
Dining Area 4th	1	Stand-Up Refrigerator, Glass Door (31 - 50 cu. ft.)	True	GDM-41	No		No	0.0	0	0	$0	$0	$0	0.0

Plug Load Inventory

	Existing Conditions					
Location	**Quantity**	**Equipment Description**	**Energy Rate (W)**	**ENERGY STAR Qualified?**	**Manufacturer**	**Model**
Atlantic County Office Building	21	Coffee Machine	500	No		
Atlantic County Office Building	357	Desktop	120	No		
Atlantic County Office Building	35	Microwave	1,000	No		
Atlantic County Office Building	12	Paper Shredder	200	No		
Atlantic County Office Building	112	Printer (Medium/Small)	450	No		
Atlantic County Office Building	45	Printer/Copier (Large)	600	No		
Atlantic County Office Building	17	Refrigerator (Mini)	174	No		
Atlantic County Office Building	18	Refrigerator (Residential)	340	No		
Atlantic County Office Building	3	Smart Board	215	No		
Atlantic County Office Building	3	Television	224	No		
Atlantic County Office Building	6	Toaster	600	No		
Atlantic County Office Building	12	Toaster Oven	600	No		
Atlantic County Office Building	3	Water Cooler	192	No		
Atlantic County Office Building	1	Storefront / ATM	250	No		
Atlantic County Office Building	1	Server	4,000	No		
Atlantic City Free Public Library	3	Coffee Machine	500	No		
Atlantic City Free Public Library	88	Desktop	120	No		
Atlantic City Free Public Library	3	Microwave	1,000	No		
Atlantic City Free Public Library	3	Paper Shredder	200	No		
Atlantic City Free Public Library	12	Printer (Medium/Small)	450	No		
Atlantic City Free Public Library	4	Printer/Copier (Large)	600	No		
Atlantic City Free Public Library	1	Projector	240	No		
Atlantic City Free Public Library	1	Refrigerator (Mini)	174	No		
Atlantic City Free Public Library	2	Refrigerator (Residential)	340	No		
Atlantic City Free Public Library	3	Smart Board	215	Yes		
Atlantic City Free Public Library	4	Television	224	No		
Atlantic City Free Public Library	1	Water Cooler	192	No		

Custom (High Level) Measure Analysis

Electric Tank Water Heater to HPWH

NOTE: HPWH calculation should not be used for existing water heaters with a storage capacity greater than 120 gal.

Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis											
Description	Area(s)/System(s) Served	SF of Area Served	Fuel Type	Input Capacity per Unit (kW)	Tank Capacity per Unit (Gal)	Description	COP	Tank Capacity per Unit (Gal)	Estimated Unit Cost	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	Payback w/ Incentives in Years
Storage Tank Water Heater (>50 Gal)	Domestic Hot Water - Office	25,000	Electric	18.0	120	Heat Pump Water Heater	2.5	120	$4,576.06	0.00	21,102	0	$2,922	$4,576	$0	$0	$0	$4,576	1.57	1.57
Storage Tank Water Heater (>50 Gal)	Domestic Hot Water - Office	25,000	Electric	9.0	120	Heat Pump Water Heater	2.5	120	$4,576.06	0.00	21,102	0	$2,922	$4,576	$0	$0	$0	$4,576	1.57	1.57
Storage Tank Water Heater (≤50 Gal)	Domestic Hot Water - Library	10,000	Electric	4.5	50	Heat Pump Water Heater	2.5	50	$2,383.17	0.00	8,441	0	$1,169	$2,383	$0	$0	$0	$2,383	2.04	2.04

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.

LEARN MORE AT energystar.gov

ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

Atlantic County Office Building & Library

Primary Property Type: Office
Gross Floor Area (ft²): 170,791
Built: 1985

For Year Ending: February 28, 2022
Date Generated: September 20, 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
Atlantic County Office Building & Library 1333 Atlantic Avenue Atlantic City, New Jersey 08404	Atlantic County 1227 Drexel Avenue Atlantic City, NJ 08401 (609) 343-2284	Jerry Griffin 1227 Drexel Avenue Atlantic City, NJ 08401 (609) 343-2284 griffin_jerry@aclink.org

Property ID: 25082969

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
102 kBtu/ft²

Source EUI
205.9 kBtu/ft²

Annual Energy by Fuel	
Electric - Grid (kBtu)	9,645,274 (55%)
Natural Gas (kBtu)	7,767,489 (45%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	96.3
National Median Source EUI (kBtu/ft²)	194.4
% Diff from National Median Source EUI	6%
Annual Emissions	
Total (Location-Based) GHG Emissions (Metric Tons CO2e/year)	1,279

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 $1/8^{th}$ 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.